verts are broad and rounded, the third and fourth quills are longest, and from the third to the ninth inclusive the inner webs are marked with a large irregular white spot, the outer webs of the fifth to the eighth inclusive are also marked with a square white patch opposite to that on the inner. The tail is much graduated, and the two exterior feathers have an oval white spot near the extremity of each. The legs and feet are black, and formed as in Promerops.

Dr. Smith observes that the species is of rare occurrence, he having met with it only three times. All the specimens were procured at the most northern boundary of the colony, and it is probable that they may be found in more abundance when his researches are continued in that direction.

On the Plate, Fig. 1. represents the bill seen from above with the incumbent scales in the proper place. Fig. 2. one of the scales removed. Fig. 3. left foot seen from above. Fig. 4. hallux. Fig. 5. bill of the natural size, showing the scale removed and the true membrane covering the nostrils.

---


No. 1. Rules for Entomological Nomenclature.
No. 2. Application thereof to the Chalcididae and Cynipidae.
No. 3. Characters, &c., of the genera Cleonymus Latr. and Cheiropachus mihi belonging to the former family.

No. 1.

"Il ne s'agit ici que de la seule Nomenclature." Spinola.

There is no portion of the entomological productions of Great Britain which has been so completely disregarded by British Entomologists as the insects composing the family Chalcididae; and when we have mentioned Latreille, Spinola and Dalman among the continental Entomo-
logists, the catalogue of authors who have attempted their investigation is complete; while at the same time there is hardly any group which can vie with them, either in the singularity of their economy, the peculiarity of their characters, or the brilliancy of their colouring.

Previously, however, to entering upon the history of the nomenclature of the family, I think it necessary to make a few preliminary remarks upon certain principles of Entomological Nomenclature; and, with Spinola, in the first place to declare, that "quart à la Nomenclature, la priorité est ma loi."

It is well known that Linnaeus, Fabricius, and their contemporaries often comprised in their extensive genera insects so different in structure, that certain of them are ascertained, their characters being now more minutely investigated, to belong even to other groups.

On the other hand it happened far more frequently that the greater part of the insects composing these genera were, from the great, and indeed surprising degree of discrimination possessed by the before-named authors, so nearly allied to each other in affinity, that the modern Entomologist has only to reject the few disagreeing species, to form the oldest generic name* employed in the group into that of a family, by transforming the termination of the last syllable of the genitive case of the generic name into the patronymic idæ; and to reduce the species into minor divisions and subdivisions, which we now term genera or sub-genera; the ancient generic

* Mr. Stephens, in his Illustrations (Haustellata, I. p. 74, note,) observes, "that the name of the family should unquestionably be derived from that of the typical group;" and adds, that from his limited knowledge of exotic forms he should not attempt to decide whether the name which he had employed, or that which had been employed by a contemporary author for the same family, ought to be retained. No further proof of the practical inconvenience of this plan, although it may perhaps be theoretically correct, can be required. Indeed, until the contents of any particular family are clearly ascertained, the supposed typical group, (or, in other words, that group which, from its situation in the family, possesses the characters of the adjacent families in a slighter state of development than any of the other groups in the same family,) will be continually subject to variation as new forms are discovered, and hence, if Mr. Stephens's rule should be adopted, the family name will necessarily be subject to similar variation. This inconvenience, however, may be at once obviated by adopting the rule which I have stated above.
name being generically reserved for that particular species, which, from being placed at the head of his genus, we are led to suppose was considered by its founder as the species more especially possessing the generic characters of the group;* indeed, in the works of Fabricius we invariably find a certain species selected, from which the characters are drawn, and in this case we are left without doubt as to the type of the genus. This is, however, a circumstance too often overlooked by modern authors.

At the period above referred to, it also not unfrequently occurred (as we shall see below) that an author, unacquainted with the works of his contemporaries, gave to some particular group, incorrectly supposed by him to be unnamed and uncharacterized, a generic name, in many instances derived from some peculiarity in the insect which he considered as the type, (adding at the same time to his genus other, and perhaps very distinct insects, rather than form them into new genera,) when, however, unfortunately for him, those very insects which he had regarded as the types of his new genus, had previously received from some other Entomologist a different generic name. Now in such a case it is quite clear that the second name must sink into a synonym. It has, indeed, been said that it ought to be retained, and that the insects placed by the author of the second generic name at the end of his genus, although completely disagreeing with the characters of the type, (from which type perhaps the second generic name was derived,) ought to be considered as entitled to such second generic name. This doctrine, however, in such cases is certainly not maintainable†, not even though the insects placed at the end of the genus by the second author may partially agree with his typical species.

* Fabricius, in his Philosophia Entomologica (p. 114) lays down the following rule, "Si genus receptum secundum leges naturæ et artis, in plura dirimatur, tum nomen antea commune vulgatissimo insecto manebit." I do not know any method so likely to create confusion and uncertainty as that contained in the above rule, since it is next to impossible that every Entomologist would select the same particular insect, and consider it as the most common in the family to which it belongs. Indeed Fabricius himself seems to have wished to inculcate this uncertainty, since, in p.118 of the same book, he observes, "Locus et tempus insecti sunt maxime accidentalia."

† "Nomen genericum unius generis, nisi supervacaneum, in alium transferri haud debet." Fab., Phil. Ent. p. 113.
Confusion has hitherto constantly attended, and cannot but attend, the employment of such synonymous names, which the introduction of new generic names would certainly have prevented. "Nominum genericorum enim mutatio semper ansam confusionis praebet."*

* Fab., Phil. Ent. p. 105.

The genus Eulophus will afford an example of the application of the above rule in a somewhat different manner.

That genus was proposed by Geoffroy for a species, the male of which possessed branched antennae. Latreille extended the genus, comprising in it all the species in the family whose antennae were apparently six or seven jointed. Dalman adopted Latreille's views, but proposed that the generic name should be changed to Entedon, placing however in his arrangement of the species (which were formed into various sections and subsections) the species with the branched antennae in the males in the first section at the head of his genus, thus considering them to possess the characters of the group in a greater state of development than the other species, all of which have simple antennae. But to the student of this portion of our Entomological productions it is evident that the group as extended by Latreille and Dalman is of higher than generic rank, forming in fact a subfamily, which may be named, after Mr. Vigors's plan, Eulophina, and that the generic name of Eulophus ought to be restricted to the species with branched antennae in the males for which it was first proposed; and since Dalman has placed these species at the head of his genus, we may be permitted to say that his name Entedon is only synonymous with the true genus Eulophus, even without reference to the claims of the latter name on account of its priority, and consequently that the name Entedon ought not to be employed generically to designate any one of the other divisions or subdivisions comprised in Dalman's group, which are of equal rank with the true Eulophi; and for which (as it will be necessary to give them names) it would be far preferable that new generic terms should be employed. In the Coleoptera how many genera do we see proposed and adopted, whose characters are far less decided than those which characterize Dalman's sections and subsections! and shall the objects comprised therein, merely because they are minute, be denied the advantages (as I may almost call them) which their relatives of larger size enjoy?

But supposing that the name of Eulophus were to be generically employed for the true Eulophi, and the name of Entedon were not to be considered as a synonym, but were to be employed generically for the insects contained in any one of the said subdivisions of Entedon, I would ask how the Entomologist could say that he is describing the genus Entedon of Dalman, when that genus
Rules for Entomological Nomenclature.

In this investigation, however, I also think it equally clear that we ought to be allowed to consider the Systema Naturae as our boundary mark, without being required to trace the name of an insect through all the old and fabulous authors who have treated upon it, and who have at the same time introduced so much confusion amongst the names by which the more commonly known insects were designated, that it is now almost impossible (although in itself a sufficiently interesting subject for investigation) to discover the insects alluded to by those authors. Linnaeus, on the other hand, "primus scientiam in formam systematis redegit, genera condidit, characteres nominaque eorum dedit;*" a system fixed and harmonious throughout, and sufficient in itself to carry his name down to the latest posterity, and as such, the names employed by him are now, notwithstanding the admitted impropriety of a very few of them, almost universally adopted. I therefore think that it would at once tend to overthrow so valuable a system were we unnecessarily to set aside his names, preferring to them others, which, even were they adopted, would lead to no satisfactory results.

There is also another question (too often overlooked) which, although not immediately connected with the present subject, I may be allowed to mention. I allude to priority in regard to the Nomenclature of Species. Now the purpose for which specific names are bestowed upon insects is comprised so many of such subdivisions? or to which of his other subdivisions ought his name Entedon par préférence to be exclusively given?

It may however be said that the whole group having apparently six or seven joints in the antennæ is but of the rank of a genus, then in such case Dalman's name must inevitably sink into a synonym of Eulophus, since Latreille previously extended the latter generic name over the whole group, and that name would be then employed; first, as a generic one as proposed by Latreille for the whole group; and second, as a subgeneric one as proposed by Geoffroy for the true Eulophi, perhaps forming the name in the latter case, after Mr. Kirby's plan, into the subgeneric name Eulophæ; Dalman's other sections and subsections having new subgeneric names given to them similarly terminating; but for my own part, as between these two plans, which in the end may be said at most to possess a variance but no difference, I certainly at present feel inclined to prefer the former. In any case the adoption of Dalman's name Entedon will be attended with confusion.

* Fab., Phil. Ent. p. 88.
perfectly artificial; namely, that by such means an insect may be readily recognized amongst its fellows, "Demitis nominibus rite determinatis alis ideae nostras nullo modo communicare valemus;"* and the aim of the Entomologist is fully accomplished if he is enabled thereby to make himself understood when mentioning or describing any particular insect; consequently a slight degree of importance is all that is requisite to be attached to the names themselves. It has however been said, that if an insect receive a name which is afterwards discovered to be incorrect, such name ought to be rejected, and that employed by the next author who described the insect adopted in its stead. For instance, if the oldest specific name be derived from a character which is afterwards discovered to be a generic one, (Ex. Leistus spinibarbis, Loriceria pilicornis,) or if a comparative name be employed, and the comparison is afterwards destroyed, (Ex. Hister maximus, Bombylius major, B. medius, B. minor,) or again, if such name be derived from a sexual character, (Ex. Eucera longicornis, Eulophus ramicornis, Eul. damicornis,) or lastly, if a name be employed indicative of the habitation or place of capture of an insect, and it is afterwards discovered that the supposed habitation was merely accidental, or in fact erroneous, (Ex. Curculio Alliaræ and C. Lapathi, noticed by Kirby and Spence, Vol. I. p. 196,) or it is discovered that the insect is not confined to the supposed locality, (Ex. Agonum Austriacum, Raphidia Londinensis,) I think, for the reasons above mentioned, that in each of these cases it is going too far to contend that such name ought to be rejected, "Toleranda tamen sunt," says Fabricius, "quamvis haud imitanda;"† for if the propriety of every specific name were to be thus rigidly examined, we should find but few which would survive the test.‡ In one of the cases mentioned Messrs. Kirby and Spence are of a

† Id. ibid. p. 118.
‡ Here may be noticed the useless curtailment of the Linnaean names of the Tineæ, which has latterly been adopted by some of our Entomologists. I would ask what advantage is gained thereby; for would not "Anacampsis cinerea or Juniperi," as written by Mr. Curtis, (British Entomology, No. 169,) be more satisfactorily known by the old established Linnaean names "cinerella or Juniperella?" "Nomina trivialia nunquam absque summà urgenti necessitate mutanda sunt." Fab., ib. p. 121.
different opinion, (Introduction, Vol. I. p. 196, note,) but De Jean, in his Preface to the first volume of his "Species général des Coléoptères," expresses a strong opinion on the propriety of retaining the oldest specific name, to the exclusion of recent improved ones, giving for examples Loricera pilicornis and Leistus spinibarbis, above noticed. It would not, however, be proper to pass over in silence, or without censure, the contradictory opinion previously expressed by that author in the same Preface, where he announces his intention of adopting the names most generally used, immaterial whether they have or have not priority of date!, adding, that the investigation of the prior claim to a name is a waste of labour, and ever attended with more trouble than can be compensated by the benefit to be derived therefrom. How unworthy is this remark of the work in which it is contained! There is one case, however, in which the earliest specific name of a particular insect must be rejected in favor of the subsequently employed name, viz. where such earliest trivial name has previously been used by some preceding author, for a different species, in the same genus.

No. 2.

We now proceed to the history of the nomenclature of the Chalcididae and Cynipidae.

The genus Cynips was proposed by Linnaeus in the 6th edition of the Systema Nature, and was evidently intended, (although comprising insects belonging to other and very different modern genera and even families,) for the reception of the true Gall Flies, those insects being placed by him at the head of the genus. Most of the minute insects of the parasitic family Chalcididae were, from the similarity in their habits, placed by him amongst his "Ichneumones minuti," as they were also by De Geer. Geoffroy shortly afterwards, in 1764, established the genus Diplolepis composed entirely of the true Gall Flies or Cynips of Linnaeus, while the genus Cynips, which he also retained, comprised many of the Ichneumones minuti of Linnaeus, having one of them, belonging to the family Chalcididae, for its type, and also comprising several other species belonging to the latter family which Linnaeus had incorrectly placed at the end of the Gall Fly genus, Cynips.
Mr. J. O. Westwood on the Chalcididae.

In the Systema Entomologiae of Fabricius, published in 1775, that author adopts the genus Cynips as proposed by Linnaeus; and unites Chalcis sispes with his Chrysides, and the small Chalcididæ either with the Ichneumones, or places them at the end of the genus Cynips.

In the Mantissa Insectorum of the same author, published in 1787, the genus Chalcis was first established; but in that work the smaller species of the family Chalcididæ were still placed either with Ichneumon or Cynips.

In 1795, Swederus established, in the Swedish Transactions, the genus Pteromalus, comprising the greater portion of those "Ichneumones minuti" of Linnaeus, which Geoffroy had miscalled Cynips, and Fabricius had placed either with Ichneumon or Cynips.

In 1796, in the "Precis des Caracteres generiques," Latreille entirely adopted Geoffroy's improper nomenclature; and Mr. Kirby, in his Monographia Apum Angliæ, (1. 82. 2.) noticing the arrangement of the Hymenoptera in that work, observes, "6. Cynips, after Geoffroy: this genus takes in no genuine Cynips, but includes a large proportion of the Ichneumones minuti of Linnaeus, the Eulopus of Geoffroy, and Chalcis of Fabricius; it would be a good genus without Chalcis, but it should have another name, as Cynips ought to be continued to the gall-nut insects," which in Latreille's work were generically called Diplolepis.

Fabricius, however, in the Systema Piezatorum, 1804, not aware of the establishment of Pteromalus, by Swederus, has, (notwithstanding the propriety of his restoring to the Gall Flies the generic name of Cynips imposed on them by Linnaeus,) introduced considerable confusion by transposing Geoffroy's other generic name, calling all those parasitic insects which that author had miscalled Cynips, by the name of Diplolepis, with the exception of a few which he placed in his genus Cleptes. This was a decided failure, since it is clear, that Diplolepis, when properly restricted to the Gall Flies as intended by Geoffroy, is only synonymous with the Cynips of Linnaeus, and consequently ought merely to be used as such. Had Fabricius either given a new name to these minute Chalcididæ, or placed them in his genus Chalcis, or adopted that of Pteromalus proposed for them by Swederus, instead of calling them Diplolepis, the confusion which has arisen would in a great measure have been avoided.
Nomenclature of the Chalcididae and Cynipidae.

Latreille, in the Histoire naturelle &c., Genera Crustaceorum &c., and Considerations generales,* still retained the improper nomenclature of his countryman Geoffroy, by forming, in the first of these works, the true Gall Flies (under the generic name of Diplolepis) with the addition of the genera Italia, Figites and Eucharis, into his family Diplolepariae; and the parasitic Cynipes of Geoffroy, (Ichneumones minuti of Linnaeus,) under the same erroneous generic name of Cynips, (but divided into different sections and sub-sections,) with the addition of the genera Leucospis and Chalcis into his family Cynipsera. The family Proctotrupii was separated from the latter family by this author, and has since been preserved distinct, although some of the genera have been more than once removed from one family to the other. In the two latter works no further improvement was made in the family of the Gall Flies, still miscalled by him Diplolepariae, and the only remark worthy of observation in the Genera Crustaceorum, is that placed after the genus of Gall Flies, the synonyms of which are thus placed.

"Diplolepis, Geoff. Oliv. Cynips, Linn. Scop. De G. Schr. Fabr. Vill. Ross. Bosc. Chr. Cuv. Lam. Illig. Panz. Jur. Walck. Spinola."!! Surely this host of celebrated names ought to have outweighed Latreille's devoted attachment to the incorrect nomenclature of his countrymen; but he adds, in order to prove the correctness of his ideas, this "Nota---" Nomen genericum" (Diplolepis) "his Insectis" (the Gall Flies) "a " Dom. Geoffroi impositum, et ab amico Olivier retentum, denominationi " Linnaeanae antepono; Cynipedes Dom. Geoffroi nunc a Fabricio " Diplolepis vocantur; nominum hæc continua subversio scientiam occi- " dit."† After stating the alterations which have subsequently been made by this author, we shall be able to ascertain in what degree this "nomi- num subversio continua" may be laid to his charge.

For the parasitic family Chalcididae, the name of Cynipsera was still retained in his Genera Crust. and Consid. generales, and the divisions and subdivisions, which he had formed in the Histoire Naturelle, of Geoffroy's

* It is almost needless to add that the arrangement and nomenclature of this work have been adopted in nearly every instance by Dr. Leach in the Edinburgh Encyclopedia, and by Mr. Samouelle in his Compendium.

miscalled parasitic Cynipes were raised to the rank of genera, amongst which was adopted that of Pteromalus of Swederus, restricted, however, to the *Pter. Gallarum* and its congener; the name of Cynips being also generically restricted to the splendid species with an elongated and exserted ovipositor in the females, (C. Bedeguaris, &c.)

In the *Insecta Liguriae*, Spinola has entirely adopted the nomenclature of Fabricius, dividing, however, the parasitic Diplolepes of that author into divers sections and subsections; but in the 17th volume of the "Annales du Museum," in his "Essai d'une nouvelle Classification des Diplolepaires," after stating the priority of the establishment by Linnaeus of the genus Cynips, the erroneous nomenclature of Geoffroy, the correct reference by Fabricius of the Gall Flies to the generic name of Cynips, and his conviction that Fabricius ought to have given a new name to the parasitic insects which he had miscalled Diplolepis, as above mentioned, he adds, that he himself would not attempt the innovation, but suggested that the parasitic family named by him Diplolepariae (answering to the Cynipsera of Latreille) might with propriety be altered to Chalcidites, more especially as Jurine had placed all the insects of the family in the genus Chalcis, and had restricted the genus Cynips to the true Gall Flies. In the same paper Spinola also suggested that the generic name Cynips, as above restricted by Latreille in the *Genera Crustaceorum &c.*, ought consequently to be set aside, proposing in its stead that of Callimone.

In the *Swedish Transactions* for 1820, Dalman, who does not appear to have been acquainted with the above *Essai* by Spinola, or the alterations adopted by Latreille in the *Regne Animal* stated below, has published an excellent paper on the Chalcididae, to which (following his countryman Swederus) he gives the family name of Pteromalini; but as Fabricius had proposed the genus Chalcis previously to the proposal of Pteromalus by Swederus, the family name ought to be founded upon the former generic name, more especially since the true Chalcides appear to be the typical species of the family. In this paper, the species having females with an elongated exserted ovipositor (Cynips of Latreille, Gen. Crust., Callimone of Spinola) are formed into the genus Torymus; Latreille himself, however, convinced of the impropriety of terming them Cynips, had previously, in the *Nouv. Dict. d'Hist. Nat.*, given them the new name of Misocampus, but both these names must fall, since they are subsequent
to the proposal of Callimone by Spinola, which ought in justice to be regarded as the generic name for the species congenerous with C. Bedeguaris, &c.

In the Règne Animal (1817), Dictionnaire d'Histoire Naturelle, and the Familles Naturelles (1825), we find Latreille, influenced by the remarks of Spinola,* at length willing to do justice to the labours of the immortal Linnæus; and accordingly he makes considerable alteration in the nomenclatures of these families and genera, giving to the family of the Gall Flies (previously termed by him Diplolepària) the new name of Gallicolæ, (why did he not at once call them Cynipidæ, following up his usual plan of naming families from the typical genus?;) and restoring to the true Gall Flies (or the genus Diplolepis of all his former works) their proper Linnæan name of Cynips. He likewise adopts Spinola's views by calling his previously named parasitic family Cynipsera by the name of Chalcidites; so that it only now remains for him to adopt the family name of Cynipidæ, instead of Gallicolæ, and to employ Spinola's long previously proposed name of Callimone in the place of his new name Misocampus.

Dumeril, in his "Considerations générales &c.," with that fondness for new names which his work too plainly exhibits, retrograding at the same time very materially in the science, unites the genera Leucospis, Chalcis and Diplolepis, (retaining Geoffroy's incorrect nomenclature for the Gall Flies) with Diapria, into one family, to which he gives the name of Abdito-larves on Neottocryptes. Although an advocate for the employment of names founded upon economy and habits, I think such ought to be restricted to the higher groups, and not employed to designate families, which cannot indeed receive a happier series of names than those now generally employed, terminating uniformly in idæ.

I cannot conclude this paper without expressing regret that Mr. Curtis, in his very valuable British Entomology, commenced in 1824, has thought it right to retain Latreille's faulty nomenclature of the Genera Crustaceo-

* See the Règne Animal, Vol. III. p. 657, note 1. p. 658, 659, 660. Addenda, whereby it evidently appears that Latreille was at length anxious to reduce the nomenclature and arrangement of the two families to a greater state of order than that in which they had so long previously been suffered to remain: much however yet remains to be accomplished with regard to their arrangement.
rum, notwithstanding it had seven years previously been corrected by the latter author in the Rêgne Animal; consequently we have the genus Iblia in the family miscalled by him Diplolepidae* instead of Cynipidae, and the parasitic genera Eulophus, Perilampus, &c., in that of Cynipidae instead of Chalcididae.

No. 3.

Having thus, I hope, satisfactorily established the claim of this minute and splendid family of parasites to the title of Chalcididae, and also presented the student with a tolerably accurate historical view of the family, I shall now proceed to the investigation of the characters, &c., of one of its numerous genera, Cleonymus of Latreille, in the course of which it will be necessary, 1st. to ascertain its actual type; 2nd. to give the generic characters of that type; and 3rd. to exhibit the degrees of relationship of the genus with contiguous genera, as well as with those insects which, from their possessing certain characters in common, have either been actually placed in it by the authors who have treated upon the subject, or which might perhaps be considered as congeneric.

Spinola appears to be the first author who separated the insects of the genus Cleonymus from the family group; since the divisions proposed by Latreille in the 3rd and 13th volumes of the Histoire Naturelle &c., were not sufficiently precise. The former author, in the 2nd volume of his Insecta Liguriae, published in 1806, gave a valuable sectional table of the family, under the generic name Diplolepis, and we find amongst the characters of his third division the abdomen described as sub sessile, elongated, and sharpened at the apex, with distinct segments, the terminal joints of the antennae seldom forming a club, and the thorax with the first segment small, narrowed and elongated. The species given as types of this third division are Dipl. depressa, Fab.; D. bicolorata, Spin.; and Ichn. nigricornutus, Christ.

* Mr. Curtis refers these genera respectively to the families Diplolepidae of Latreille and Leach, and Cynipsidae [Cynipidae] of Latr. and Leach; but I find cannot that Latreille in any of his works has adopted our uniform terminations in idæ, his names for these two families being in his former works "Diplolepaires, Diploleparia;" and "Cynipsères, Cynipsera."
Characters of the genus Cleonymus.

Latreille, subsequently in the 4th volume of the Genera Crustac. &c. (1809), proposed the genus Cleonymus, which, with Spalangia, he placed in a section of the family whose characters are "mandibulae bidentatae; thoracis segmentum anticum antice attenuatum, subconicum; abdomen ovato-conicum, vel trigonum, elongatum, subtus, terescae excipiendae causae, in feminis longitrorum canaliculatum;" adding also the following Obs. "Antennae valde fractae, sensim extrorum crassiores, articulis decem distinctis, ultimo magno, distincto." The number of joints in the antennae specified in this observation is, however, applicable to Spalangia alone. In the characters of the genus Cleonymus itself we find "antennae ultra capitis marginem anticum et superum, vel oralem, insertae." The species given as types are "Dipl. depressa, Fab.; Ichn. rufescens, Rossi; I. fenestralis, Rossi; Ichneumon, De G., tom 2, pl. 31, fig. 22, ejusdem generis?" In his "Considerations générales" (1810) similar sections are adopted, but the only type of the genus which is given is the Dipl. depressa, Fab.

This species, therefore, we are bound to consider as our type, not only from its having evidently been considered as such by Spinola and Latreille, but also from its having been tolerably figured by Coquebert. None of the other species placed in the genus appear to have been figured, (except De Geer's,) and it would be difficult to draw generic characters sufficiently explicit from the short specific descriptions which have been given of them; and it will be seen that Latreille himself had doubts whether the only other figured species belonged to the genus, and which is, in fact, the Eupelmus De Geeri of Dalman; and if, upon a rigorous investigation of the generic characters of the other species placed in the genus, it shall be discovered that they do not agree with the characters of the type, although perhaps they may nevertheless fall within the previously too loosely drawn characters of the genus, I shall not hesitate in considering the depressa as solitarily entitled to the generic name, and that the other species must be placed in other genera.

The following is the description of the type from the Systema Piezatorum of Fabricius, p. 151.
Mr. J. O. Westwood on the Chalcididae.

Depressa 13. Diplolepis, obscure aurea, abdomine depresso, cyaneo, alis apice fuscis, maculâ fasciâque posticâ albis.

And Coquebert’s figure exhibits, “sufficiently to swear by,” the peculiar clouding of its wings. Of this species I have seen three specimens, all females, and each agreeing with the above description and figure. They are in the respective cabinets of Mr. Haworth, Mr. Stephens, (taken near Hertford,) and Mr. Bainbridge, who swept his specimen into a net from clover, at Darent, at the latter end of May, 1827. The size varies a little in these three specimens; it is represented in the plate by the crossed lines under the insect. The following are more ample specific characters.

Diplolepis depressa, Fabr., Coq., ♂.

Tab. II. fig. 1. ♀.

Head and thorax rich coppery-aureous and thickly punctured; eyes and ocelli dark brown; basal joint of the antennæ fuscous, the remaining joints ferruginous, except the last, which is dark brown; postscutel shining, impunctate; the fore legs and intermediate femora ferruginous, the posterior legs and intermediate tibiae and tarsi fuscous. The first five segments of the abdomen are of a dark, shining, cyaneous green, the remaining three tinged with dark coppery green. Wings pale hyaline, the posterior half of the upper pair stained with brown, growing paler to the tips, having a large white spot at the anterior margin, and a whitish fascia in the pale fuscous cloud, near to and running nearly parallel with the tip of the wing. The under side of the thorax and of the posterior thighs is golden green.

From this species, therefore, we must now draw our generic characters; but before I do so it will be necessary to state that I am unacquainted with its male. It is also necessary to state that I have not included amongst the generic characters any account of the Trophi. This I have avoided for three reasons; 1st. my want of specimens for dissection; 2d. the difficulty of the examination of the Trophi, arising from their minuteness, and the consequent superiority of external characters; and 3rdly. from a conviction that as the perfect insects throughout the different groups in the family appear to make but little use of their
Characters of the genus Cleonymus.

trophi, which therefore here naturally possess but a secondary importance, but little variation will be found in the formation of them, and hence that fixed generic characters cannot be drawn from them; since I feel satisfied that, having regard to such slight variation throughout the respective groups or subfamilies, the species in any one of the genera vary nearly as much inter se, in the structure of these parts, as the genera themselves.* Indeed I certainly feel inclined to adopt on this point the opinion of Mr. Curtis generally, since I do not see any sufficient grounds for restricting it to the Coleoptera; and although it is somewhat at variance with his more recently expressed opinions. That author, after pointing out the similarity in the trophi of Mycetophagus and Tetratomata, two genera theretofore placed widely apart and in different families, has observed, "My opinion is daily strengthened that the organs of manducation, in the Coleoptera at least, will form the most natural divisions for families, and that the antennae alone will frequently supply the best generic characters."†

But if the families are thus to be considered either as characterizable or divisible into subfamilies, (for from the expression of Mr. Curtis it is not sufficiently clear which of these is intended,) from the formation of the trophi, the characters of the genera must be sought for not only in the formation of the antennae, but also of other organs, which must necessarily be external ones. Hence this observation of Mr. Curtis may with advantage be still more generally extended, since I hold it for certain that wherever we find any set of organs, which

* Hence the folly in extensive genera belonging to such groups, of selecting one species as the type of a genus, of drawing the characters of such genus from a second species, and of figuring a third as an example of it.

† British Entomology, No. 156. After the expression of such an opinion, I should certainly have hesitated considerably, (even were it merely for the sake of consistency,) before I had united (as Mr. Curtis has done in the very genus, in his observations upon which the above opinion was expressed) insects differing so extremely as the Mycetophagi and Triphylli, the clava of whose antennae is, as Mr. Curtis admits, respectively formed of three and five joints; more especially since the elavation of the antennae is, (as I hope shortly satisfactorily to establish,) a character intimately connected with the economy of these insects.

Vol. IV. B
for example we will suppose to be the trophi, running, with but little variation in their formation, through a certain series of groups or genera of various external appearance, each of which groups, nevertheless, possesses peculiar habits, we ought to consider the characters drawn from such organs as characteristic of the whole of that series, be it either a family or a subfamily. Now, wherever the trophi are found to be such slightly varying organs, we must of necessity resort to variations exhibited by other organs, such as the legs, antennæ, wings, or other external parts, and these will therefore be found to supply the essential characters of the genera. Such genera, although "they have no better claim to distinction" than these external characters, here necessarily become generic, (which Mr. Curtis has nevertheless recently thought proper to designate "mere outline, or suchlike secondary characters," )* rest upon so "solid a basis" that it will require the exertion of more than a single Entomologist to shake them from their foundation, however that Entomologist may, perhaps, at the present time be inclined to imagine that the number of genera may be diminished with impunity, unmindful that by such a proceeding the benefit to, and the advancement of, science, that sumnum bonum, at least as it ought to be, of every Entomologist, must of necessity suffer in the attempt. That the opinion which I, as an advocate for external characters and organization, have ventured to express above, is not contrary to the principles upon which modern genera are established, is evident; and I feel convinced that no one can on the one hand examine Mr. Curtis's dissections, for example, of Colax, Perilampus, and the insect which he has named Cleonymus maculipennis, or those of several genera of Tenthredinidae figured by the same author; and, on the other hand, peruse the following remark of Mr. Stephens, "The trophi of Platycerus and the five following genera are so extremely similar, that the species have till lately been considered as constituting one genus only, but there are several striking external characters by which they may be advantageously separated," † and then boldly assert, that in such and many similar cases the trophi are the organs first to be investigated, and principally to be relied upon as affording generic characters, and that the

Characters of the genus Cleonymus.

external characters, which, be it remembered, point out peculiarities in internal organization, become, or are to be deemed, secondary ones: indeed Mr. Curtis himself, in his observations upon Cleonymus, has shewn that he did not always consider external organs in the light of "mere outline, or suchlike secondary characters." Upon the general relative value of characters drawn from the trophi, antennæ, and other individual external parts, I hope at a future time to enlarge, referring the student in the mean time to Mr. MacLeay's introduction to the Horæ Entomologicæ, Vol. I.

The following are detailed generic characters of

Cleonymus, Latr.

The Head is transverse above, with the anterior rather broader than the posterior margin; nearly orbicular in front, rather convex, with two slight impressions somewhat beneath the centre of the face for the reception of the basal joint of the antennæ, (A). Eyes rather large, lateral. Ocelli three in a triangle on the crown. Antennæ inserted somewhat beneath the centre of the face, near each other, (A.) short, not much longer than the head, geniculated, gradually thickened to the tips, 11-jointed, first joint the longest, second as long as the fourth, third the shortest, fourth and five following of nearly equal length, tenth joint of similar size, but produced on the outside, forming a sort of bed on that side for the reception of a portion of the terminal joint, which is conical. (B. represents the antennæ seen from the outside; C. represents the three terminal joints viewed from above; and D. represents the same viewed from the inside, or from the situation of the tip of the other antenna.) I query whether this singular formation be not a sexual character.

Collar nearly square above, narrower than the head, rounded in front, a little broader behind; the remainder of the Thorax as broad as the head, having the scutellum rounded, and the narrow postscutel? longitudinally divided. The manitrunk, including its upper surface or true prothorax, is completely hidden from view above (so that the Neck is not apparent) by the collar or anterior portion of the mesothorax.

Fig. E. represents the under view of the manitrunk with the head of the insect removed; b, b, represent the sides of the collar dilated beneath.
c, c, represent the antpectus longitudinally divided in the centre by a deep groove. To the front part of this antpectus the head is attached at a, and to its posterior part are attached the basal joints, or coxae of the fore legs, d, d.

The Abdomen, (upon which as a generic character I think great stress ought to be placed, inasmuch as its variations clearly indicate corresponding variations in the method of oviposition,) is longer than the head and thorax, and of equal breadth with the head near the whole of its length; the two last joints are attenuated, and rounded at their hinder margins; the upper surface, in all the specimens which I have seen, is quite flat, 7-jointed, the fourth being as long as the three preceding, the fifth about twice the length of the fourth; the tips of the organs of oviposition being just perceivable, (G. and H. e.) The peduncle is very short and rather thick, (G. and H. a.) I may here notice a singular character, namely, that the segments of the abdomen are all completely covered with minute punctures, except at the posterior margins of each segment. Fig. H. represents a side view of the abdomen, and it will be seen that it is not near so deep nor so much angulated as in some of the neighbouring genera. Fig. G. represents the under-side view of the same part, and exhibits several characters extremely worthy of notice. In this view, the rings marked respectively d, are merely continuations of the dorsal segments, and not distinct ventral ones. This formation has been partially observed by Messrs. Kirby and Spence, Intr. Vol. III. 707, who remark, that “in some Hymenoptera (Cimbex) the sides of the last dorsal segment turn down and become ventral; on its lower side it has in these a longitudinal cavity, which receives the ovipositor in repose;” and at p. 703, they remark of Leucospis, a genus of Chalcididae, that “the ventral segments are replaced by a long, narrow, central plate, succeeded by a minute one.”

In Cleonymus, however, there appear to be only two actual ventral segments, independent of the dorsal ones; they are situated at the base of the abdomen, and are small, the second being the most minute (G. and H. b and c.); the dorsal segments, therefore, become in fact ventral, but they do not close; indeed the basal and apical ones are considerably asunder in the specimens which I have examined, one edge only of the fourth segment folding slightly over the other; the last segment does not even turn down. From the hinder margin of the last, or second ventral segment, the ovi-
Characters of the genus Cleonymus.

Positor appears to take its rise, and is apparently covered through its entire length, except at its extreme tip, by a thin membrane,* which does not, however, prevent its form being perceivable as represented in Fig. G. Fig. I. represents a transverse section of the fifth segment of the abdomen as exhibited in dried specimens, by which it will be seen that there is a considerable space between the edges of the under side of the dorsal segments and the ovipositor (I. a.); this space I should conceive is, however, only found in dried, shrunk up specimens, and that when alive it may perhaps be filled up by the inflation of the membrane. The Wings do not exhibit any peculiar characters, the nervures being similar to those of the generality of the family noticed below. The Legs are slender. The posterior Coxae large, and the posterior Thighs rather thicker than the anterior. The Tibiae are slender, the four anterior with a single spine at the apex and the posterior with two, the smallest of which is double. The Tarsi are all 5-jointed, the basal joint being the longest. Fig. F. represents a fore leg of the female. The peculiar formation of the joints of the Tarsi is exhibited in this figure.

Such then are the generic characters of Cleonymus, which it will be seen differs from Mr. Curtis's Colax in many characters, more especially in the formation of the antennæ, collar, and in the general structure of the abdomen. Other characters which I have noticed above will peculiarly distinguish this genus from its affinities, and as yet I have not met with a second species which will agree with the characters of the typical one. Whether those which are referred to it by Latreille and Spinola, and mentioned above, be or be not congeneric, I am not at present able to decide; I am inclined, however, to think that they are not.

Spinola, in the Annales du Museum, Vol. XI. p. 149, has adopted the genus Cleonymus, placing it in his section with twelve joints in the antennæ, inserted in the middle of the face, which has not any impression for the reception of the basal joint, and giving for its characters, "Abdomen comprimè et même concave en dessus; Fente ventrale correspondante aux anneaux antérieures et terrière dépassant rarement l'extrémité de l'abdomen. Col acuminé plus long et plus étroit que le

* I think it not unlikely that I may have been misled as to this membrane for want of specimens to examine.
Mr. J. O. Westwood on the Chalcididae.

disque;" and placing the depressus (which it may be doubted whether he ever examined, since his characters of the genus do not agree with those possessed by this species,) with Dipl. bicolorata, Spin., and Cleon. Cingulum, Spin., ined., in his first section of the genus, with the "Tarrière ne dépassant pas l’extrémité de l’abdomen." His other section, "Tarrière dépassant l’extrémité de l’abdomen," is most probably the genus Eupelmus, and its species are named compressipes and hemipterus, Spin., ined.

In the Regne Animal, Vol. III. p. 658, Latreille has reunited his mis-named long-tailed Cynips and Cleonymus with the Pteromalus of Sweden, with the expressson, "Ils n’offrent point les caracteres que nous venons d’indiquer."

Dalman, in his paper in the Swedish Transactions above referred to, neither adopts the genus Cleonymus of Latreille, nor notices the depressus in his synoptic lists of the species. He has adopted the genus Pteromalus, containing with him no less than seventy-nine species, divided into various sections and subsections, in the first of each of which "A. Abdomen elongatum trunco longius sæpius acuminatum;" and "a. Alæ distinctæ maculæ," it is not improbable the true Cleonymi will find a place.

Latreille, in the Familles Naturelles, has again revived the genus Cleonymus, placing it between Pteromalus and Encyrtus.

The remaining author who has treated upon the former of these genera is Mr. Curtis, who, in his observations upon Colax, shortly notices Cleonymus as "embracing those species with clouded wings, truncated antennae, the abdomens of the females being similarly shaped to those of Colax, but longer;" "from being unacquainted with their males," he could not "enter further upon the subject" of the differences between that genus and Colax.*

Having, however, subsequently obtained male specimens of a species with clouded wings, he was induced to consider them as the males of an unknown species of Cleonymus, and shortly afterwards published an account of that genus in his British Entomology, No. 194. A daily, and I might almost say unceasing, attention to the investigation, habits, and structure of the present family for several years past,† enables me, how-

* British Entomology, 166.
† I have adopted the suggestion of Fabricius, who long ago remarked, (Phil. Ent. p 7.) "Pauca (i. e. systemata particularia) jam elaborata invenimus, alia
Characters of the genus Cheiropachus.

ever, to correct the errors into which Mr. Curtis has fallen, and to state, 1st. That (although that author has admitted the depressus to be the type of Cleonymus) not one of the characters which he has given of that genus is applicable thereto, excepting only such as are applicable to the whole family or subfamily; since 2nd, the insect figured and described as the male of the Cleonymus, and from which the male characters of that genus were derived, is the male of a species not belonging thereto, but to a very distinct and new genus; and 3rd, the insect from which the female characters were derived also belongs to another distinct genus, not being a Cleonymus, and consequently not Cl. depressus, as imagined by Mr. Curtis; 4th, that the male insect in question has erroneously been supposed to be a new species; and lastly, that the formation of at least the anterior portion of the thorax or truncus of the Hymenoptera has not been sufficiently investigated by that author.

The following are the external characters of the new genus of which the misnamed Cl. maculipennis is the type. Mr. Curtis having described the trophi of the male of that species as the trophi of Cleonymus, I shall refer the student to that author's description thereof for the cibarian characters of the

Genus, Cheiropachus,* mihi.

Type, Diplolepis quadrum, Fab.

Head orbicular and rather convex in front, transverse above. Antennæ of both sexes longer than the head, geniculated, filiform, inserted below the middle of the face, 13-jointed, pilose, basal joint long and stout, second small, third and 4th very minute, ring-shaped, fifth and remainder cup-shaped, each about as long as the second, the fifth being rather the longest, the three last forming a conical mass. The Antennæ of the female desiderata Entomologis oculatis commend. E. gr. Ichneumones, Apes, Cureuliones, Tinea, aliaque."

The science of Entomology is now indeed so vastly increased that it is impossible for any one thoroughly to investigate every branch of it (I might almost say, scarcely more than a single branch of it) in detail. How continually do we therefore perceive the ill effects of such fruitless endeavours to overcome the whole, in the confusion produced by authors commenting upon groups with which they are not previously sufficiently acquainted!

* Χειρ, manus et παχυς, crassus.
Mr. J. O. Westwood on the Chalcididae.

(Fig. K.) are rather shorter than in the male, (Curtis, pl. 194, fig. 1.) and slightly thickened to the tips. Eyes small, lateral. Ocelli three in a triangle.

Neck short, apparent. Collar in both sexes bilobed behind, narrower than the head, the remainder of the thorax as broad as the head. Scutellum rounded. Postscutellum? longitudinally divided in the centre.* Wings of equal length in both sexes, pubescent and ciliated. Superior with a nervure running from the base, parallel to the costa, nearly half way, whence it is continued along the costal margin a short distance, and then becomes furcate, one of the furcations descending a little way into the disc of the wing, at an angle pointing towards its tip, the other furcation continued (gradually diminishing in strength) along the costal margin to the tip. Inferior, narrow and nerveless. Legs slender, the anterior and posterior thighs in the males incrassated (Curtis, pl. 194, fig. 8, a fore leg of the ɔ.) Anterior thighs in the female gradually incrassated to the tips, where there is a strong indentation in the inside, (Tab. II. L. a.), posterior thighs not so thick as in the males; the posterior pair of legs appear very far behind, especially in the males, from the great length of the posterior coxae.

Abdomen of the male sessile, obconic, depressed, polished (except the last segment), the first segment large, arched above, covering one or two segments? longitudinally divided down the centre by a deep groove and having a notch at the hinder margin in the centre (Fig. R. ff and g). The male organs of generation slightly protruded (Fig. R. d). That of the female requires a more minute examination. It is long, angulated in profile beneath (Fig. N.), attenuated from about half its length to the tip, and composed of seven polished joints, the third and fourth of which are the broadest, the previous joints being narrowed to the base; the first joint is arched above, with a slight notch at its hinder margin in the centre; the four following are depressed in the centre, the lateral margins being raised; the two last joints are the narrowest, and at the tip of the last the

* The general formation of the thorax of the male is similar to that of the female. My figures were taken from specimens which had not been injured by being pinned. From the incorrectness of Mr. Curtis’s drawing of a portion of the thorax of the male, I should conceive that his specimens had been considerably injured,
organs of oviposition are visible, having the appearance of an eighth joint (M. and N. c). All the dorsal segments turn downwards at an angle (M. and N. d.) and become partially (or, as it may perhaps better be termed, sub-) ventral, since there are five distinct, true, ventral segments, the four basal ones being short, and reaching to about half the length of the second dorsal segment (Fig. M. and N. b b b b.) and the fifth long, reaching to the end of the fourth dorsal segment (Id. c.), and it is beneath the tip of this fifth ventral segment that the ovipositor appears to take its rise, at a considerable angle, which passes within or beneath the deflexed margins of the fifth, sixth and seventh dorsal segments. Fig. O. represents a section of the abdomen at the fourth dorsal segment, shewing its triangular form, the manner of the connexion between the dorsal and ventral segments, and the position of the ovipositor.

Species I. Ch. quadrum. (Dipl. quadrum, Fab.)

Tab. II. Fig. 2, ♀.

Cleonymus maculipennis, Curtis, Brit. Ent. No. 194, ♂.

♂. For the description of this sex see Curtis, loc. cit. The colour of the thorax varies from bright green to a dark, obscure, blackish green. ♀. Head and thorax deeply punctured, dull cupreous, slightly tinged with green; antennae dark brown, first and second joints ochraceous. Abdomen perfectly smooth and shining, dark cyanous black, tinged with dark green; its basal segment elevated at the sides and brighter green, the apex slightly pubescent. Wings iridescent, the superior with two dark brown spots on each, one (the smallest) near the centre, the other near the tip, passing through the furcate nerve. The spots in the wings of the females are not quite so large as in those of the males, they also vary a little in size in individuals of the same sex. Legs ochreous, the four posterior thighs shaded pitchy. The size of both sexes of this species varies considerably; I have specimens of each scarcely more than \( \frac{3}{4} \) of that of others of the same sex; I have also a male even larger than the largest females.

Specimens of both sexes are in the cabinets of Mr. Stephens and myself, and specimens of the males in those of Messrs. Cooper, Curtis, and Ingpen. My specimens were taken by myself, several years ago,
Mr. J. O. Westwood on the Chalcididae

at Coomb Wood in Surry, in the month of July or August, on an old rail made of a bough from which a part of the bark had been stripped. The sexes were in equal profusion, and they were all running about upon the barked part of the rail, where the sunbeams fell with great heat; when disturbed, they flew to another part of the rail without leaving it. Might they not have been watching for some internal or sub-cortical feeding larva in which to deposit their eggs? I also beat another specimen of the female from, I believe, an oak, at the latter end of August, near Ensham in Oxfordshire. Mr. Cooper's males were taken the latter end of July, on the trunk of a decayed elm, near Knight's Hill Cottage, Dulwich, and Mr. Stephens's was taken, in June last, at Ripley in Surry.

Fabricius, in his Systema Pecatorum (p. 152, 16.) describes this species as follows: "D. nigra, òæeo-nitens, abdominis basi pedibusque ferrugineis; alis albis, maculis duabus marginalibus, atris;" and Latreille, (who in his Histoire Naturelle places this species in his division of Cynips, of which he says, that the abdomen is "presque rond dans les males,") thus describes it, "Vert bronzé ; antennes, base de l'abdomen et pattes "d'un fauve pâle; deux taches noirâtres sur les ailes superieures. Com-"mune aux environs de Paris sur les ormes."

These descriptions, I need not state, are specifically applicable to Mr. Curtis's male maculipennis, and the original detailed description of quadrum in the Entomologia Systematica (Vol. II. p. 186) is evidently drawn from a small dark-coloured specimen of the same sex, notwithstanding the expression of Fabricius in that description, "Abdomen—aculeo brevi exserto." The mention of this aculeus was doubtless the cause which induced Mr. Curtis to suppose that the description of Fabricius was drawn from a female, and that, as his specimens were males, they would not agree with the description of the Fabrician species, and were therefore to be considered as a new species. Had Mr. Curtis, however, more accurately examined the abdomens of his male specimens, he would have perceived that they possessed a short, exserted aculeus, as Fabricius has misnamed it, and which is, in fact, the tip of the male organs of generation,* the structure of which I have exhibited in Figures

* De Geer has fallen into a precisely similar error. In describing the abdo-}

men of the male of Eulophus pectinicornis he has observed, "Au postérieur
Affinities of Cheiropachus Quadrum.

R, S, T, and U, and the description of which will be found in the Explanation of the Plate.

Spinola has united this species in his Insecta Liguriae (Vol. II. p. 208) with his species varians and pallipes, the former of which is formed, with others, into a section of his genus Halticoptera, in the Annales, the quadrum being entirely omitted in the latter work, which species does not indeed agree with the loosely drawn characters of that genus.

Latreille has omitted quadrum in his Genera Crustaceorum, and Dalman has placed it as the first species in the first section of his very extensive genus (or rather subfamily) Pteromalus.

The observations which Mr. Curtis has made upon the affinities of Cleonymus being founded upon the characters of the male of Cheir. quadrum, may with propriety be inserted here, since it is now evident that they are not applicable to Cleonymus, but belong to the present genus. He says, "The trophi of Cleonymus are so very similar to those of Colax, that we should not have established the latter genus had not other characters presented themselves; it is true that the mandibles of the former are stronger and have but two distinct teeth, and the terminal joint of the maxillary palpi is shorter and more dilated; but on comparing the males of the two genera more decided characters will be found to distinguish them, and such as we trust will justify their separation. The males of Colax are marked by a very large head, a ring-shaped prothorax, an obovate abdomen and slender thighs; the same sex of Cleonymus, has a moderately sized head, a bilobed prothorax, an obconic and thick abdomen, and robust anterior and in- crassated posterior thighs."

The characters which separate the females of Cheiropachus from those of Colax, although not so striking as those existing between the other sex, are sufficient to warrant the separation of the two groups. The chief are the incassation of the anterior thighs in Cheiropachus, and the difference of the formation of the collar and abdomen; the latter of which in this genus, it will be seen, is not longer than in the females of Colax, du ventre on voit une petite partie pointue en forme d’aiguillon, qui sans contredit est la terriere que l’Ichneumon introduit dans la feuille habitée par une chenille pour y deposer un œuf." Vol. I. p. 590.
and is here very much depressed above, instead of being slightly convex, as in the female of Colax dispar. (Fig. 3, Q. represents a section of the abdomen of the latter insect at the fourth dorsal segment.) The female antennæ of both genera are very similar in formation.*

The distinction between the females of the present genus and of Cleonymus are far more striking, and may easily be discovered on reference to the characters of each respective genus.

As to the number of species belonging to this genus, there appear to be several females in my cabinet agreeing with the female C. quadrum, but which I have not yet had sufficient leisure thoroughly to investigate. I have not, however, yet met with any male at all agreeing with the male Quadrum.

With regard to the insect which Mr. Curtis has considered as the female of Cleonymus, he has observed "that the abdomen is longer, more depressed, and less compressed and angulated beneath than in the genus Colax, and that the female antennæ (at least in the specimens before us) are thickened gradually to the apex; they have not the ring-shaped third joint which that genus has, nor do the three last joints form a distinct mass." The figure, indeed, which he has given of the antennæ of a female presumed by him to be that of Cleonymus depressus, although much more nearly resembling the antennæ of that species than the female antennæ of Cheiropachus, differs from the former not only in the formation of the terminal joints, but also in having a joint more than in Cleonymus; hence it is evident that it is referrible to some other (perhaps a new) genus; but whether the seven species contained in Mr. Curtis’s cabinet, all of which he says are females, be or be not congenorous with that from which his figure of the female antennæ was drawn, I am not able to state; at all events we may be led to suppose that such is the case, or Mr. Curtis would doubtless have noticed the differences in their antennæ.

It only remains for me to notice the formation of the thorax. And one of the most conspicuous and valuable organs in the family is the collar,

* That part of the antennæ which in Colax dispar ☛ Mr. Curtis regards as the third joint, is, in fact, formed of two minute ring-shaped joints, more closely soldered together than in Cheiropachus. (See Fig. 3, P. a.)
Thorax of Hymenopterous Insects.

which part Mr. Curtis invariably terms the prothorax. Upon the general formation of the truncus, or, as it is usually called, the thorax of the Hymenoptera, it is not my purpose at present to enlarge, further than to state its primary division into the manitrunk and alitrunk; I shall therefore refer the student to Kirby and Spence's Introduction, Vol. III. p. 529. Those authors have satisfactorily shewn that the said anterior conspicuous part, or collar, is a portion of the alitrunk, being attached to the mesothorax, (a portion of the alitrunk,) to which collar there is no analogous part in the Coleoptera; in the latter order, the true prothorax (or, as it is there generally termed, the thorax,) which is the upper surface of the manitrunk, is very large; but in the Hymenoptera, the whole manitrunk, including its upper surface or prothorax and under surface or antepectus, becomes diminished, and is generally hidden by the collar, only becoming conspicuous when the upper surface is elongated into a neck as in Xyphydria, or more slightly as in Cheiropachus.

Explanation of the Plate.

Fig. 1. Cleonymus depressus ♀ magnified.
A. to F. details of ditto, all more or less magnified.
A. Front view of the head.
B. Antennæ seen from the outside, or from the tip of the wing on the same side as the antenna figured.
C. The three terminal joints of the antennæ seen from above.
D. Ditto, seen from within, or from the tip of the other antenna.
E. Under side of the anterior part of the truncus with the head removed.
   a. Point of attachment of the head.
   b, b. Deflexed margins of the collar.
   c, c. The antepectus longitudinally divided by a deep groove.
   d, d. The coxae of the fore legs.
F. A fore leg.
G. Under view of the abdomen.
   a. The peduncle.
   b. The first true ventral segment.
Mr. J. O. Westwood on the Chalcididae

c. The second ditto.
d, d, d, d, d, d, d, d. The dorsal segments deflexed.
e. The tips of the organs of oviposition.
H. Side view of the abdomen.
   Details as in G.
I. A transverse section of the fifth dorsal segment of the abdomen.
   a. The position of the ovipositor.

Fig. 2. Cheiropachus quadrum ♀ magnified.
K. to O. Details of ditto, more or less magnified.
K. The antenna.
L. The fore leg.
   a. A strong indentation on the inside.
M. Under view of the abdomen.
   b, b, b, b. The four short ventral segments.
   c. The fifth long ditto.
   d, d, d, d, d, d, d, d. The dorsal segments deflexed.
   e. The tip of the organs of oviposition.
N. Side view of the abdomen.
   Details as in M.
O. A section of the fourth dorsal segment of the abdomen.
   a. The position of the ovipositor.

Fig. 3. P, and Q. Details of Colax dispar ♀ magnified.
P. The antennæ.
   a. The two minute ring-shaped joints.
Q. A section of the abdomen at the fourth dorsal segment.
   a. The position of the ovipositor.

Fig. 4. R. to U. Magnified details of the abdomen of Ch. quadrum ♂.
R. The upper surface of the abdomen.
   a. The penultimate segment narrowed above.
   b. The apical segment, worthy of notice in being covered with minute punctures.
   c, c. Its posterior margin slightly produced at the sides.
d. One of the male organs of generation, (the prehensor?) subcrustaceous, apparently divided by four longitudinal channels.

f, f. The large basal segment, divided into two arches by a longitudinal groove.

g. The notch in the centre of the posterior margin of the basal segment. This notch is perceivable in the female, and also in some of the contiguous genera.

S. The apex of the last segment of the abdomen and the prehensor? noticed above, more powerfully magnified.

Details as in Fig. R.

T. A lateral view of the last three segments of the abdomen, a, b, c, and d, as in R.

e. The penis? flat, horny and hairy at its outer surface.

h. The deflexed margin of the penultimate segment, dilated and hairy beneath.

U. The under side of the last three segments of the abdomen.

Details as above.

e. The penis? flattened, broad at the base, narrower to the tip, where it terminates in two blunt teeth, hairy externally.

h, h. The deflexed margins of the penultimate segment.


[Continued from Vol. III. p. 378.]

ON SOME FISHES FROM THE SANDWICH ISLANDS.

The fishes which form the subject of the present communication constitute nearly the whole of a small but interesting collection presented to