NUMBER I.

OF

ANNULOSA JAVANICA,

OR

AN ATTEMPT TO ILLUSTRATE THE

NATURAL AFFINITIES AND ANALOGIES

OF THE

INSECTS

COLLECTED IN JAVA BY THOMAS HORSFIELD, M.D. F.L. & G.S.

AND DEPOSITED BY HIM IN THE MUSEUM OF THE

Honourable East-India Company.

BY W. S MACLEAY, ESQ., M.A. F.L.S.

SOC. CÆS. NAT. CUR. MOSQ. NAT. SCRUTAT. BEROLIN. SOCIUS ET
MUS. REG. GALL. HIST. NAT. CORRESP.

LONDON:

PUBLISHED BY KINGSBURY, PARBURY, AND ALLEN,
LEADENHALL STREET.

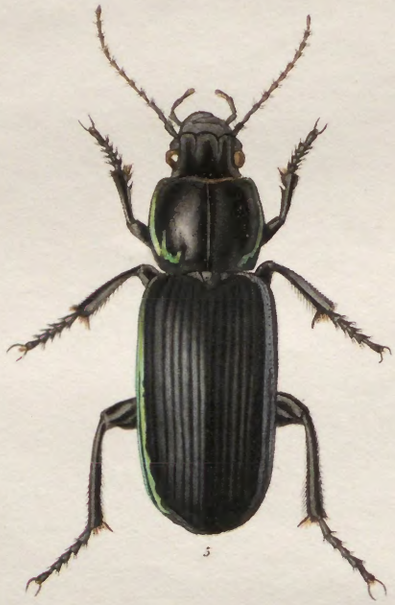
1825.

Price 12*s. coloured,* 10*s.* 6*d. plain.*

EXPLANATION OF PLATE I.

Fig. 1. Lissauchenius rufifemoratus.
Fig. 2. Pericalus cicindeloides.
Fig. 3. Colpodes brunneus.
Fig. 4. Anaulacus sericipennis.
Fig. 5. Catadromus tenebrioides.
Fig. 6. Dicælindus felspaticus.
Fig. 7. Æphnidius adelioides.
Fig. 8. Planetes bimaculatus.
Fig. 9. Helota Vigorsii.

(N.B. This sheet will be replaced, with the second number, in a form corresponding with the work.)



Drawn by J. Curtis.

London. Published by Kingsbury, Parbury & Allen, April 1825.

Engraved by H. Weddell.

TO THE

HONOURABLE THE COURT OF DIRECTORS

OF THE

Honourable East-India Company,

THIS WORK

IS, WITH THEIR PERMISSION, RESPECTFULLY DEDICATED,

BY THEIR OBEDIENT SERVANTS,

WILLIAM SHARP MACLEAY,

AND

THOMAS HORSFIELD.

PREFACE.

For several years after his arrival in Java, the principal pursuits of Dr. Horsfield were Botany and Materia Medica, but as numerous insects were constantly occurring to him during his botanical excursions, he was naturally and almost imperceptibly led to the collection of these beautiful and interesting animals. Like most other entomologists he commenced his career in the science by paying attention to Lepidopterous insects, to the collection of which he was the more induced by their great abundance in certain districts, during the latter part of the rainy season. The Coleopterous and other insects, which have been deposited by him in the East-India Company's Museum, were principally collected towards the end of his residence in the island, which he finally quitted in 1817, on its being ceded to the Dutch.

In the year 1812, or soon after the conquest of Java by the British arms, Dr. Horsfield's original plans were considerably enlarged, in consequence of the liberal patronage which was bestowed on his researches, by the Honourable East-India Company, through the friendly medium of Sir Stamford Raffles, the Lieutenant-Governor of the Island. At this time Dr. Horsfield was established in an extensive plain, elevated nearly 200 feet above the level of the ocean, and situated near the middle of the island, in regard both to its length and breadth. This plain is highly fertile, and with very little exception, is in a complete state of culture. The soil is a deep vegetable mould which, near the banks of several large rivers that flow through it, is mixed with sand. Here the collection of insects was carried on with zeal and perseverance, not only by Dr. Horsfield himself, but by various native assistants, who had been properly trained to this pursuit. His attention, as may be conceived, soon extended itself to all Annulose animals without exception, and his assistants were accordingly instructed to look for them in every situation, and as far as possible, to leave no place unexamined. During these researches, therefore, the party being provided with all the usual implements of entomological collectors, neglected none of the ordinary resorts of insects, such as flowers, decayed wood, carcases of dead animals, ponds, &c., and consequently, the collection now in the possession of the East-India Company, may very fairly be considered as affording a general view of the entomology of the above-mentioned plain. When any remarkable deficiency is observed in particular natural groups, we may at least conclude, that such insects are on this plain comparatively very rare. According to Dr. Horsfield's general observation, indeed, those insects which live on plants,

shrubs,

shrubs, and trees, are extremely abundant in Java; while such as in more temperate climates are commonly found in various situations near the surface of the earth, are limited to a few families. At the same time, however, it may be well to bear in mind, on regarding the immense proportion of herbivorous insects in the collection, that from the nature of Dr. Horsfield's more immediate pursuits, he was particularly led to collect on plants.

From the plain just mentioned, in which, on account of the extension of agriculture and a numerous population, the variety of vegetable and animal productions is necessarily limited, Dr. Horsfield often made journeys, in different directions, through the more wild and uninhabited parts of the island. Some of these were undertaken almost exclusively for entomological research, and were particularly directed at the proper seasons to a long range of hills extending parallel to the southern coast of the island, and rising to an elevation of 2,000 feet above the level of the ocean.

The base of this range is of a mixed nature; partly calcareous, partly trappean, and the hills are covered with trees and shrubs, although in many places the vegetation is less abundant and luxuriant than in the volcanic district, which constitutes a long series in the centre of the island. The great bulk, however, of the *Coleoptera* to be described in the following pages, was collected in the southern ranges, or on hills of nearly the same elevation, near the foot of the large volcanos, in the centre of the island. And here may be stated a curious circumstance in entomological geography, observed by Dr. Horsfield, namely, that the temperature which exists from an elevation of 1,000 to that of 2,000 feet above the level of the ocean, is most productive in Coleopterous insects; and, consequently, that this order occurred most abundantly in the southern and lower central ranges. The *Lepidoptera*, on the other hand, appeared to be most abundant at an elevation of between 3,000 and 4,000 feet, that is on the declivities of the high volcanic peaks. On such lofty situations, the luxuriance of vegetation greatly exceeds that of the southern ranges; and here, at the height of nearly 4,000 feet above the level of the sea, multitudes of the most brilliant and rare *Lepidoptera* were taken, and from the quantity of larvæ observed by Dr. Horsfield, he conceives that many more species remain still to be collected.

If the collection can be considered defective, Dr. Horsfield imagines that it is only scanty in such species as may be peculiar to the districts which extend from the immediate confines of the ocean to an elevation of 200 feet. On the south coast the hills rise so abruptly from the sea to an elevation of several hundred feet, that probably few species were lost by these shores not having been examined; but along the northern coast of the island, which in many cases is low, and bounded by extensive plains of sand, there possibly remains much to be discovered.

It may therefore be stated in recapitulation,—1st. That this collection affords a general sample of such *Coleoptera* and *Lepidoptera* as are to be found in the extensive plain which is situated south of Samarang (one of the principal towns on the northern coast), and which extends from the declivities of the mountain Merapi, in the west of the island, to those of the mountain Lawu, in the east.

2dly. That in frequent excursions made from the capital Suracarta (which is situated in the plain above-mentioned), towards the eastern and western boundary of the native princes territory, and towards the ranges extending along the southern coast of the island, both *Coleoptera* and *Lepidoptera* were carefully sought after, but were almost exclusively collected on plants.

3dly. That the fertile acclivities of the volcanic series, extending longitudinally through the centre of the island, and covered with a profusion of the most luxuriant vegetation, have afforded a large proportion of the *Lepidoptera* in the collection; while in the western extremity of the island, which comprises many uncultivated tracts of country highly productive in insects, the opportunities which Dr. Horsfield possessed for collecting were comparatively limited.

From what has now been stated, it must sufficiently appear that this collection is not brought under the notice of the public as a complete one. Many species indeed have lately been described from the continental collections as inhabitants of Java, which will not be found in the following list; and it is possible that many more still remain undescribed in the cabinets of the King of the Netherlands, M.M. Westermann, Reinwardt, &c. But this much may be said with the strictest truth, namely, that Dr. Horsfield has brought to England so fair a sample of the Entomology of Java, that if it be deficient in several species, it is probably not deficient in many peculiarly new forms. And if so much can be said of the extent of our materials, still more may be promised with respect to their intrinsic value; for Dr. Horsfield will be found to have paid such attention to the metamorphoses of *Lepidoptera*, as has enabled him to bring to the shores of Europe a more valuable mass of entomological information, than had ever hitherto been collected within the tropics.

Having thus given an outline of the mode and localities in which this valuable collection was made, and some notions with respect to its extent, I may be allowed to say a few words on the plan of descriptive catalogue that has been employed to make thespecies known.

Scarcely one of the many voyages and travels which at present teem from the press, is considered as scientifically ushered into the world, unless it be accompanied by an appendix containing descriptive catalogues of the animals or plants which may have occurred in the course of the expedition. The nature, use, and proper object

of such catalogues become, therefore, questions not altogether without interest. A descriptive catalogue in Natural History is nothing else than a list of species, accompanied with such descriptions as may be judged sufficient to make these species known; and it is evident that a number of various catalogues, having very different objects in view, may be drawn up to correspond with the terms of this definition. A catalogue, for instance, may be formed like that of Buffon, with an express contempt of technical nomenclature and a thorough disregard of system; the interest of the work depending wholly on that of the history of the individual species described, and the fecundity of imagination, or floridness of style with which their respective manners are developed. Such is, so far as concerns true science, the least profound, and therefore the most ancient sort of descriptive catalogue; although indubitably it is in certain cases quite sufficient for the purpose of making known the animal intended to be described. Thus, considering the horse merely as a domesticated animal, no scientific description can so eloquently, so admirably depict it as that of Buffon, and yet from such a description, we gain no notion whatever of the place which this noble creature holds in the great plan of creation. For all that we learn by it, there need scarcely be more than two insulated beings in the world, man and the horse. The consequence is, that such catalogues only suit for giving popular accounts of a few of such remarkable plants and vertebrated animals, as are directly connected with the habits of man. They seem to proceed, not only on the idea of all design, all order being absent in the creation as a whole, but also as if the infinitely greater part of organized forms need scarcely have been created. It would be absurd, even if it were possible, which it certainly is not, to adopt such a plan of catalogue for the description of insects or shells; for the interest taken by the public in these "*Animated Natures*," depends either on the number of anecdotes they contain, or upon our having already, in the usual course of life, acquired directly or indirectly some notion of the animals described, and therefore some curiosity to know more of their manners. Such a catalogue, therefore, is truly unscientific; but at the same time, and certainly for this reason it is the most popular of any. To understand it requires no previous acquaintance with Natural History; and to read it, we are told, is all that is necessary for the common purposes of life. True indeed it is, that a horse, a dog, a bee, any animal in fact which is already interesting to us from its immediately affecting the interests of man, may in this way be described, so that every characteristic trait, every particular of their manners shall be detailed: and yet it is easy to prove, that both the reader and writer of such descriptions may remain utterly unacquainted with Natural History as a science. They know no more of it, necessarily, than that person knows of astronomy who may have observed the change of seasons, or the difference in the length of days and nights.

nights. Buffon himself, to whom such catalogues owe their chief reputation, was more properly the historian of a few natural objects, than the "Historian of Nature." This, perhaps, to the generality of readers, will appear a bold assertion, when directed against a man so celebrated; and may indeed startle any person who has been accustomed to allow the following parallel to be correctly drawn. "*Linnæus saisissoit avec finesse les traits distinctifs des êtres; Buffon embrassoit d'un coup d'œil les rapports les plus éloignés.*" But I confess that the truth of this distinction, so indisputable in the eyes of French naturalists, has never yet been apparent to me; and so far from attributing general views of the plan of creation to Buffon, in preference to Linnæus, I do not conceive that the mode in which he studied Natural History, could ever have led him beyond a well-written "*Animal Biography.*" It is not indeed asserted, that Buffon was destitute of general notions on the creation; for this with a man of genius, looking at so divine a work, was impossible: still less is it asserted that he was deficient in the powers of generalizing; but what I mean is, that his ideas of nature were from the foundation wrong, his mode of studying her works erroneous, and his general conclusions, therefore, almost always false. For the truth of my position, I have only to refer to those parts of his works that touch on what is truly the science of Natural History: as for instance, to take one of the most profound of them, his account of birds that have not the power of flying. All that can be said in favour of the above distinction, is, that if Buffon had an eye for seizing any relations of affinity, they were indeed "*les plus éloignés.*" Leaving, therefore, such a plan as his to those inventive imaginations, those crude theories, and that pompous flowery style, which can alone give it any peculiar interest, the modern writers of *Faunæ* or *Floræ*, have invariably been obliged to resort to systematic descriptive catalogues. All of these however may, I conceive, be reduced to two kinds—those which are founded on artificial systems, and those which are grounded, not on any particular artificial system, but on the endeavour to discover the natural system. Of the first kind, that is, of those which are drawn up according to the pre-conceived importance of some one or two particular organs, is the justly celebrated *Systema Naturæ* of Linnæus.

We have seen that by such a plan as that of Buffon, it would be impossible to make known the forms of every insect, shell, or moss, that may occur in distant countries, and recourse is therefore had to a systematic catalogue which, by referring to the arrangement of some classical work, such as the "*Systema Naturæ*," or the "*Regne Animal*," enables the traveller at once to give a name to the object he describes, and the reader to know it by that name. The advantage of such a descriptive catalogue is, that to scientific characters and technical descriptions, written with the precision of Linnæus, may thus be subjoined the histories of the rarest animals, written with the eloquence

eloquence of a Buffon. While, therefore, it records the manners and economy of such beings as most directly affect our habits of life, it also admits that of which an unscientific catalogue is incapable; namely, the means of making the lowest animalcule or lichen of a distant country, nearly as well known to us in point of form, as a horse or an oak. A systematic descriptive catalogue, founded on an artificial system, is indeed very convenient for the description of newly discovered animals, when the principal object in view is the possibility of their being useful or injurious to us in the course of life. Those fire-side travellers who limit their researches in Natural History to such points, as being acquainted with the forms of the cereal plants used by the peaceful Hindoos, or with those of the animals eaten by the savages of the Polar regions, require nothing more than this species of catalogue; and so far all may be right. But if we descend to the description of minute mosses or insects on this plan, it is difficult not to imagine that our leisure hours might have been better employed. Unless it be for killing time, it is difficult to conceive what possible purpose it can serve, to name and describe some thousands of minute insects and shells, which we may never see but in the cabinet of a collector. Certain insects, indeed, may attract a portion of attention on account of the uses to which they may be applied by man, or the injuries which they may inflict on him. Thus the cochineal insect of America, or the destructive locust of Africa, may excite some share of interest in the general reader of an entomological systematic catalogue; but these are only drops in a vast ocean of species, and the writer of such a catalogue, founded on an artificial system, must, when he has done his best, content himself with the credit of having enabled some *virtuoso* to give barbarous names to a few dried beetles.

If, however, a descriptive catalogue can be formed, not resting on the preconceived importance of any particular organ or organs, but, on the manner in which the whole animal structure varies, and having, therefore, for its object the discovery of the general plan of creation, it is obvious that the lowest insect or polype derives importance from this object. Organized nature is a complicated chain of beings, of which chain each species forms a link. Every new species added to our list, serves thus to increase our knowledge of this stupendous system,—a system that ought to excite in every breast the most intense interest; not merely as one of the works of our Creator, but as that particular work of the Divine Hand, which has been designed with direct reference to ourselves. A minute beetle of Java, therefore, which of itself scarcely raises a thought in our minds beyond what may originate in its splendour of colour, or its eccentricity of form, becomes absolutely important when described in reference to its fellows. Not, indeed, that with respect to the particular fact itself, the world need care much to know that some tribes of beetles are constructed on a plan beautiful and regular beyond measure: but when, in consequence of this knowledge, a similar beauty and regularity

regularity are detected in other branches of the organized creation, even in that with which we ourselves are immediately connected, and the presumption thus arises that they extend throughout nature; then at least ought naturalists to attend to this delightful field for discovery, and by none ought it to be despised. Those who take up the subject in this light, will even excuse the entomologist for making insects the particular object of his study, in preference to the other branches of nature. Entomologists indeed, when their researches are properly directed, may truly say with the poet,—

"*In tenui labor, at tenuis non gloria.*"

For it is among insects, above all other groupes of animals, that, owing to their myriads of species, the mode in which nature's chain is linked—a mode, the knowledge of which comprizes all knowledge in Natural History—will be most evident, and therefore most easily detected. Nay, with a view to the discovery of the natural system, a local descriptive catalogue of insects, arranged according to their natural affinities, is more useful than a descriptive catalogue of *Vertebrata* on the same plan; and this, because the comparative paucity of vertebrated species in a given place will render such a catalogue infinitely more disjoined, than any similar list of Annulose animals ever can be.

It is obvious also, that such a catalogue may contain vivid descriptions of such animals as of themselves are interesting to mankind, while it admits of even more scientific precision than the most copious of those which are founded on artificial systems. The very situation of an animal in a catalogue, which is arranged correctly according to natural affinities, may point out a thousand particulars, both of its economy and structure, that could never have been arrived at by the most elaborate description.

The sole disadvantage attending this sort of catalogue is, that it ceases to be a dictionary of nomenclature, to which a perfect tyro in entomology may, with certainty, resort for the name of any insect he has collected. And, undoubtedly, if a person be unacquainted with the Linnean genera of insects, I fear that he will not be able to make much use of the following observations; but if, on the other hand, he should know these genera, he can, in my opinion, have little difficulty in comprehending every thing here stated.

I am not aware that any local descriptive catalogue of insects has ever yet been attempted, with reference to the discovery of a natural arrangement, unless, perhaps, it be the admirable *Monographia apum Angliæ*; but even the plan of this work had only reference to a few *Hymenoptera*, and consequently, was inapplicable to other insects, and much more so to all other animals. The reader will, therefore, take into consideration the difficulties I encounter in commencing a catalogue of insects, on a plan of investigating

gating Affinities and Analogies which is conceived to be applicable to the whole of organized matter. The most comprehensive view that, in this world at least, man can ever take of nature, must be but a glimpse of the reality, and must, consequently, be always susceptible of infinite improvement. As yet, moreover, we have not even arrived at the threshold of nature's temple; so that I shall have attained the utmost I can hope for, if I should be found to have made a nearer approach to it, than had ever yet been made in the same branch of entomology. The attention of naturalists in different countries, and in widely different departments of Natural History, having lately been turned towards the laws which regulate the distribution of organized nature, and their works in general being easily referred to, I shall not in this place enter into the theory. The staunch partizans of Linnæus, however,—those who account the *Systema Naturæ* to be Nature's system,—will not be displeased to find, that in the following pages the Linnean genera of *Coleoptera*, even those which, by Fabricius and Latreille, were most widely broken asunder, now again become groupes, and this merely by following the *filum ariadnæum* of affinities, and certainly without any remarkable partiality on my part to the learned Swede's character as an entomologist. It cannot, however, be denied, that almost in every case his genera are natural groupes, although he erred in making them all of the same rank, and appears to have had no idea whatever of the manner in which they are connected.

I have only now farther to observe, that it shall be my earnest endeavour to render this work useful to persons resident in the Indian Archipelago, not merely by enabling them to know the species they may meet with, and so to commence a science which may eventually prove an agreeable source of amusement; but by informing them of the circumstances to which they ought to pay most attention, and thus making their labours tend to the development of the plan of creation.

My next and principal endeavour shall be not only to render the Javanese species of *Annulosa* known to European collectors, but to shew the places which they respectively occupy in the scale of created being. In the meanwhile let the young naturalist bear in mind, that it is not the ready ability to give a name to an object, which ought to be considered the grand, the ulterior aim, the "*ultimus finis*" of his observations, but, as Linnæus says, the discovery of the natural system; and of this the meanest atom that lives, the *Monas* itself, may perhaps form a link as necessary towards our proper comprehension of the whole, as any other animal, however large, or however intelligent.

ANNULOSA JAVANICA.

INTRODUCTION.

As this Work is to be conducted with as much reference as possible to those general principles of natural distribution which I have laid before the Public, both in the *Horæ Entomologicæ* and the Transactions of the Linnean Society, the reader may easily perceive that there will be some novelty in the arrangement, as well as in the matter arranged. In abandoning, however, that division of Coleoptera which is founded on the number of joints in the tarsi, and which has acquired so much vogue on the Continent, it may be necessary to shew that I am countenanced by some authority. I shall, for this purpose, therefore, content myself with citing the following words of M. Latreille: that is, of the distinguished naturalist to whom the *Tarsal System* owes much more of its celebrity than to its inventor. "*Articulorum tarsorum progressio numerica decrescens in methodo naturali non admittenda.*"—(Gen. Crust. et Ins. vol. i. p. 172.)

It will also be seen that I commence with the Adephagous Coleoptera, not indeed because they form a particularly rich part of the Hon. East-India Company's collection, and still less from any notion of the Linnean genus *Cicindela* having a peculiar title to this pre-eminence, but because they constitute that department of the science which at present most engages the attention of Continental Entomologists. In the course of this investigation I shall have several new genera, or rather subgenera, to propose, of which the characters in some cases must necessarily rest on refined, and even minute considerations. Now, as the object I have in view is to make known in a definite manner all the species that may be new, I cannot hope to carry this my intention into execution without adopting some of those delicate distinctions, which result from the mode of investigation that has lately been pursued by M. Bonelli, in his study of these insects. I have, indeed, little choice to make: for I must either expose myself to a charge very frequently at present brought against Entomologists—namely, that they disgust persons with the science by the multitude of names with which they load it; or I must display unpardonable ignorance of the many excellent observations which could never have been discovered, nor can now be explained, without such a mode of discrimination being resorted to. When, therefore, I venture to add to the already overwhelming number of subgenera into which the Linnean genus *Carabus* has been divided, I have to state in excuse, that this course of proceeding is adopted from the conviction that it is impossible to assign some of the new Javanese forms to any of those genera, which MM. Dejean and Bonelli have almost entirely founded on the examination of European

insects. If, in short, new subgenera are here made, it is because otherwise I should have had either to refer all the new Javanese insects to European subgenera, with the characters of which they do not agree; or to assign them to large groupes, where the Entomologist would have had to search for them among some hundreds of species, and at last have ended his toil with complete uncertainty as to their identification.

If my subgenera were in every case natural, or if I could in every case display their true place in the series of affinity, I should as little think of offering an apology for minuteness of investigation, as my readers would expect it. In that event, a sufficient answer would be, that certain affinities were pointed out by such minute discrimination, while the resulting series was natural; but this I am sorry to say cannot be pretended in every case, and particularly in that of one of the families into which the Linnean *Carabus* shall here be divided. Consequently the new subgenera of this family, *viz.* the *Harpalidæ*, must rest their stability first on their own merits, as serving to make new forms definitely known; and secondly, on the little value of every argument that has hitherto been used to prove the minuteness of modern Entomological genera. Indeed, on this last head I cannot refrain from calling the reader's attention to a few curious facts, which will serve to illustrate an argument that has already been ably sustained by Mr. Spence, in his monograph on the genus *Choleva*.

There is nothing which makes the fertility of design that has characterized the Creation so incontestably evident, as the variation of structure that sometimes prevails in groupes of an inferior rank, such as genera or families. It is indeed manifest, that if a groupe like the *Vertebrata* be of a primary degree, and the number of species it contains be nevertheless small, then the divisions will be more decided and more easily seized than if the number of species were great. But if the groupe be not of a primary nature like the Linnean genus *Carabus*, and yet the number of species contained in it be great, then the difficulties of distribution are augmented, owing to the number as well as to the minuteness of the differences to be seized. And yet it is such difficult ground that we ought in a particular manner to cultivate, if we wish to attain a true knowledge of nature; and this remark truly deserves attention from those who object to that delicacy of research which has characterized the labours of MM. Clairville, Bonelli, and Dejean, among the *Harpalidæ*. The distinctions of these Entomologists are, it is true, often minute; but when we observe that the groupes characterized by such distinctions contain twenty, thirty, sometimes more than a hundred species, we necessarily say that, for the sake of convenience alone, it were to be wished that even these groupes, minute as they are, could be subdivided. But while this delicacy of discrimination is useful for the artificial purposes of nomenclature, it becomes indispensably necessary in the study of affinities. More than 1600 species of the Linnean genus *Carabus* have, for instance, come within my own knowledge. Now, supposing a new species to occur, which indeed happens every day, what definite idea of its structure or affinities can possibly be obtained by a person who refers it to a groupe of 1600 beings of so many various forms? And if these 1600 species compose but one genus, as they do according to Linnæus, what person can be found with either time or inclination to identify the specific name of one of them? Indeed, this circumstance of itself has rendered the identity of many species of Linnæus, and even of Fabricius, quite uncertain. For example: "*Carabus alatus ater nitidus, elytris striatis antennis rufis*" (*Fab. Syst. Eleuth.* vol. i. p. 189) is a description that will apply to hundreds of insects, of structure,

structure, economy, and appearance all totally different from each other. On this account, therefore, Clairville and Bonelli merit the greatest praise for the assiduity and perseverance they have shewn in the study of the *Harpalidæ*. Their labours, however, soon gave rise to the complaint that every species was thus becoming a genus, and that confusion instead of order was thus arising from their innovations. This complaint, indeed, has gradually died away among Entomologists; but it has, in consequence, become a charge levelled generally against Entomology, by certain persons who are ignorant of the present state of the science. The genus *Carabus* of Linnæus has, above all others, given rise to such charges; and it must therefore not a little surprise these critics to know, that after all the various mutilations which the genus *Carabus* of Bonelli has undergone, it appears in the collection of M. Dejean, whose catalogue, be it remembered, is very far from being extensive in extra-European insects, to contain about twice as many species as Linnæus has described of his genus *Carabus*. In the 13th edition of his Systema Naturæ, the latter describes only forty-three of his genus *Carabus*, which is a groupe of four modern families; whereas Baron Dejean's collection contains eighty-three species of the modern genus *Carabus;* and I know of about forty more. No genus can rest on more refined considerations than the genus *Harpalus*, as it at present stands; yet Dejean's catalogue contains ninety-two species, of which sixty-three are European. On looking at this catalogue, we find that the average number of species Baron Dejean possesses in each of his eighty-six genera made out of the Linnean genus *Carabus*, is ten; that is, the same number which Persoon, in his last edition of the Synopsis, describes in each of his 2280 genera of plants; and yet, as Decandolle has well observed, in the *Théorie Elémentaire de la Botanique* (p. 222), Persoon has in reality fewer genera, in proportion to the number of plants he knew, than Linnæus; for while the former assigns ten species to each of 2280 genera, the latter naturalist only allows six species at an average to each of 1260 genera. So that if 1500 species of Linnean *Carabus* exist in collections, we may double the number of published subgenera, and yet allow fewer subgenera, in proportion to the number of species we know, than Linnæus did of genera in that portion of nature with which he was best acquainted. So much for the observation that every species is now a genus in Entomology,—an observation that has had its origin entirely in the inadequate idea generally prevailing as to the number of annulose species which exist. We every day hear of the difficulty of natural history having increased, and doubtless it is increasing every hour: but this is owing to the number of new species which are pouring in upon us. Still a great advantage has accrued to the science from the augmentation of our collections; for if the study of natural affinities was formerly impossible, it has now come within the reach of every person who does not allow himself to be frightened by the multitude of names which necessarily crowd the pages of the best modern works on natural history. Names, after all, are only formidable when marshalled in an index; and the difficulty they present to the young naturalist not only vanishes when it is encountered, but soon is found to be his best aid, in combating difficulties of infinitely greater importance.

With respect to my general distribution of Clairville's *Adephaga*, I have little more to say, than that it is a sketch of natural affinities which the reader of the *Horæ Entomologicæ* will find to illustrate certain questions there left in doubt. And if I have not been able to adopt that exposition of these insects which has lately been given to the public by my friends MM. Latreille

and Dejean, it has at least been as closely attended to as I judged either consistent with nature or convenient for use.*

Some of the new subgenera here proposed being founded on external characters, it may be necessary to premise, that where the specimen was unique or very rare in the collection, I had not, of course, the permission to dissect it. I hope, therefore, that this circumstance will be taken particularly into consideration, by those who may have occasion to refer to the following descriptions, which I shall now proceed with.

* I have not, for instance, thought it advisable to lay so much stress on the form of the external joint of the palpi as these gentlemen have done. The validity of my reasons for differing from them in this respect may be judged on a perusal of P. i. p. 4, Horæ Entomologicæ. As to the general distribution of M. Latreille, it is confessed by himself to be artificial, and therefore I need offer no apology for abandoning it.

COLEOPTERA.

An attempt has been made in the *Horæ Entomologicæ* to shew that if we gradually limit our views, and descend from the consideration of the kingdom *Animalia* to the department or subkingdom *Annulosa*, from this again to the class *Mandibulata*, and then to the order *Coleoptera*, thus leaving each groupe for one of its component minor groupes, we shall at length observe the last-mentioned, *viz.* the order *Coleoptera*, to resolve itself into five minor groupes, which I have termed tribes. Now one of these tribes consists of insects having Chilopodiform larvæ; that is, their larvæ are carnivorous, having their head furnished with ocelli and strong mandibles, generally pierced for suction. Their body is subdepressed, composed of angular, or at least of laterally incontinuous segments, of which all, or at least a certain portion, are each covered with a corneous lamina. Some one of the hinder segments of the body (in general the penultimate or last) is moreover always furnished with at least two styliform appendages, which are sometimes corneous, sometimes membranaceous, and sometimes articulated. From this general resemblance of the larvæ to young *Chilopoda*, the tribe may be termed

CHILOPODOMORPHA.

Character Typicus.

Larva *chilopodomorpha plerumque carnivora, corpore processubus duobus posticis styliformibus dorsalibus semper instructo.*

Imago *plerumque pentamera, mandibulis corneis, maxillis bipartitis vel processubus duobus; laciniâ interiori in unguem corneum incurvum fere semper desinente; laciniâ exteriore sæpius biarticulatâ interdum palpiformi.*

I have elsewhere shewn that nature appears to have varied less in the structure of the maxillæ than in any other part of the mouth of *Coleoptera*, and have consequently inferred that the Entomologist ought to pay particular attention to the form of the maxillæ in the perfect insect. In the tribe having Chilopodiform larvæ, we have a remarkable example of the truth of this reasoning, for a particular modification of that form of maxillæ which is general to this tribe caused the carnivorous insects, or *Adephaga* of Clairville, to be early separated from all other Coleoptera by a most anomalous character, *viz.* that of having six palpi. When Savigny, however, reduced to one general structure the mouth of all winged insects, it followed as an immediate consequence, that Coleoptera do not differ so much among themselves as that two or three families should have four maxillary palpi and all the rest only two. We find, accordingly, that a more philosophical view of the subject did not fail to be taken by M. Latreille, as soon as he had weighed with due consideration the theory of M. Savigny.* For instance, the maxillæ of Coleoptera may be described generally as being composed of several pieces which are often entirely confluent, and generally so far confluent as to form one mass; the interior palpi (as they are called) of adephagous insects forming almost the only known exception to the rule. But even in

* Nouveau Dictionnaire d'Hist. Nat., art. *Bouche*, p. 242.

in this case the proper view of the maxillæ is, that they terminate in two lobes, generally ciliated, and often confluent, the external lobe being in its typical state connected with the internal lobe by an articulation, and the internal lobe being terminated by an unguis. Of this typical maxilla *Passalus* affords a good example;* and among the *Petalocera*, we find it distinguishable in the whole family of *Geotrupidæ*. We have an example of the confluence of the maxillary pieces, that is, of a complete departure from the typical maxilla, in *Ægus;* and, indeed, the Thalerophagous *Petalocera* in general, but particularly the *Anoplognathidæ*, exhibit little or no traces of the above typical structure of the maxilla.

The Maxilla of such Coleoptera as have Chilopodiform larvæ, possesses, however, a peculiar character, which may be considered as typical in reference to the groupe. The external lobe is not only connected with the internal by an articulation, but itself consists of two pieces. Sometimes, as in the Linnean genera *Cicindela*, *Carabus*, *Dytiscus*, and *Gyrinus*, this biarticulate external process of the maxilla is slender and cylindrical, and consequently palpiform, occasioning these genera to be characterized as having four maxillary palpi. Sometimes, as in the Linnean genera *Hydrous*† and *Staphylinus*,‡ this biarticulate process is dilated and not palpiform. Sometimes again, as in certain species of the Linnean genus *Silpha*, the two pieces which form the external lobe of the maxilla are confluent or soldered together, although the typical structure remains visible, or the outer piece is converted into a penicilliform lacinia, adapted to the particular economy of the insect.

The tribe of *Chilopodomorpha* is divisible as follows, into five stirpes *i. e.* races; or, which is the same thing, into two groupes; one of which contains two stirpes, and is typical of the tribe; while the other contains three stirpes, more immediately conducting to other tribes, and which may therefore be termed aberrant.§

		Stirpes.	Exempla typica.
Chilopodomorpha.	1. *Normal groupe*, consisting of insects having linear or setaceous antennæ, with the exterior biarticulate process of the maxilla palpiform. Adephaga of Clairville.	1. Geodephaga	*Carabus.*
		2. Hydradephaga	*Dytiscus.*
	2. *Aberrant groupe*, consisting of insects having their antennæ clavate, or, at least, gradually thickening towards the apex, while the external lobe of the maxilla is not palpiform.	3. Philhydrida	*Hydrophilus.*
		4. Necrophaga *(Lat.)*	*Silpha.*
		5. Brachelytra *(Lat.)*	*Staphylinus.*

That this tribe is a natural groupe, sufficiently appears from the above series of five stirpes returning into itself, and forming as it were a circle. Thus, from the *Geodephaga*, or genera *Cicindela* and *Carabus* of Linnæus, we pass by means of *Omophron* to the *Hydradephaga*, or genera *Gyrinus*, and *Dyticus* of Linnæus. From these again we pass to the Linnean genus *Hydrous*, which, until his entomological career was nearly over, the great Swede confounded always with *Dyticus*. Part of the *Philhydrida*, such as the modern genus *Elophorus*, was by Linnæus

* For this and the following examples, the reader may consult the figures given in the first part of the *Horæ Entomologicæ*.

† *Hydrophilii* Lat. Gen. Ins. et Crust. vol. ii. p. 62.

‡ Kirby, Lin. Transact. vol. 14, p. i. p. 100.

§ The terms applied by M. Fries to such groupes, *viz. centric* and *radiant*, I have not thought proper to adopt, for reasons that will be found at length in the Transactions of the Linnean Society, Vol. 14, p. 59.

Linnæus placed in his genus *Silpha*, to which, without doubt, *Elophorus* approaches by some of the less typical insects of that groupe, which M. Latreille, in the *Genera Insectorum*, has named *Necrophaga*. From the *Necrophaga* we pass by means of *Micropeplus* to *Staphylinus*,* and then *Lesteva* (the *Carabus staphylinoides* of the *Entomologia Britannica)* will serve to conduct us back again to the Terrestrial *Adephaga*.

I now proceed to the consideration of that normal groupe of the *Chilopodomorpha*, which is the same with the

COLEOPTERA ADEPHAGA of Clairville and Latreille.

Character Essentialis.

Maxillæ lobo interno unguiculato, ungue interdum articulo inserto; lobo externo palpiformi sæpissime biarticulato, quâ de causâ sex palpos apud Adephaga quidam enumerant.

The *Adephaga* of Clairville compose one of those dichotomous groupes which M. Fries would term a *centrum*. They are remarkable for having been characterized as possessing four maxillary palpi, two to each maxilla. This excellent characteristic may, however, as above explained, be more accurately understood by accounting all Coleoptera as having only two maxillary palpi, and the *Adephaga* to be only peculiar in having a biarticulate process to the maxilla, which in some species is degraded to a mere spine. The typical structure of the maxilla in adephagous insects seems to be that of the *Cicindelidæ*, where this organ has both the external and internal lobe biarticulate. In all the other *Chilopodomorpha* the external joint of the internal lobe, when it exists, is as in *Cicindela*, unguiform, but confluent with or soldered to the first joint.

These predaceous insects evidently form two very natural groupes, *viz.* the Terrestrial and Aquatic Adephaga, the former of which is much more numerous in species than the second.

A. GEODEPHAGA.

Adephaga Terrestria, Lat. *Carabus et Cicindela, Lin. Pedes tantummodo gressorii. Corpus oblongum raro ovatum. Pedes postici motu horizontali et verticali; laminæ pectorales quibus inseruntur magnitudine mediocres.*

B. HYDRADEPHAGA.

Adephaga Aquatica, Lat. *Dyticus et Gyrinus, Lin. Pedes natatorii. Corpus ovatum. Pedes postici motu tantum horizontali; laminæ pectorales quibus inseruntur maximæ.*

If the five following families of terrestrial *Adephaga*, which coincide with those of MM. Latreille and Dejean, be natural, then the subdivision of them will probably depend on the form of the mentum, which deserves particular attention. But although I believe the following table to be a very near approximation to the truth, I am inclined to think that the accurate demarcation of the respective families depends on the forms of the larvæ. Thus, the *Cicindelidæ* and *Carabidæ* are distinguished from all the other terrestrial *Adephaga*, in having the styliform appendages to the body of their larvæ corneous; but the *Cicindelidæ* have them dorsal and affixed to the eighth segment of their body, in order to suit their mode of life; whereas, the *Carabidæ* have them caudal.

* "Sous quelques rapports les Brachélytres avoisinent les Adéphages et sous plusieurs autres les Boucliers et les Nécrophores."—*Lat. Règne Animal*, vol. iii. p. 216.

caudal. That the other three groupes of terrestrial *Adephaga* may be distinguished by their larvæ in like manner, I infer from a circumstance recorded by M. Latreille, who says, that the larva of *Aristus* has the form and manners of the larvæ of *Cicindelidæ*, a circumstance perhaps only to be accounted for on those principles of natural distribution which I have explained at length, Horæ Entomologicæ, Part ii. p. 518.

	Geodephaga.	*Familiæ.*	κατ' ἐξοχην.
1. *Normal groupe.* Tibiæ anticæ haud emarginatæ.	Maxillæ apice articulatæ.	1. *Cicindelidæ*	volantes.
	Maxillæ haud apice articulatæ.	2. *Carabidæ*	mingentes.
2. *Aberrant groupe.* Tibiæ anticæ emarginatæ.	Elytra haud truncata abdomine haud pedunculato.	3. *Harpalidæ*	currentes.
	Elytra haud truncata abdomine pedunculato.	4. *Scaritidæ*	fodientes.
	Elytra truncata abdomine haud pedunculato.	5. *Brachinidæ*	crepitantes.

The *Adephaga Terrestria* of Clairville having attracted the attention of all the most celebrated of modern Entomologists, and having been much more studied than any other groupe of insects whatever, it is singular that so little should have hitherto been done towards their natural arrangement. M. Latreille, even in the very first number of the work which he and Baron Dejean have commenced on the *Coleoptères de l'Europe*, abandons the hope of effecting a natural arrangement. When I therefore attempt to combat this difficulty in the above rough sketch, it is because it becomes necessary, in order that my readers may form an adequate notion of Dr. Horsfield's acquisitions in this branch of natural history. The five families I have given above answer, with very little variation, to the *Abdominales*, *Cicindeletæ*, *Truncatipennes*, *Bipartiti* and *Thoracici* of Latreille: who, however, seems to be little more aware of their mutual connexion than he is of the groupe *Chilopodomorpha*. The above names, indeed, used by him, I do not adopt, because, in the first place, they disturb that harmony of nomenclature which is so essential to the interests of Entomology; and, secondly, because they appear fanciful, and do not sufficiently express the characters of the respective families. I have thus thought proper to name them from the most remarkable or best known genus in each. M. Latreille has another family called *Subulipalpes*, composed solely of his old genus *Bembidion*, and of which the principal distinctive character is the subulate form of the last joint of the maxillary palpi, as if there were not insects in almost every adephagous family which possess this character. The family of *Subulipalpes* is therefore clearly to be abolished, and we shall find that the natural place of *Bembidion* is in one of the five families above laid down.

On examining the five families in the above table, we find the stirps returning into itself and being thus a natural groupe; for it is easy to perceive that *Elaphrus* has a connexion both with the *Cicindelidæ* and *Carabidæ*, that *Panagæus* and *Licinus* lead us from these last to the *Harpalidæ*, that *Acinopus* and *Cephalotes* lead us from these by means of the genus *Aristus* to the *Scaritidæ*, that *Siagona* conducts us from the *Scaritidæ* to the *Brachinidæ*, from which by means of *Anthia* and *Manticora* we return to the *Cicindelidæ*. That parallel analogies exist in these families, cannot be doubted by any one who considers the genera *Colliuris*, *Agra*, *Dischyrius*, *Stomis* and *Cychrus*, or *Megacephala*, *Anthia*, *Scarites*, *Chlænius* and *Carabus*, or *Cicindela*, *Graphipterus*, *Siagona*, *Blethisa*, and *Nebria*, &c. &c. The genus *Enceladus* seems also to connect the opposite points of the circle of affinity, by connecting the *Carabidæ* with the *Scaritidæ*.

In

In the further investigation of these families, which I shall now enter upon, I must regret my inability, for the present, to separate the genera from the subgenera with any certainty.

Fam. 1. CICINDELIDÆ.

Of this family I shall offer the following Synopsis Generum, both because the number of known genera is so small, and because MM. Latreille and Dejean seem to consider it almost impossible to express by one tabular view the affinities which exist in the group. It must however be premised, that if we judge *Cicindela campestris* to be the type of the extensive genus *Cicindela* we find *C. gracilis* Pall. and *C. coarctata* Dej., leaving it for the genus *Ctenostoma* of Klug (*Caris* of Fischer), while by means of *Euprosopus* 4. *notatus* Lat. we approximate to *Megacephala*.

SYNOPSIS GENERUM COGNITORUM.

Mentum apice emarginato medio dentato.
1. *Ctenostoma* Klug.
2. *Cicindela* Lin.
3. *Euprosopus* Lat.
4. *Megacephala* Lat.
5. *Platychile.** ..... *Manticora*. Fab.

Mentum apice emarginato medio haud dentato.
6. *Therates* Lat.
7. *Colliuris* Fab.
8. *Tricondyla* Dej.

By recollecting the approximation of the extremities of this series, we have all the *Cicindelidæ* with long cylindrical bodies placed together. M. Latreille founds his primary division of the *Cicindelidæ* on the comparative length of the penultimate joint of their palpi: a consideration so vague, that we can scarcely be surprised that he should, as he says, have found it impossible to arrange them according to their affinities. The above distribution of the family has, however, the advantage of combining all the considerations upon which the two arrangements given in the "*Coleoptères d'Europe*" are founded, and nevertheless, avoids the glaring inconsistency of separating

* Genus PLATYCHILE Nobis, *MANTICORA* Fab.

Antennæ cylindricæ, articulo tertio secundo fere triplo longiore.

Labrum transversum, medio anticé bidentato.

Mandibulæ exsertæ, arcuatæ, tridentatæ, dentibus apice nigris.

Palpi maxillares articulo ultimo obconico crassiore præcedente breviore.

Palpi labiales articulis duobus primis brevissimis, penultimo longo fere cylindrico, ultimo securiformi.

Mentum emarginatum medio unidentatum.

Caput magnum planum. *Thorax* planus in medio canaliculatus, angulo postico utrinque porrecto subspinoso. *Abdomen* insecti dimidii longitudine, sessile, cordiforme, thorace latius, elytris supra convexis haud connatis tectum. *Pedes* anteriores, in maribus saltem, tarsorum articulis tribus primis dilatatis, quarto brevissimo processuque laterali, ultimo tenui unguibus acutis. *Tibiæ* omnes apice spinosæ.

PALLIDA. P. lævis tota pallida capite bipunctato elytris sub lente variolosis: variolarum centro eminente.

Manticora pallida? Fab. Syst. Eleuth. 1. p. 167.

Habitat ad Caput bonæ spei. Mus. Macleay.

Obs. This curious insect connecting *Manticora* with *Megacephala*, only differs from the *Manticora pallida* of Fabricius in not having connate elytra.

separating *Ctenostoma* from the long-necked *Cicindelidæ*, as the first does; or of placing *Ctenostoma* near *Therates*, as in the second. It is a curious proof of the value of the table given in Horæ Entomologicæ, pt. 1. p. 4, that an arrangement may thus be found, which will keep together the insects of a similar formation of palpi, and which may nevertheless not be grounded on the consideration of these organs.

The voracious insects which compose this family are all extremely active in their perfect state, and inhabit sandy districts, as it is in the sand that the artful and wary larvæ dig cylindrical pit-falls for their prey.

I shall now proceed to the description of such species of this most natural family as Dr. Horsfield collected in Java. They all belong to the three genera *Colliuris*, *Therates*, and *Cicindela*, and eight out of fourteen of them are quite new. The length of their body, as well as that of the other insects described in this work, is always measured in inches or parts of an inch.

Genus. COLLIURIS Fab.

1. *Diardi. C. cærulea antennis clavatis: clavâ cinereo-fuscâ, femoribus rufis tibiis tarsisque cyaneis, his albopubescentibus.*

C. Diardi. Lat. & Dej. Col. d'Europe, p. 67.

Long. corp. $\frac{5}{8}$

Caput labro quadrato septemfido, dentibus æqualibus, mediis obtusis, lateralibus acutis. *Palpi* articulo ultimo obconico apice subtruncato. *Antennæ* breves filiformes clavâ sex-articulatâ. *Thorax* nec abruptè constrictus nec transversè striatus. *Elytra* apice truncata fere lævia.

2. *Emarginata. C. cærulea thorace subvilloso, antennarum articulis tertio quarto quintoque medio rufis sex ultimis cinereo-fuscis.*

C. longicollis. Lat. Gen. Crust. & Ins. t. 1. tab. 6. fig. 8.

Long. corp. fere $\frac{7}{16}$

Caput labro subsemicirculari septemfido, dentibus æqualibus subacutis. *Palpi* articulis ultimis obconicis abruptè truncatis apice securiformi. *Antennæ* mediæ filiformes vix clavatæ. *Thorax* haud abrupte constrictus vel transverse striatus. *Elytra* apice dentibus acutis. *Pedes* femoribus rufis, tibiis tarsisque cyaneis, his, posticis præsertim, albo pubescentibus.

3. *Tuberculata. C. cærulea thorace bis abrupte constricto, antennarum articulis tertio quartoque apice rufis quinque ultimis cinereofuscis.*

Long. corp. $\frac{11}{16}$

Caput labro subsemicirculari septemfido. *Palpi* articulis ultimis obconicis apice rotundatis. *Antennæ* vix clavatæ longæ filiformes. *Thorax* constrictione anteriore arctissimâ et sic fere tuberculatus. *Pedes* postici femoribus ferrugineis, tibiis cyaneis apice ferrugineis, tarsorumque articulis cinereis villosis, duobus ultimis nigris.

4. *Arnoldi. C. viridicærulea thorace transversè substriato antennis haud clavatis pallidis: articulo primo subcyaneo.*

Long. corp. $\frac{11}{16}$

Caput labro subsemicirculari, dente laterali minuto reliquis æqualibus. *Palpi* pallidi articulis ultimis ovatis. *Antennæ* longissimæ filiformes. *Thorax* fere glaber haud abruptè constrictus. *Elytra* apice suturâ maculâque mediâ ferrugineis. *Pedes* pallidi tibiis posticis ferrugineis, apice tarsisque albis.

M.S. *Josephi Arnold, M. D. naturæ indagatoris peritissimi.*

5. *Horsfieldii.*

5. *Horsfieldii. C. cærulea thorace transversè striato antennis haud clavatis: articulis tertio et quarto apice, reliquis basi pallidis.*

Long. corp. $\frac{11}{16}$ +

Caput labro semicirculari septemfido, dente laterali minore reliquis æqualibus. *Palpi* articulis pallidis apice nigris; ultimis ovatis. *Antennæ* longissimæ filiformes. *Thorax* haud abruptè constrictus. *Pedes* postici femoribus rufis, tibiis cyaneis apice albis, tarsorumque articulis primis albis sed penultimo ad apicem ultimoque nigris.

Genus THERATES. Lat. *Eurychile* Bon.

6. *Humeralis. T. atroviridis æneus, elytris punctatis basi plicatis testaceis apice bispinosis pedibus testaceis.*

Long. corp. $\frac{3}{8}$ +

Caput atroviride nitidissimum lævissimum oculis magnis nigris; labro testaceo octofido, dente laterali distincto majore reliquis æqualibus. *Mandibulæ* nigræ. *Palpi* testacei. *Antennæ* nigræ basi testaceæ. *Thorax* atroviridis nitidissimus lævissimus subcylindricus subcanaliculatus antice posticeque constrictus. *Elytra* atroviridia nitidissima basi testacea plicâ depressâ suturâ nigrâ, apice dehiscentia bidentata, dente apicali majore acuto nigro. *Corpus* subtus nigrum ano rufo. *Pedes* testacei tarsorum articulis ultimis nigris.

Obs. MM. Latreille and Dejean have figured two other Javanese species of this genus, which they name *cærulea* and *spinipennis*. *T. humeralis* seems to come between the two; but is evidently most closely allied to *T. spinipennis*. The genus itself undoubtedly approaches to *Cicindela* in affinity.

Genus CICINDELA.

7. *Versicolor. C. atrocæruleus thorace bis constricto elytris atris, apice violaceis; margine maculis tribus viridicæneis.*

Long. corp. $\frac{5}{16}$ +

Insectum nitidum generi præcedenti proximum. *Caput* atrocæruleum rugis striatum fronte depresso oculis magnis prominentibus. *Labrum* viride. *Mandibulæ* testaceæ apice nigræ. *Palpi* testacei articulis duobus ultimis viridibus. *Antennæ* nigræ basi cæruleæ. *Thorax* theratis latere posticêque viridis. *Elytra* trimaculata maculis viridibus marginalibus; humerali elongatâ posticé latiore, mediâ transversâ, posticâque triangulari. *Corpus* subtus cæruleum. *Pedes* atrocærulei.

8. *Quadripunctata. C. cyanea nitida labro lineâ mediâ albidâ, elytris punctis duobus pone medium niveis.*
C. 4—punctata. Fab. Syst. Eleuth. vol. 1. p. 239.

Long. corp. $\frac{1}{16}$

9. *Analis. C. ænea, elytris punctatis: margine cyaneo, antennis fuscis, ano pedibusque rufis.*
C. analis. Fab. Syst. Eleuth. vol. 1. p. 236.

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

10. *Heteromalla. C. subcylindrica cuprea, elytris punctis albis; tribus marginalibus aliâque parvâ mediâ.*

Long. corp. $\frac{7}{16}$ +

Caput cupreum rugis striatum, facie viridi; labro carinato cupreo, apice quinque-dentato nigro. *Palpi* pallidi articulis duobus ultimis nigris. *Antennæ* nigræ basi cupreæ. *Thorax* rugis striatus cupreus cylindricus antice vix constrictus, lateribus lineâque transversâ posticâ viridibus. *Elytra* punctata cuprea suturâ

elevatâ maculis quatuor, humerali minimâ, mediarum duarum marginali majore posticâque triangulari. *Corpus* subtus atrocæruleum. *Pedes* femoribus tibiisque subpiceis.

11. *Semivittata. C. atra, thoracis margine pectoreque aureis, elytris vittâ submarginali abbreviatâ punctisque quinque albis.*
C. semivittata. Fab. Syst. Eleuth. vol. 1. p. 237.
Long. corp. $\frac{1}{2}$

12. *Aurulenta. C. cyaneo auroque variegata, elytris punctis quatuor albis: intermedio lunato.*
C. aurulenta. Fab. Syst. Eleuth. vol. 1. p. 239.
Long. corp. $\frac{5}{8}$

13. *Funerea. C. atrôcuprea elytris punctis tribus marginalibus primo humerali lunuláque apicis clavatâ albis.*
Long. corp. $\frac{1}{16}$
Caput post oculos rugosulum punctis duobus subviolaceis. *Labrum* nigrum. *Palpi* atrocuprei apice cærulei. *Antennæ* nigræ basi cupreæ stipite aureo. *Thorax* canaliculatus lineis duobus transversis. *Scutellum* violaceum. *Elytra* punctata. *Corpus* subtus atrocæruleum lateribus pectoris aureis. *Pedes* femoribus cupreis, geniculis tibiarum apice tarsisque atrocæruleis.

14. *Tremebunda. C. olivacea-subænea, elytris margine laterali interrupto lunulâ humerali clavatâ apicalique dentatâ strigâque mediâ recurvâ clavatâ.*
Long. corp.—fere $\frac{3}{8}$
Species *C. trisignatæ* Dej. affinitate proxima. *Caput* cupreo-æneum rugis striatum, labro albo palpisque testaceis articulo ultimo viridi. *Antennæ* nigræ basi cupreæ stipite aureo. *Thorax* cupreo-æneus canaliculatus lineis duobus transversis, lateribus pilosulis. *Elytra* subpunctata punctis vix elevatis strigâ mediâ incumbente et clavâ fere separatâ. *Corpus* subtus viridiæneum, lateribus pilis albis hirsutis. *Pedes* viridiænei albo-hirsutuli, femoribus cupreis.

Fam. 2. CARABIDÆ.

The collection does not contain any insect very near the type of this family, the character *per excellentiam* of which, is to have the maxillæ without any articulated unguis at the apex, and the anterior tibiæ without any emargination on their inner side. In receding from the genus *Carabus*, which is the type of the groupe, and advancing to meet the *Harpalidæ*, the first appearance of the tibial emargination may be traced at the apex by an oblique linear canal in some insects, which nevertheless truly belong to the family. This canal, however, in some cases, does not advance so far as the anterior face of the tibia.

When irritated, this family of insects possesses, in a remarkable degree, the property of spirting out from the anus an exceedingly acrid and volatile fluid.

Genus. PANAGÆUS Fab.

15. *Cereus. P. niger clypeo glabro, occipite thoraceque profunde punctatis, elytris striis punctatis maculisque duabus undatis melleis: anticâ latiori marginali.*
♀ Long corp. $\frac{1}{2}$ +
Caput punctis scabriusculum clypeo labroque glabris. *Thorax* suborbicularis punctis profundis scabriusculis. *Scutellum* minimum triangulare. *Elytra* striis decem impressis punctatis, scutellari brevissimâ;

simâ ; maculisque duabus cereo-flavis, anticâ subhumerali a quintâ striâ ad marginem et posticâ versus apicem a quintâ striâ ad nonam undulatis. *Corpus* subtus atronitidum. *Pedes* nigri.

Subgenus LISSAUCHENIUS Nobis. *Panagæus* Wiedemann? *Carabus* Fab.

Labrum transversum antice haud emarginatum.
Mandibulæ acutæ, sinistrâ majore.
Palpi maxillares elongati articulo quarto obconico apice truncato.
Palpi labiales articulo ultimo magno securiformi.
Mentum dente sinûs simplice.
Subgenus *Panagæo* certe affine. *Collum* distinctum. *Os* acutum. *Thorax* canaliculatus marginatus nitidus subquadratus utrinque rotundatus antice posticeque angulatus. *Corpus* alatum. *Tarsi* maris antici articulis tribus dilatatis.

Obs. This genus differs from *Panagæus* in having the labrum not emarginate, the last joint of the maxillary palpi not triangular, the middle tooth of the mentum simple and the thorax neither suborbiculate or entire, and scarcely wider than the head. The antennæ are mutilated in the only specimen of the genus which Dr. Horsfield has brought to England.

16. *Rufifemoratus. L. ater capite thoraceque viridiæneis, elytris sulcatis punctatis maculâ posticâ flavâ.*

♂ Long. corp. $\frac{1}{16}$

Caput læve labro palpis antennisque nigris, his basi subpiceis. *Thorax* punctatus ovatus anticé posticéque truncatus lateribus marginatis. *Elytra* convexiuscula atronitida striâ primâ ad scutellum brevissimâ. *Corpus* subtus nigrum. *Pedes* nigri femoribus rufis.

Obs. This insect comes very near to the description of *Carabus posticus* in Fabricius, the only difference being that the latter insect has the "*thorax lævis*" and the "*pedes fulvi.*" The *Panagæus chalcocephalus* of Wiedemann, which is also a Javanese insect, may possibly belong to the same subgenus.

Fam. 3. HARPALIDÆ.

We know comparatively so little of the exotic species of this most numerous family, that it is impossible for me at present to give its natural distribution with any degree of certainty. This is, indeed, my only apology for the want of regularity, which the Entomologist cannot fail to discover in the order of the following genera, which, moreover, I am quite unable to distinguish from the subgenera. The inability to separate genera from subgenera, is the unavoidable consequence of not knowing the natural distribution of the family.

Genus CHLÆNIUS Bon.

17. *Cinctus. C. capite thoraceque subæneis elytris atroviridibus : margine testaceo pedibus testaceis corpore nigro.*
C. Cinctus Fab. Ent. Syst. 1. p. 138.—61.
C. Xanthocrus Wiedemann, Zoologisches Magazin. Band. 2. st. 1. p. 68.

♀ Long. corp. vix $\frac{5}{8}$

Caput vix thorace angustius cupreum læviusculum, facie viridiæneâ, labro testaceo, mandibulisque piceis. *Antennæ* testaceæ. *Palpi* testacei articulo ultimo haud truncato. *Thorax* marginatus punctulatus.

Elytra

Elytra striata striâ primâ ad scutellum brevissimâ. *Corpus* subtus atronitidum abdominis margine testaceo.

Obs. This appears to be the *Carabus cinctus* of Fabricius, but is not the *Carabus cinctus* of Olivier, which is European, and has had a new specific name given to it by Duftschmidt. The true *C. cinctus* above described seems to be found throughout India, for there is not sufficient difference in Wiedemann's description of his *C. Xanthocrus* to separate it from our insect.

18. *Apicalis. C. niger capitis thoracisque lateribus cupreis, elytris obscuro-nigris maculâ apicali pedibusque flavis.*

Long. corp. fere $\frac{11}{16}$

Caput thorace paulo augustius labro palpis antennisque piceis. *Thorax* marginatus posticè punctatus. *Elytra* striatâ striâ primâ ad scutellum brevissimâ.

19. *Quadricolor. C. niger capite thoraceque cupreis, elytris obscuris ore antennis pedibusque rufis.*

Carabus 4-color. Fab. Syst. Eleuth. vol. 1. p. 180.

———— Oliv. Ins. 35. tab. 10. fig. 111.

♂ Long. corp. $\frac{5}{8}$

Obs. The only difference that appears between the unique specimen in Dr. Horsfield's collection, and the description of Fabricius is, that the latter's insect has the head and thorax viridiæneous instead of cupreous. From his *C. tenui-collis*, our insect differs in having a rounded, instead of a narrow thorax.

20. *Micans. C. elytris auro micantibus, apice maculâ testaceâ, pedibus rufis.*

Carabus micans Fab. Ent. Syst. 1. 151. 115.

Carabus analis Oliv. Ins. 35 t. 10. fig. 115.

♂ Long. corp. $\frac{1}{16}$

Obs. Although Olivier gives Senegal as the habitat of his *C. analis*, it nevertheless seems to be the same with the *C. micans* of Fabricius and our insect. If Olivier's species should prove different, it is, at least, clear that he has not sufficiently characterized it.

21. *Flaviguttatus. C. capite thoraceque viridiæneis elytris obscuro-nigris striis quartâ quintâque ante maculam transversam interruptis.*

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

Caput viridiæneum labro mandibulisque nigris, palpis antennisque nigro-piceis his basi illis apice testaceis. *Thorax* subquadratus marginatus lateribus convexis punctatus subcupreus margine viridiæneo. *Elytra* atra obscura punctulata striata striâ primâ ad scutellum brevissimâ, quartâ et quintâ medio-interruptis et ante maculam posticam marginalem subcruciatam flavam confluentibus. *Corpus* subtus atro-nitidum. *Pedes* femoribus flavis geniculis tibiisque nigris, tarsis piceis.

Genus CATASCOPUS—Kirby.

Antennæ articulis secundo et tertio fere æqualibus.

Labrum oblongo-quadratum arcuatum, anticè angustius et profunde emarginatum, lobis rotundatis singulo setis tribus instructo.

Mandibulæ edentulæ acutæ crassæ breves incurvæ.

Palpi

Palpi breves crassi articulo ultimo ovato apice subtruncato.

Labium obconicum convexum setis terminalibus instructum. *Paraglossæ* labio duplo longiores magnæ rotundatæ.

Mentum dente medio vix conspicuo.

Caput haud thorace latius. *Thorax* convexiusculus truncatus obcordatus anticé latior lateribus sinuatis. *Elytra* margine postico unidentato convexiuscula lateribus parallelis.

Obs. Mr. Kirby has published so excellent a description of this genus in the 14th vol. of the Linnean Transactions, that the above generic character may appear superfluous; and, indeed, it is only here given for the purpose of comparing the species more readily with the following genus *Pericalus*, to which they approach very near in affinity. Both genera have their elytra præmorso-truncate at the posterior margin.

22. Elegans. *C. viridiaureus labro mandibulis palpis antennis pedibusque nigris, elytris sulcato-striatis striis lateralibus punctatis latere aureo.*

C. elegans. Fab. Syst. Eleuth. 1. p. 184. 76.

Elaphrus elegans Weber Obs. Ent. p. 45.

Tachys elegans Schön. Syn. Ins. 1. p. 221.

Long. corp. $\frac{5}{8}$

Caput pone oculos nigros punctatum collo lævi. *Thorax* lineâ anticâ transversâ curvâ aliâque mediâ longitudinali fossulâque utrinque posticâ impressus. *Scutellum* nigrum. *Elytra* marginata lateribus aureis striâ scutellari brevissimâ. *Corpus* subtus atronitidum.

Obs. Fabricius takes no notice of the emargination at the apex of the elytra, which is a character of the genus. The *Carabus elegans* of Olivier belongs to quite another genus.

23. Quadrimaculatus. *C. viridiaureus labro palpis antennisque piceis, pedibus rufis, elytris striatis; maculis duabus flavis.*

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

Obs. This last species differs in several important respects from *Catascopus elegans*, which comes nearer to the species described by Mr. Kirby, and named by him *C. Hardwickii*. The *Carabus splendidulus* of Fabricius, also belongs to the genus which thus contains four described species.

Subgenus PERICALUS Nobis.

Antennæ articulo tertio elongato.

Labrum oblongum distinctum antice emarginatum.

Mandibulæ porrectæ subparallelæ.

Palpi mandibulis vix longiores tenues cylindrici.

Mentum bidentatum medio plano truncato.

Caput thorace latius collo distincto. *Oculi* globosi valde prominuli. *Thorax* depressiusculus obcordatus profundé canaliculatus, antice emarginatus angulis subporrectis acutis, antice latior lateribus sinuatis subreflexis. *Elytra* marginata postice unidentata. *Abdomen* depressiusculum antice angustius.

Obs.

Obs. This genus is in some respect or other connected with *Sphodrus*, as may be seen on examining the elongate mandibulæ, cylindrical palpi, long third joint of the antennæ, and obcordate form of the thorax. The specimen in the collection of the East India Company being unique, I am unable to give more than external characters.

24. *Cicindeloides. P. cyaneus facie labro pedibusque nigris antennis piceis elytris striatis.*

Long. corp. fere $\frac{7}{16}$

Caput pone oculos rugis striatum collo glaberrimo. *Mandibulæ* nigræ. *Palpi* ferruginei. *Antennæ* apice pubescentes. *Thorax* lateribus rugosulis, lineâ posticâ transversâ impressus. *Elytra* fere sulcata sulco scutellari brevissimo et ad apicem pilis paucis raris longis instructa. *Corpus* subtus atronitidum. *Pedes* trochantere ferrugineo.

Genus REMBUS Lat.

Obs. The synopsis of the family of *Carabiques* given in the work of MM. Latreille and Dejean, ought to be consulted for the characters of this genus. It is, however, easily to be known by the deep semicircular emargination of its short transverse labrum. It seems to come near both to *Licinus* and *Badister;* from the former it differs in having the three tarsi of the anterior feet less dilated in the males, and from the latter in the labrum, mentum, and palpi.

25. *Politus. R. ater nitidus labro antennarumque articulis basalibus nigro-piceis; his apice pubescentibus pallidioribus.*

Carabus politus Fab. Syst. Eleuth. vol. 1. p. 189.

Carabus indicus Herbst. Arch. p. 163. n. 21. p. 29. fig. 11.

♂ Long. corp. $\frac{5}{8}$ +

Obs. The specific character given to this insect by Fabricius is so vague, that I have deemed it necessary to make a new one as above.

Subgenus DIROTUS Nobis.

Antennæ versus apicem pubescentes, stipite minimo globoso, articulo primo obconico crassiore tertio æquali sed secundo duplo longiore, articulis ultimis æqualibus filiformibus apicali subulato.

Labrum quadratum, antice sex setis ciliatum, vix emarginatum, angulis subacutis.

Mandibulæ acutissimæ porrectæ attenuatæ apice arcuatæ basi vix unidentatæ.

Maxillæ longæ tenues falciformes compressæ, latere interno spinis brevibus acutis armato, angulo basali setis armato; processu dorsali articulo basali longo tenuissimo, secundo præcedente fere triplo breviore cylindrico.

Palpi maxillares articulo stipitali minimo, secundo crasso subovato, tertio tenuissimo vix obconico præcedentibus simul sumptis longiore, ultimo subconico breviore.

Palpi labiales articulo primo crasso subcylindrico brevi, secundo brevissimo globoso, tertio præcedentibus simul sumptis fere duplo longiore tenui obconico, ultimo subobconico breviore apice obtuso.

Labium subquadratum apice truncato setis duabus terminalibus. Paraglossa utrinque membranacea

membranacea, tenuis, cylindrica vel potius subulata, labio multo longiore.
Mentum tridentatum dente sinus simplice.
Thorax longior quam latior, convexus, marginatus, medio canaliculatus.

Obs. This subgenus has the habit of *Dolichus*, from which it is not far in affinity.

26. *Subiridescens. D. atronitidus palpis antennis tarsisque piceo-rufis, thorace brevissimo, elytris striatis atro-iridescentibus.*

Long. corp. $\frac{3}{8}$ +

Caput totum lævissimum. *Elytra* striâ primâ ad scutellum brevissimâ, sculpturâ marginali irregulari. *Corpus* subtus atronitidum pedibus nigris.

Subgenus COLPODES Nobis.

Antennæ articulo tertio elongato seu duorum primorum simul sumptorum longitudine; articulis tribus primis nitidis, reliquis pubescentibus.
Labrum transversum quadratum integrum.
Mandibulæ elongatæ trigonæ, apice acutæ incurvæ.
Palpi maxillares articulo tertio tenui obconico, quarto æquali cylindrico-ovali vix truncato.
Mentum sinu simplice.
Caput fere longitudine thoracis. *Thorax* obcordatus, antice emarginatus, postice truncatus, lateribus rotundatis haud sinuatis, marginibus subreflexis. *Corpus* convexiusculum elytris striatis posticè sub-emarginatis. *Pedes* antici ♂ tarsorum articulis omnibus dilatatis, penultimo bilobato lobo anteriore majore.

Obs. This subgenus has some connexion with the genera *Sphodrus* and *Anchomenus;* from the former it may easily be distinguished by its thorax; and from the latter by its antennæ. The posterior sinuation of the elytra seems to indicate a relation to *Catascopus*.

27. *Brunneus. C. atrobrunneus concolor nitidus ore ferrugineo, antennis apice rubris, geniculis tarsisque piceis.*

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

Caput læve facie mediâ elevatâ lateribusque rugosulis. *Antennæ* articulis ultimis octo rubris pubescentibus apice ciliatis. *Thorax* lineâ anticâ transversâ, mediâ longitudinali, fossulâque utrinque posticâ impressus. *Elytra* striâ suturali brevissimâ.

Subgenus OMASEUS Zieg.

Obs. The following species differs from the type of the subgenus which, according to German catalogues, is the *Carabus melanarius* of Illiger, or *C. leucophthalmus* of Fabricius, in having the last joint of the maxillary palpi securiform. I do not, however, think it necessary to separate it generically from that insect.

28. *Viridicollis. O. niger capite viridi: clypeo oreque nigris, thorace viridi: margine nigro, elytris atropurpureis*

♂ Long. corp. 1 $\frac{1}{8}$

Subgenus CATADROMUS Nobis.

Antennæ setaceæ articulis septem ultimis pubescentibus, articulo tertio præcedentibus simul sumptis breviore.

Labrum breve, latum, transversum, antice subemarginatum, medio quatuor setis instructo, angulis rotundatis.

Mandibulæ validissimæ capite paulo breviores, subtrigonæ, extus convexæ intus concavæ, basi unidentatæ, apice acutissimæ incurvæ.

Maxillæ subtrigonæ intus setis ciliatæ, apice ungue acuto armato; processus dorsalis articulo basilari obconico, apicali subcylindrico incurvo vix subulato.

Palpi maxillares articulo stipitali brevissimo ovato, secundo et tertio æqualibus hoc obconico illo incurvo subcylindrico apice subcrassiore, articulo quarto vel apicali breviore obconico apice obtuso.

Palpi labiales quasi mento affixi, stipite minimo tuberculiformi, articulis primo subobconico et secundo subgloboso quasi articulum unum albo-annulatum versus apicem constrictum formantibus, articulo tertio obconico intus setis duabus instructo, articulo ultimo breviore setâ unâ instructo, obconico, apice obtuso.

Labium stipite occulto, obconicum lateribus subsinuatis, margine antico emarginato, angulis setis duabus terminalibus instructis. *Paraglossæ* vix labii longitudine, utrinque distinctæ, membranaceæ, tenues, subclavatæ, apice obtusæ.

Mentum tridentatum dente sinus simplice acuto.

Elytra apice sinuata vel potius emarginata. ♂ *Tarsi* anteriores articulis tribus dilatatis.

Obs. This subgenus differs from *Omaseus* in having the elytra emarginate at the apex and the middle tooth of the mentum simple instead of emarginate. It approaches also to *Platysma nigra* in affinity, and has some relation to *Cephalotes* Bon. (*Broscus* Panz); but this is much less remarkable than the former affinity.

29. *Tenebrioides. C. atronitidus viridi-marginatus elytris sulcatis : sulco a suturâ secundo bipunctato margineque viridi-punctato.*

Carabus tenebrioides. Oliv. Ins. N°. 35, p. 17. 8.

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

Obs. This insect, of which a wretched figure is given by Olivier, is the largest and handsomest of the Javanese *Adephaga*. A piceous variety in my father's collection is the very specimen from which Olivier took his description and figure. Its identity, therefore, with the above species is completely ascertained, and its nigropiceous colour in all probability merely results from its having been a young insect when taken.

Genus DICÆLINDUS Nobis.

Antennæ setaceæ thorace longiores articulis primo et tertio æqualibus, ultimis octo pubescentibus.

Labrum transversum quadratum.

Mandibulæ

Mandibulæ ut in *Dicælo*.

Palpi maxillares articulo penultimo et ultimo æqualibus, hoc cylindrico ovali.

Mentum dente sinus bifido.

Thorax transverso-quadratus lateribus rotundatis marginatis, antice emarginatus, postice truncatus, medio canaliculatus, fossulâ lineari utrinque postice impressus.

Corpus valde depressum elytris striâtis. *Pedes* antici maris tarsorum articulis duobus dilatatis.

Obs. The affinities of this genus would be very difficult to discover were it not for a Brazil insect, which I believe forms M. Latreille's genus *Microcephalus*,* and which clearly connects it with *Dicælus*. This Brazilian insect has the subquadrate mentum of *Dicælindus*, and the securiform palpi of *Dicælus*. It may also be worth while to compare our insect with *Amara* and *Dinodes*.

30. *Felspaticus*. *D. nigro-iridescens lævissimus labro antennis tarsisque piceis, elytris septemstriatis : margine exarato postice subcatenulato.*

Long. corp. $\frac{1}{10}$

Caput atronitidum, postice subiridescens, facie bifossulatâ, labro quadrato piceo. *Antennæ* articulis basalibus nitidis piceis, reliquis pubescentibus rufis. *Thorax* politissimus iridescens. *Scutellum* minutissimum. *Elytra* sicut Felspath politissima. *Abdomen* subiridescens. *Pedes* nigri tarsis ferrugineis.

* In protesting against the slovenly mode lately adopted by some continental naturalists, of publishing generic names without defining the genera to which they are applied, I must express my regret at seeing it now resorted to by those who have most powerfully appealed against it. Because they are themselves well acquainted with the insects to which they assign certain names, they fancy that others must also know them, forgetting that the general adoption of the name must always depend on the accurate definition of the relation which exists between it and the insect. At least I hope, that it is this species of oversight which alone occasions the grievous inconveniences of which Entomology has to complain; for I can scarcely suppose that naturalists, to whom the science owes so much in other respects, would condescend to confuse it, or thwart its progress for the mere sake of securing, by a doubtful priority, so trifling an advantage as a generic name, and so miserable a fame as must depend upon such priority. Certain it is, however, that inextricable confusion must arise from this course of proceeding, unless it be now at once firmly resisted; and unless Entomologists resolve to abide by the maxims laid down on this subject by Linnæus and Fabricius. Proceeding on the principles laid down by these great authorities, who have both declared characters absolutely necessary, in order that genera may be known, I am sure that the reader will consider me justified in considering no name as secure, unless it be accompanied with a character. In these pages all names of mere catalogues, whether generic or specific, shall be as much overlooked as if they never had existed. In some few cases, perhaps where the names like *Rembus*, *Omaseus*, are assigned to described insects, and the meaning of the author is thus, in some measure, ascertained, I may *choose* not to increase the confusion by refusing to adopt them, although M. Latreille has most truly said, that even such names without characters, "*ne sont que de simples indications et n'imposent aucune loi.*"

I ought here to observe, on my own part, that it may possibly be found that M. Wiedemann has published in the pages of his *Zoologisches Magazin*, some few of the species here described; and of course, his names in such cases must be adopted as having the right of priority. Although I have long been in expectation of receiving the work complete, I unfortunately, at present, only possess some loose sheets of it, which I owe to the kindness of Dr. Escholtz. In every instance, however, where I could obtain M. Wiedemann's names, I have carefully adopted them, for his descriptions are not only detailed, but very accurate.

Genus TRECHUS Clairv.

31. *Convexus. T. atronitidus pedibus antennisque piceis, his ad basin palpisque pallidioribus, elytris substriatis.*

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

Insectum Cephalotis habitu parvulum alatum vix huic generi associandum. *Caput* nigronitidum latitudine thoracis. *Antennæ* articulis subæqualibus primo duobus sequentibus simul sumptis breviore, articulis quatuor ultimis crassioribus, apicali longiore ovato. *Palpi* maxillares articulo ultimo subulato cum tertio breviore quasi articulum unum fusiformem formante. *Thorax* convexus marginatus obcordato-truncatus, basi angustior, latior quam longus, medio vix canaliculato. *Elytra* striis sub lente distinctis, primâ ad scutellum brevissimâ.

Obs. Although I have assigned this little insect to the genus *Trechus*, I am aware that it differs from it in many respects. The only specimen however in the collection is so mutilated, that I cannot venture to found a subgenus upon it, and therefore present as full a description of it as its being pasted down on paper will permit me to make. It agrees with the characters of *Trechus* given in the *Règne Animal* of M. Cuvier; but these have been too vaguely drawn up to enable a beginner to form a correct idea of the genus.

Subgenus GNATHAPHANUS Nobis.

Antennæ articulis fere æqualibus secundo breviori.

Labrum transverso-quadratum, angulis anticis rotundatis.

Mandibulæ sub clypeo fere occultæ; sinistrâ ad basin solum apparente.

Palpi maxillares articulo ultimo subsubulato, tertio obconico breviori.

Palpi labiales articulo ultimo præcedente breviore, subulato, acuto.

Mentum breve, transversum, dente sinus minimo simplice.

Caput transverso-quadratum, latius quam longum, antice truncatum facie brevissimâ. *Thorax* ut in *Harpalo*, sed fossulâ lineari brevi utrinque postice impressus. *Corpus* oblongum. *Elytra* striis irregularibus punctisque discalibus, apice emarginata vel excisa.

Obs. To this subgenus the *Harpalus Thunbergi*, of Schönherr appears to belong. It differs, however, from the following species, in being pubescent.

32. *Vulneripennis. G. ater, elytris decem-striatis: striâ secundâ brevi spatioque inter strias tertiam et quartam septem punctato.*

Long. corp. $\frac{1}{16}$ +

Insectum nitidiusculum. *Caput* lineâ transversâ anticâ utrinque fossulatâ. *Palpi* articulo ultimo piceo. *Antennæ* obscuræ pubescentes. *Thorax* lateribus posticeque marginatus, medio canaliculatus. *Scutellum* inconspicuum. *Elytra* marginata striâ secundâ cum primâ ad scutellum confluente; striis quartâ et quintâ, sextâ et septimâ apice confluentibus, spatio inter septimam et octavam bi-vel-tri-punctato, illoque inter decimam et striam marginalem punctato scabroso. *Pedes* nigri.

Genus HARPALUS Lat.

33. *Punctilabris. H. niger antennis apice rufo-pubescentibus, labri limbo antico brunneo sexpunctato, facie transversè-lineatâ.*

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

Caput

Caput lineâ transversâ angulis deflexis. *Thorax* lævissimus marginatus margine subrugosulo, lineâ mediâ longitudinali, fossulâque utrinque postice inconspicuâ. *Elytra* striata striâ secundâ ad scutellum brevi.

Obs. The following description of an insect unique in the collection is taken from so mutilated a specimen, that although I am almost sure it is not a true *Harpalus*, I cannot venture to assign it to any other subgenus. Although it has a punctured thorax the habit is rather that of *Gnathaphanus* than of *Ophonus* Dej.

34. *Punctulatus. H. niger, totus subtilissime punctulatus, elytris pubescentibus striatis, pedibus flavis tarsisque piceis.*

Long. corp. $\frac{5}{16}$

Caput labro transverso quadrato subemarginato.

Subgenus AMARA Bon.

35. *Tricolor. A. nigra elytris æneis, labro nigro, palpis antennis pedibusque ferrugineis.*

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

Caput lineâ faciali transversâ utrinque fossulatâ. *Thorax* convexus, marginatus, lævissimus, vix canaliculatus sed fossulâ postice utrinque impressus. *Elytra* striata striâ secundâ ad scutellum inconspicuâ. *Corpus* subtus nigrum.

36. *Subolivacea. A. nigronitida labro femoribusque piceis, antennis pedibusque ferrugineis, elytris æneo-olivaceis viridibus vix nigris.*

Long. corp. $\frac{5}{16}$ +

Caput nigronitidum latum transversum labro semicirculari. *Thorax* planus, lateribus posticeque marginatus, vix postice utrinque impressus. *Elytra* striata margine punctato, striâ secundâ brevi tertiaque versus apicem punctis aliquot raris.

37. *Subænea. A. nigronitida labro piceo, antennis basi pedibusque rufis, thorace postice utrinque impresso, elytris nigro-æneis.*

Long. corp. vix. $\frac{5}{16}$

Præcedente paulo minor differt antennis basi solum rufis, thorace sulcis tribus posticé distinctis, femoribus nigris elytrisque haud viridibus.

Subgenus DIORYCHE Nobis.

Antennæ lineares, pubescentes, articulo tertio duobus præcedentibus s.s. breviore.
Labrum transverso-quadratum angulis rotundatis.
Mandibulæ breves.
Palpi maxillares articulo quarto subulato, precedente obconico breviore.
Palpi labiales articulo ultimo acuto sub-subulato.
Mentum sinu simplice angusto.
Caput facie emarginatâ. *Thorax* latus; punctatus, marginatus, canaliculatus, obcordato-quadratus, antice emarginatus. *Elytra* striata, apice sinuata vix emarginata.

38. *Torta. D. atronitida antennis ferrugineis, pedibus flavis, elytris nigro-æneis : striis tertiâ sextâque punctatis.*

Long. corp. $\frac{1}{4}$ +

Caput

Caput labro piceo palpisque ferrugineis. *Thorax* posticé creberrime punctatus. *Elytra* striâ secundâ ad scutellum brevi, spatio inter strias tertiam et quartam, quintam et sextam punctato. *Coxæ* ferrugineæ.

Obs. The *Carabus flavilabris* of Fabricius perhaps comes near to this insect, if not to the subgenus *Colpodes*.

Subgenus HYPHÆREON Nobis.

Antennæ pilosulæ vel pubescentes articulo tertio secundo duplo longiore.
Labrum quadratum.
Mandibulæ longiusculæ acutæ.
Palpi maxillares articulo ultimo elongato tenui obconico.
Palpi labiales articulo ultimo breviori subulato.
Mentum dente sinus simplice parvo acuto.
Caput oblongum glabrum, facie lateribus subparallelis utrinque fossulatis. *Thorax* lævis, nitidus, canaliculatus, subquadratus, lateribus rotundatis, antice marginatus, marginibus lateralibus subpunctatis subreflexis, posticoque subpunctato, fossulâ utrinque vix conspicuâ. *Elytra* striâ secundâ ad suturam brevi.

39. Reflexus. *H. atronitidus antennis oreque piceis, pedibus obscuris; femoribus testaceis, thorace postice punctis scabroso.*

Long. corp. $\frac{3}{4}$ +

Caput mandibulis nigris palpisque rufis. *Antennæ* obscuro-piceæ apice pallidiores. *Elytra* striis profundis. Corpus subtus atronitidum, ano obscuro.

Subgenus HYPHARPAX Nobis.

Antennæ longitudine thoracis, apice crassiores, pubescentes, articulis secundo et tertio æqualibus.
Labrum quadratum.
Mandibulæ longiusculæ acutæ.
Palpi maxillares articulo ultimo elongato, tenui, obconico.
Palpi labiales articulo ultimo breviori subulato.
Mentum tridentatum.
Caput triangulare inter oculos bifossulatum glabrum. *Thorax* brevis, convexiusculus, lævissimus, transverso-quadratus lateribus rotundatis; lineâ mediâ longitudinali haud marginem anticum attingente fossulâque posticâ utrinque lineari. *Elytra* striata striis æqualibus.

40. Lateralis. *H. atronitidus ore antennis pedibusque ferrugineis, elytris striis lateralibus creberrime punctulatis apiceque ferrugineo.*

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

Caput atronitidum labro piceo, palpis ferrugineis. *Thorax* postice trilineatus.

Genus ANAULACUS Nobis.

Antennæ moniliformes, crassæ, vix capite longiores, articulis secundo et tertio fere æqualibus.
Labrum breve, latum, transverso-quadratum, angulis obtusis, antice vix emarginatum.
Mandibulæ latæ trigonæ latere externo incurvo.

Palpi

Palpi maxillares articulo ultimo brevi cylindrico apice vix tenuiore.
Paraglossæ distinctæ tenues cylindricæ membranaceæ.
Mentum trilobum.
Caput triangulare lævissimum inter oculos haud bifossulatum. *Thorax* duplo latior quam longus, antice emarginatus, postice vix convexus, lævissimus canaliculatus. *Corpus* totum depressiusculum latum abdomine sessili. *Scutellum* indistinctum. *Elytra* submarginata. *Pedes* quatuor postici spinosuli.

41. SERICIPENNIS. *A. atronitidus ore antennis pedibusque ferrugineis, elytris lævissimis nigrosericeis: maculis duabus rufis.*

Long. corp. fere $\frac{1}{4}$

Caput atronitidum labro piceo, mandibulis palpisque ferrugineis. *Thorax* atronitidus lateribus pilis paucis ciliatis. *Elytra* atra sericea maculâ sagittiformi rufâ ad humeros alterâque securiformi ad apicem. *Corpus* subtus atronitidum.

OBS. This is one of those singular and apparently anomalous forms which occur not unfrequently among the *Harpalidæ*.

Subgenus ÆPHNIDIUS Nobis.

Antennæ capite duplo longiores, apice crassiores pubescentes moniliformes, articulo secundo et tertio æqualibus.
Labrum transverso-quadratum, antice vix emarginatum.
Mandibulæ latæ trigonæ latere externo incurvo.
Palpi maxillares articulo ultimo elongato tenuiore subsubulato.
Menti sinus simplex.
Caput triangulare lævissimum, inter oculos haud bifossulatum. *Thorax* marginatus, duplo latior quam longus, antice emarginatus, fere sinuatus, postice lobatus lævissimus canaliculatus utrinque postice vix fossulatus. *Corpus* totum depressiusculum oblongum abdomine pediculato. *Elytra* submarginata striata striâ prima scutellari brevi indistinctâ. *Pedes* quatuor postici spinosuli.

42. ADELIOIDES. *Æ. atronitidus labro pedibusque nigro-piceis, antennis palpisque ferrugineis, elytris holosericeis atris.*

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

Subgenus CÆLOSTOMUS Nobis.

Antennæ articulis ultimis novem pubescentibus, subæqualibus, secundo breviore.
Labrum tranversum, ad basin latius, margine antico pubescente emarginato sex setis distinctis, lobis rotundatis.
Mandibulæ subinæquales crassæ arcuatæ, apice obtusæ, crenatæ, sub labro latentes.
Palpi brevissimi; *maxillares* articulo ultimo longo subulato acuto.
Labium minimum, paraglossis fere duplo longioribus laminam membranaceam subquadratam, antice bilobatam, basi augustiorem formantibus.
Mentum in ore concavo deflexum, dente sinus minimo acuto vix conspicuo.

Caput

Caput lævissimum facie subemarginatâ. *Thorax* circuli segmentum majus formans, marginatus, convexus haud canaliculatus, suborbicularis, margine antico truncato lineâque transversâ impresso. *Elytra* apice subsinuata, striata, striâ primâ ad scutellum brevissimâ.

Obs. The affinity of this subgenus seems to be towards *Licinus* and *Badister*.

43. *Picipes. C. atronitidus antennis obscuris : articulis duobus primis pallidioribus, pedibus pallido-piceis, elytris apice subpiceis.*

Long. corp. vix $\frac{1}{4}$

Caput lævissimum labro nigro, mandibulis corporeque subtus nigropiceis.

Fam. 4. SCARITIDÆ.

The typical character of this family, which appears more numerous in the new world than in the old, consists in the broken antennæ, the pedunculated abdomen, the semilunar thorax, and digitated anterior feet.

MM. Latreille and Dejean, in their late work, *Coleoptères d'Europe*, seem to regard the *Scaritidæ* as animals not carnivorous. But against this opinion, so contrary to what might have been judged from analogy, we have the authority of two accurate observers, MM. Olivier and Lefebre de Cerisy. The latter naturalist, who, from his residence at Toulon, possesses many facilities for studying their economy, has made some most interesting observations on the Genus *Scarites*, and particularly the *S. Gigas* of Olivier. He finds them to be nocturnal insects of prey. During the day, they lurk almost without motion in the holes which they dig in the earth, but at night they sally out and prey on the various *Melolonthidæ*, &c. which may happen to fall in their way.

The only three species of the family which Dr. Horsfield found in Java belong all to the typical part of it.

Genus CLIVINA Lat.

44. *Sabulosa. C. nigro-brunnea capite lineâ anticâ transversali : vertice haud impresso, elytrorum striis fere crenatis.*

Long. corp. $\frac{1}{4}$ +

Insectum *Clivinâ arenariâ* Lat. angustius, corpore minus convexo. *Caput* frontis medio haud puncto impresso. *Thorax* lateribus truncatis vel saltem quam in *C. Arenaria* haud tam convexis.

Genus SCARITES Fab.

45. *Semicircularis. S. mandibulis canaliculatis, thorace postice rotundato, elytris punctato-striatis : striâ tertiâ unipunctatâ.*

An *Scarites punctum*, Wiedemann, Zool. Mag. Band 2. *s.* 1. *p.* 38 ?

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

Insectum totum atronitidum. *Caput* vix bisulcatum sed lateribus striatis. *Thorax* lævissimus, marginatus, canali medio lineam anticam transversalem impressam attingente haud ultra progrediente. *Elytra* marginata striis punctatis impressis punctoque striæ a suturâ tertiæ versus apicem impresso.

Obs.

Obs. This species, if not a variety of a Bengal insect described by Wiedemann under the name of *S. punctum*, comes exceedingly near it.

46. *Indus. S. mandibulis substriatis, thoracc postice subtruncato, elytris lineato-striatis striâ tertiâ bipunctatâ.*
Scarites indus Oliv. Ins. 2. no. 36. tab. 1. fig. 2.

Long. corp. $\frac{11}{16}$

Insectum *S. subterraneo* Fab. affine, totum nigronitidum. *Caput* sulcis duobus rugosulis impressum. *Thorax* lævissimus marginatus, canali medio lineam anticam transversalem impressam attingente haud ultra progrediente. *Elytra* marginata striis impressis; striâ a suturâ tertiâ punctis duobus mediis hoc apicem versus illo basin versus impressâ.

Obs. This species was confounded by Fabricius with his *S. subterraneus*, an American insect, which would have been an *Attelabus* with Degeer.

Fam. 5. BRACHINIDÆ.

In this family, as well as in the last, we have rarely, if ever, that dilatation of the tarsal joints, which often marks in so extraordinary a manner the difference of sex among the *Harpalidæ* and *Carabidæ*.

The typical insects of the family are gregarious, and well known for the detonating mode of defence which they employ against their enemies. This curious property results from the rapid volatilization when exposed to the air of an acrid liquid analogous to that which we have already noticed in the *Carabidæ*, but which in the *Carabidæ* retains its liquid state on being ejected from the anus. The construction of the two sacs which secrete this fluid is explained by Cuvier in the *Règne Animal*.

Each of the three first insects to be described in this family might have been assigned to new subgenera, as they do not accurately coincide with Bonelli's characters for the genera *Dromius*, *Lamprias* and *Lebia*; but as their place in the system is visible at first sight, I have judged it unnecessary to multiply subgeneric names.

Genus DROMIUS Bon.

47. *Tetraspilotus. D. nitidus, capite nigro, thorace nigropiceo, elytris atris striatis: maculis duabus flavis.*

Long. corp. vix $\frac{5}{16}$

Caput nigrum labro oblongo quadrato antennis palpisque piceis. *Thorax* obcordatus latior quam longus depressiusculus canaliculatus lateribus subreflexis. *Elytra* maculis duabus hac basali illâ posticali. *Corpus* subtus *pedesque* picei.

Obs. This species has the middle tooth of the mentum indistinct, and thus to a certain degree leaves *Dromius*. *Carabus notulatus*, of Fabricius, appears to come near to our insect, which, with the following species, has the elytra very little truncated, if at all.

Genus LAMPRIAS Bon.

48. *Ruficeps. L. rufa nitida, elytris cyaneis striatis medio depressiusculis: striis profundioribus, oculis geniculisque nigris.*

Long. corp. $\frac{5}{16}$

Obs. This species appears to be more common on the continent of India than in Java.

Genus LEBIA Lat.

49. *Splendidula. L. rufa, oculis albis, thorace marginato, elytris striatis viridiæneo-marginatis apice truncatis.*

An *Lebia marginalis*, Wiedemann Zool. Mag. Band. 2. s. 1. p. 60?

Long. corp. $\frac{2}{10}$

Insectum omnino splendidulum corpore subangusto. *Caput* rufum clypeo inter antennas fossulato, labro magno quadrato, mandibulis latis inermibus apice acutis. *Mentum* lobis latis sed maxillarum basin haud tegentibus. *Antennæ* articulo tertio brevissimo. *Thorax* truncato-obcordatus rufus medio canaliculato. *Scutellum* inconspicuum rufum. *Elytra* abbreviata abrupté truncata pulcherrima. *Corpus* subtus nitidissimum rufum. *Pedes* rufi.

Obs. This species comes so near to a Bengal insect described by Wiedemann as *L. marginalis*, that I must leave the separation of them to the entomologist who may have it in his power to examine both.

Subgenus ORTHOGONIUS Dej.

Antennæ breves crassiusculæ.

Labrum transverso-quadratum, antice emarginatum lobis rotundatis, singulo setis tribus antice instructo.

Mandibulæ inæquales, subtrigonæ, latæ, superne convexæ, angulatæ, subtus concavæ, basi subdenticulatæ, apice acutissimæ incurvæ.

Maxillæ sinuatæ apice latiores, latere interno membranaceo ciliato haud spinuloso vel setoso, processu dorsali articulo ultimo oblongo tenui ovato vel fusiformi; dorso pone palpos duobus tuberculis setigeris instructo.

Palpi maxillares articulo primo brevissimo, secundo maximo crasso obconico subincurvo, tertio obconico, quarto conico, his duobus quasi articulum unum oblongum ovatum formantibus, ultimo tertio breviore.

Palpi labiales articulo basilari (labii stipiti affixo) brevissimo lato, articulo secundo brevi obconico vix subgloboso, tertio obconico præcedentibus simul sumptis longiore, quarto præcedente breviore subconico vel potius subulato.

Labium angustum subcylindricum apice clavatum setis duabus instructum. *Paraglossæ* labio haud longiores latæ angulis rotundatis membranaceis; *Stipes* labii magnus semicircularis menti sinum fere implens.

Mentum sinu edentulo setâ utrinque instructo angulisque acutis.

Caput facie anticâ setis sex instructâ. *Pedes* unguibus subtus denticulatis tarsorumque articulo penultimo bilobato.

Obs. As M. Dejean has assigned a name to this subgenus in a manuscript catalogue, I have thought proper to adopt it, although the genus is now for the first time characterized. It agrees with the three former genera in having the ungues of the tarsi denticulated beneath, and the elytra subtruncated at the apex; but in most other respects of external appearance it differs widely from the *Brachinidæ* in general. It has the habit of a *Nebria*, and possibly approaches to this genus or to *Blethisa* in affinity. Judging from the ciliated membranaceous maxillæ, I suspect that this genus is not very carnivorous in its habits.

50. *Picilabris. O. nigro-brunneus capite nigro, thorace sulco transverso postice impresso, elytris striis subpunctatis.*

Long. corp $\frac{5}{8}$ +

Caput nigrum labro palpisque piceis. *Antennæ* piceæ, apice pilosulæ obscuræ. *Thorax* canaliculatus antice haud marginatus, duplo latior quam longus, lateribus subreflexis, quadrâ mediâ impressâ, angulis fossulatis. *Elytra* striâ secundâ ad scutellum brevi. *Corpus* subtus piceum. *Pedes* picei tibiis nigris.

51. *Brunnilabris. O. brunneus capite thoracis disco elytrorumque limbo nigris, thorace anchorâ dorsali impressâ margineque pallido, elytris striato-punctatis.*

Long. corp. fere $\frac{11}{16}$

Caput labro palpis antennisque brunneis, his apice obscuris hirsutis. *Thorax* canaliculatus, duplo latior quam longus, fossulâ utrinque postice impressus. *Elytra* striâ primâ et secundâ ad scutellum brevi confluentibus. *Corpus* subtus brunneum. *Pedes* nigriusculi femoribus brunneis.

52. *Alternans. O. niger thorace sulco transverso postice impresso, elytris striis vix geminatis, interstitiis alternatim punctulatis.*

Plochionus alternans, Wiedemann, Zool. Mag. Band. II. s. 1. p. 52.

Long. corp. $\frac{3}{8}$ +

Caput palpis brunneis labro antennisque nigris, his apice pubescentibus. *Thorax* antice marginatus canaliculatus duplo latior quam longus, fossulâ utrinque postice impressus. *Elytra* striâ secundâ ad scutellum brevi cum primâ confluente. *Corpus* subtus nigro-brunneum pedibus nigris.

Obs. The above-mentioned three species come very near to the genus *Plochionus* of Dejean, and accordingly Wiedemann appears to have referred all the species of the genus *Orthogonius* with which he was acquainted, to *Plochionus*, viz. his *P. duplicatus*, *P. acrogonus*, and *P. alternans*. *Plochionus*, however, has a more western geographical situation, no species being, to my knowledge, found farther east than Bordeaux, while America appears the metropolis of the genus. Some species of the genus *Plochionus* may be expected to occur in the south of England or Ireland, particularly the *P. Bonsfilsii* of Dejean.

Genus DRYPTA Fab.

53. *Lineola. D. rufa elytris punctato-striatis pubescentibus : vittâ mediâ rufâ, pedibus rufo-testaceis ; geniculis piceis.*

An *Drypta lineola*, Meg. *apud* Dej. Catal. p. 2.?

Long. corp. $\frac{5}{16}$

Caput rufum convexum punctatum oculis albis, mandibulis maxillisque apice piceis, palporum maxillarium ruforum articulo ultimo ovato. *Antennæ* rufæ articulo secundo longissimo apice piceo. *Thorax* punctatus subcylindricus haud capite longior, truncato-obcordatus, postice marginatus, medio canaliculatus. *Elytra* apice vix truncata nigra, striis decem, scutellari brevissimâ, vittâque mediâ longitudinali rufâ haud basin sed suturam ad apicem attingente. *Abdomen* subtus atro-viride.

Obs. This species varies, or at least the *D. lineola* which comes from the continent of India is so near to it, that it is scarcely possible to assign distinct specific characters to them. A New Holland *Drypta*, which I have named "*Australis*," differs also from the above only in having

having the palpi, antennæ and feet black, the coxæ and base of the femora being rufo-testaceous.

54 *Unidentata. D. cyaneus femoribus sanguineis, elytris postice unidentatis : decem striis punctorum interstitiisque punctatis.*

Long. corp. $\frac{1}{12}$

Caput cæruleum punctatum oculis albis, mandibulis piceis, palpis maxillaribus longissimis rufis articulo ultimo ovali sericeo-albicante. *Antennæ* rufæ articulo basilari conspicuo, secundo ad apicem quartoque ad basin piceis. *Thorax* capite multo longior punctatus subcylindricus medio haud canaliculatus. *Elytra* apice abrupte truncata vel unidentata pubescentia. *Corpus* subtus nigro-cyaneum. *Pedes* coxis testaceis, femoribus rufis, geniculis tibiisque piceis, tarsis rufescentibus.

Obs. In Bn. Dejean's catalogue we find a manuscript-name "*longicollis*" assigned without any description by Megerle to an Indian *Drypta*. As I conceive this entomologist may only have obtained a knowledge of such Indian insects as were collected by M. Fichtel, I account his *D. longicollis*, although the name will equally apply to the above Javanese insect, to be a native of the Continent. *Drypta longicollis* differs in that case from *D. unidentata*, in being atro-cyaneous with yellow femora, in having truncated but not dentated elytra, and in having the fourth joint of the antennæ altogether rufous. *Drypta flavipes* of Wiedemann, a Bengal insect, seems to be still another distinct species.

Subgenus APTINUS Bon.

55. *Occipitalis. A. alatus ater capite flavo : vertice nigro, thorace bimaculato, elytris sulcatis flavo bimaculatis.*

♂ Long. corp. $\frac{3}{4}$

A. bimaculato Lat. et *A. fulminanti* Fab. affinis sed alatus. *Caput* flavescens postice punctatum maculâ mediâ nigrâ campanulatâ. *Antennæ* flavescentes articulo basilari nigro. *Thorax* niger marginatus subcanaliculatus maculâ utrinque ferrugineâ. *Elytra* atra sulcis haud striulatis striis elevatis ad apicem pallidis, maculâ humerali rotundâ strigâque mediâ abbreviatâ flexuosâ clavatâ transversâ valde angulatâ flavis. *Corpus* nigrum. *Pedes* flavi geniculis nigris.

Obs. Bonelli has separated the genus *Brachinus* from *Aptinus*, on no other account than that the latter is apterous. If, however, we reckon *B. sclopeta* Fab. to be the type of one genus, and *B. hallista*, Ill. of the other, the insect above described, although winged, will come nearer to the latter than to the former. The fact is, that *Aptinus* has not yet been properly separated from *Brachinus*.

M. Dejean appears to be acquainted with other Javanese species of the genus than the one mentioned above.

Genus PLANETES Nobis. *Helluo* Dej.

Antennæ articulo primo et quarto æqualibus et hoc secundo tertioque simul sumptis longiore.

Labrum quadratum antice vix emarginatum.

Palpi maxillares articulo secundo duobus ultimis simul sumptis æquali, tertio obconico, quarto oblongo crasso apice obtuso.

Palpi labiales articulo ultimo securiformi sed vix tertio crassiore.

Mentum tridentatum.

Caput

Caput ut in genere *Taro* Clairv. *Thorax* subquadratus canaliculatus postice angustior angulis anticis rotundatis. *Corpus* valde depressum.

Obs. This genus is intermediate between *Tarus* Clairv. (*Cymindis* Lat.) and *Helluo*, Bon.; from the latter it differs in the labrum not being acuminate, and from the former in the shape of the maxillary palpi and thorax.

56. *Bimaculatus. P. ater labro palpis antennis pedibus elytrorumque maculâ mediâ ferrugineis elytris sulcato-striatis.*

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

Caput atronitidum transversé punctatum facie lævi bipunctatâ antice truncatâ. *Thorax* atronitidus punctatus. *Elytra* atra depressiuscula sulcata, sulcis profunde striatis maculâ versus basin ovali ferrugineâ. *Corpus* subtus atrum.

Obs. This species may perhaps be found too near the *Carabus Stigma* of Fabricius, but certainly is not the same with the *Helluo distactus* of Escholtz, described as a Javanese insect in Wiedemann's Zoological Magazine; although I suspect the latter to be also a *Planetes*, from what Dr. Escholtz says of the thorax being proportionally longer than in his *Helluo impictus*, a species found in Bengal. *Helluo distactus*, differs from *Planetes bimaculatus* in being striated and having each stria marked with two rows of points. None of these species, however, are true *Helluones*, and the mistake has arisen from the continental entomologists being so little acquainted with the original *Helluo* of Bonelli, *Helluo costatus*, which is a New Holland insect.

Stirps. 2. HYDRADEPHAGA. *Hydrocanthari* Lat.

In the *Geodephaga* the binary subdivision of the groupe is not very distinct, because the characteristic marks of each subdivision insensibly pass into each other. In this stirps of aquatic carnivorous insects it is however different, for the binary subdivision is remarkably distinct, and I know as yet of no insect which can satisfactorily fill up the hiatus that occurs between the *Gyrini* of Linnæus and his *Dytisci*.

The larvæ of the *Hydradephaga* differ from those of *Geodephaga* in being truly aquatic, and therefore breathing by tracheal branchiæ. Their prothorax also, or that segment of the body which corresponds with what is usually called the thorax of the perfect insect, is not of a more corneous texture than the other segments.

I shall not at present attempt to divide the *Hydradephaga* into families, but content myself with giving the following approximation to a natural arrangement. The genus *Hoplitus* of Clairville seems to form the type of a family which I have not here ventured to designate.

Hydradephaga.		*Familiæ.*
1. *Normal groupe,* Pedes antici longi, Antennæ breves. Gyrinus Lin.	1.	*Gyrinidæ.*
	2.	* * *
2. *Aberrant groupe.* Pedes antici breves, Antennæ setaceæ lineares. Dytiscus Lin.	3.	* * *
	4.	*Dytiscidæ.*
	5.	* * *

Fam.

Fam. 1. GYRINIDÆ.

Degeer, in his immortal work, has observed, " Les Tourniquets approchent beaucoup des Scarabés-d'eau ou des Dytisques ;" but the remark was neglected by Latreille until lately. In his *Genera Crustaceorum et Insectorum* he placed the *Gyrini* and *Parni* in the same family, named by him *Otiophori*, thus confounding a relation of analogy with one of affinity.

I know not whether I am quite right in considering these insects as belonging to the normal groupe of *Hydradephaga ;* but certainly, both in their perfect and larva form, they are farther distant from the *Carabi* than *Dytiscus*. As however it is imposible to proceed naturally in a linear series of description, I begin with this Hydradephagous family, which is known to every entomologist by its gregarious sportive nature and its auriform antennæ.

The larvæ of *Gyrinidæ* are exactly *Scolopendræ* in appearance, the tracheal branchiæ answering to the false feet of the *Chilopoda*. The perfect insects are almost the only *Hydradephaga* that possess a metallic lustre.

Genus DINEUTUS Nobis. *Gyrinus* Lat.

Antennæ brevissimæ apice subacutæ.
Labrum semicirculare haud ciliatum.
Palpi clavati.
Pedes antici fere corporis longitudine.

Obs. These few characters, although merely external, will sufficiently separate this genus from *Gyrinus*. M. Latreille has observed that, the exterior biarticulated lobe of the maxillæ, or (as it is more commonly called) the internal maxillary palpus becomes evanescent in the exotic *Gyrini*, as well as in certain exotic genera of *Geodephaga* such as *Therates*.

57. *Politus, D. nigro-æneus lævissimus, clypeo nigro-piceo angulis rugosulis aureis, pedibus anticis piceis posticis pallidis.*

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

Genus GYRINUS.

58. *Dentipennis, G. niger vix æneus elytris postice unidentatis apice truncato-sinuatis punctulatis substriatis.*

Long. corp. $\frac{5}{16}$ +

Labrum nigrum. *Corpus* subtus nigro-æneum vix cupreum ano hirsuto. *Pedes* antici picei posticis quatuor rufis.

Obs. I am uncertain whether this species be sufficiently distinct from the *Gyrinus Indus* of the supplement to the *Ent. Syst*, a species which Fabricius afterwards abandoned in the *Syst. Eleutheratorum*.

59. *Limbatus. G. elytris apice truncato-sinuatis striatis ad suturam æneis, vittâ mediâ sub-cupreâ margineque viridi.*

Long. corp. vix. $\frac{5}{16}$.

Caput viride vertice subcupreo labrique margine viridi. ♂ Caput punctis duobus sub-impressis.

Fam.

Fam. 4, DYTISCIDÆ.

The larvæ of these insects have not the lateral branchial appendages of the *Gyrinidæ*, and are therefore much less scolopendriform. Indeed their sub-convex and rather conical body with various other circumstances might, on a first view of them, make us place them out of their natural situation; but their obvious analogy to the larvæ of *Hemerobii*, as well as to the larvæ of *Geodephaga*, will serve to make them known to the practical entomologist.

There are few insects so voracious as the *Dytiscidæ*, and their power of moving at will either in the water, in the air, or on the earth, gives them ample means of satisfying their rapacity.

I may in this place make the remark, that aquatic insects do not among themselves differ so much in form as terrestrial insects. It is not merely that they are fewer in species, and therefore may be expected to form fewer genera, but that the tropical genera of aquatic insects are much the same with our own, or at least are not so different from each other as the tropical and European *Geodephaga*. Another remark to be made is, that aquatic insects are in general as large or larger with us than they are within the tropics. I know of no *Hydrophilidæ* larger than our *Hydrophilus piceus*; and the largest of the *Dytiscidæ*, that has ever come under my notice, is the *D. latissimus* of Sweden. The only exception to this remark among the *Hydradephaga* occurs in the *Gyrinidæ*, as for instance in the genus *Dineutus* above described.

Genus COLYMBETES Clairv.

60. *Octodecim-maculata. C. niger capite maculis tribus, thorace marginali, elytris vittâ marginali maculisque novem flavis.*

Long. corp. $\frac{5}{16}$

Caput maculis tribus mediis *Thoraxque* maculâ marginali flavis. *Elytra* striis tribus punctorum obsoletissimorum, vittâ marginali nec basin nec apicem attingente, maculis flavis tribus basalibus, quatuor mediis fasciam fere formantibus et duabus apicalibus. *Corpus* subtus nigrum abdominis lateribus rufo-maculatis. *Pedes* quatuor antici flavi.

61. *Fabricii. C. collo nigro, thorace rufo, elytris cinereo-rufoque striatis.*

Dytiscus varius. Fab. Syst. Eleuth. i. p. 267, 48.

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

Obs. Fabricius described an insect in the *Ent. Syst.* which he found in the Banksian cabinet, and called it *D. varius*. Afterwards he confounded a Sumatra insect, which he found in Daldorff's cabinet, with his *D. varius*, and altered the original specific character to suit his new insect, which I here call *D. Fabricii*.

62. *Suturalis. C. elytris cinereo-nigroque variegatis: striis tribus punctorum impressis suturâ nigrâ lineâque utrinque rubrâ.*

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

Caput obscure ferrugineum punctis duobus impressis medio utrinque nigrum, ore palpis antennisque testaceis. *Thorax* glaber lævis marginatus subcanaliculatus rufus maculâ mediâ transversali nigrâ. *Elytra* punctis numerosissimis approximatis nigris cinereisque variegatis, striis punctorum obsoletis, margine exteriore rubro. *Corpus* subtus nigrum, pedibus quatuor anticis femoribusque posticis piceis.

63. *Vittatus.*

63. *Vittatus.* *C. ater lævis elytris vittâ sub-marginali flavâ : maculâ baseos atrâ.*
Dytiscus vittatus, Fab. Ent. Syst. i. 190 14.
————————, Oliv. Ins. 40. tab. i. fig. 5.
Long. corp. $\frac{1}{2}$

Obs. The black spot on the yellow vitta in this species varies exceedingly.

64. *Fasciatus.* *C. elytris flavis : fasciis duabus suturâ punctoque apicis nigris.*
Dytiscus fasciatus. Fab. Ent. Syst. 1. 189, 9.
————————, Oliv. Ins. 40, tab. 2, fig. 19.
Long. corp. $\frac{1}{2}$ +

Genus DYTISCUS. Lin.

65. *Griseus.* *D. cinereus thorace punctis duobus nigris elytris fasciâ dentatâ nigrâ.*
Dytiscus griseus, Fab. Ent. Syst. 1, 191, 16.
————————, Oliv. Ins. 40. tab. 2, fig. 12.
Long. corp. $\frac{1}{2}$ +

Obs. This species appears to be very generally dispersed over the warmer latitudes, as it occurs in my father's collection from Bengal, Bombay, Italy, Spain, France, and even from the Island of St. Bartholomew, in the West Indies, where it was collected by Dr. Forstrom. This West Indian specimen only differs from the rest in wanting the black spots on the thorax, which spots are also evanescent in European varieties of *D. griseus.*

66. *Rugosus.* *D. nigro-viridis, clypeo thoracisque margine laterali flavis, elytris medio rugosulis vittâ marginali interruptâ.*
Long. corp. $1\frac{3}{16}$.

Caput atrum clypeo labroque flavis antennis palpisque pallidis. *Thorax* nitidus striis duabus lateralibus aliâque anteriori transversâ leviter punctulatis. *Elytra* nigra limbo lævissimo nitido, striis tribus punctulatis exaratis, vittâ marginali flavâ postice fractâ apicem elytrorum haud attingente. *Corpus* piceum lateribus pedibusque anticis pallidis.

67. *Limbatus.* *D. olivaceus thoracis elytrorumque margine flavo, abdomine atro : maculis lateralibus testaceis.*
Dytiscus limbatus. Fab. Syst. Eleuth. 1, p. 258, 2.
Dytiscus aciculatus. Oliv. Ins. 13, 6. tab. 3, f. 30.
Long. 1 $\frac{3}{8}$

Stirps. 3. PHILHYDRIDA.

Entomologists in general, with the exception of M. Latreille and his followers, have allowed a close affinity to exist between this stirps and the *Hydradephaga,* and nothing but the difficulty of making this affinity accord with the other parts of his system could ever have made so acute an entomologist as M. Latreille to doubt so obvious a truth. Originally both these stirpes were known under the common denomination of *Hydrocanthari,* and Linnæus comprized all the species under the generic name of *Dytiscus,* separating the groupe into two sections, which correspond with our stirpes *Hydradephaga* and *Philhydrida.* To these sections, in process of entomological investigation, he gave the names of *Dytiscus* and *Hydrous,* but finally for this last groupe adopted the word *Hydrophilus,* which had been already appropriated to them by Geoffroy

froy. Still, however, the *Dytisci* and *Hydrophili* were kept close to each other as neighbouring groupes by Linnæus, Geoffroy, Fabricius, and Olivier, until M. Latreille thought proper to separate them.

Olivier seems to have well remarked that Degeer's opinion as to the number of joints in the antennæ of *Hydrophilus piceus* being only nine, is founded rather on appearance than on truth, and that the real number corresponds with that of the *Dytisci*, namely eleven, the only difference being that the eighth and tenth joints are here very minute. Their place is marked by the distances which intervene between what are commonly considered the second and third, and the third and last joints of the clava. The fact however is, that the number of joints in the antennæ is in these two stirpes subject to some variation from the typical number, which in *Coleoptera* is eleven.

I have already alluded to those two divisions of the maxilla in *Hydrophilus* of which one corresponds with what is usually termed the internal maxillary palpus in *Adephaga*, although it now ceases to be palpiform. In some genera however, such as *Spercheus*, which come nearest to the *Hydradephaga*, the outer process of the maxilla is long, slender, and truly palpiform. Fabricius accordingly, when he instituted the genus *Spercheus* assigned six palpi to it, as well as to *Dytiscus*. The feet, indeed, of the *Philhydrida*, as well as other points of their external anatomy, their larvæ and their habits, all prove their affinity to the *Hydradephaga*.

The larva of *Hydrophilus piceus* is long and somewhat conical, and bears great resemblance to that of a *Dytiscus*, the body being terminated in both by two filiform processes, which seem useful for the respiration of the insect. One grand difference between them, as Lyonnet has shown in contravention of a curious fancy of M. Frisch, is that the head of the larva of *Hydrophilus* being adapted to its habit of preying on small *mollusca* as they float in the water, is inclined towards its back, whereas in the other it has its usual inclination towards the belly. Both larvæ are thus carnivorous, quit the water when full-grown, and having made an oval cocoon, undergo metamorphosis in the earth.

The *Philhydrida* appear, when arrived at their perfect state, to be in some degree herbivorous, or at least to lose in a great measure the carnivorous habits of the *Hydradephaga*; they seem therefore to indicate an approach towards insects truly herbivorous. Perhaps *Hydrophilus piceus* is as voracious an animal as belongs to the stirps; yet we may learn how inferior it is in voracity to an *Adephagous* insect, from the anecdote recorded by Clairville, on the authority of Dr. Esper, who having confined an insect of this species in a glass of water with a *Dytiscus marginalis*, not more than half its size, soon found it yield itself an easy prey to the latter, which having detected a vulnerable part between the head and thorax, greedily devoured it. M. Miger, also, who observed so well the singular manners of this family, and who has given so detailed an account of them in the fourteenth volume of the *Annales du Muséum*, ascertained that the greatest part of the food of the perfect insects is derived from aquatic plants.

I shall offer the following arrangement of the *Philhydrida* as an approximation to the natural one:

Philhydrida.

1. *Normal groupe?* Palpi antennis breviores	1. *Heteroceridæ?*	
	2. *Parnidæ*,	(analogous to the *Gyrinidæ.*)
2. *Aberrant groupe?* Palpi antennis longitudine saltem æquales.	3. *Helophoridæ.*	
	4. *Hydrophilidæ*,	(analogous to the *Dytiscidæ.*)
	5. *Sphæridiidæ?*	

In this table, although the affinity of *Sphæridiidæ* to *Hydrophilidæ*, and of *Heteroceridæ* to *Parnidæ* is incontestable, I have thought proper to mark the place of the *Sphæridiidæ* and *Heteroceridæ* with doubt, as their connection is not very distinct. The fore tibiæ, however, in both families are spinous; and the tetramerous genus *Georissus* seems to be of some use in uniting these discordant groupes.

Fam. 1. HETEROCERIDÆ.

The type of this family is tetramerous, but its affinity to the *Parnidæ* has never been contested. Dr. Horsfield has brought no insects from Java that can be safely assigned to the groupe.

Fam. 2. PARNIDÆ. *Parnidea.* Leach.

In the *Genera Insectorum et Crustaceorum* M. Latreille has placed the type of this family or the true genus *Parnus* in the same family with *Gyrinus*, and has called the whole group *Otiophori*. He thus mistook a very obvious relation of analogy for one of affinity; and accordingly, in the *Considérations Générales* and the third volume of the *Règne Animal*, we find that he separates *Parnus* and *Gyrinus*, giving them their proper affinities, but taking little or rather no notice of the analogy which exists between them. The genus *Potamophilus* of Germar (*Hydera* of Latreille) appears to lead off to *Octhebius* of Leach, and other insects of the next family.

Subgenus DRYOPS. Leach.

68. *Hardwickii. D. olivaceo-fuscus aut nigricans, tomentosus, elytris punctorum impressorum lineis octo tarsisque omnibus rufescentibus.*

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

Obs. This subgenus is characterized by Dr. Leach in the third volume of his *Zoological Miscellany*, page 88, and may be easily known from *Parnus* by its wanting the thoracic longitudinal fossulæ of the latter genus. *Dryops Hardwickii* differs from the type and only other known species of the subgenus, (that is from *D. Dumerilii*, which is a South of Europe insect,) in having a darker colour, and the points of the elytra impressed instead of elevated. I have named this new species after Major-General Hardwicke, a gentleman to whom every naturalist is indebted for the zeal and science he has displayed in the prosecution of the several departments of Oriental Zoology.

Fam. 3. HELOPHORIDÆ.

There are no species of this family among Dr. Horsfield's insects. The groupe is remarkable among the *Philhydrida* for the metallic lustre which generally characterizes the insects which compose

compose it, and which only again occurs in the contiguous family of *Hydrophilidæ*. They appear to lead naturally to *Berosus*, and such other genera of the next family.

Fam. 4. HYDROPHILIDÆ.

The analogy between the larger insects of this family composing the genus *Hydrous* and the larger *Dytisci* is too striking to escape the notice of the most cursory observer. Their manners, their larvæ, the singular dilatation at the extremity of the anterior tarsi of their males may all serve to shew us how Linnæus came to name the type of this family *Dytiscus piceus*.

The most singular habit known of this insect is that the female spins out of her abdomen a gummy matter, which forms an envelope for her eggs, and these, disposed symmetrically in their oval receptacle, float about on the surface of the water until the larvæ are hatched. It is not known how many other genera of the family possess this curious economy.

The insects of this family which come from tropical climates prove, by their near affinity to European insects, how much fewer typical forms there are of aquatic insects than of terrestrial.

Subgenus BEROSUS. Leach.

69. *Pulchellus. B. griseo-flavescens, capite scutello thoracisque maculâ mediâ divisâ nigris, elytris striatis: maculis tribus.*

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

Insectum supra punctulatum. *Elytra* maculis tribus obscuris striisque nigris impressis, interstitiis crebré punctatis, punctis nigricantibus.

Obs. This genus often retains some of the metallic lustre of the *Helophoridæ*.

Genus ENHYDRUS. Meg.

70. *Pallens. E. albicans nitidus punctulatus, thorace maculis quatuor obscuris transversé dispositis elytrisque obsoleté striatis.*

Long. corp. $\frac{3}{32}$.

Genus SPERCHĒUS. Fab.

71. *Platycephalus. S. infra nigricans, supra scabriusculus cinereus, elytris lineis quatuor elevatis: dorso bituberculato, pedibus subferrugineis.*

Long. corp. $\frac{5}{32}$.

Obs. This curious little insect is truly a *Spercheus*, and thus becomes the second species of the genus that is known to entomologists.

Genus HYDROUS. Lin. Leach.

72. *Pallidipalpis. H. olivaceo-niger, elytris striis punctorum tribus, margineque vagé punctulato.*

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

Hoc Insectum ab alio Americano (*H. Fuscipalpe* mihi) ex Insulâ Sanctæ Trinitatis simillimo differt *corpore* convexiore breviore, *colore* dilutiore, *palpis* crassioribus, et *antennarum* articulo sexto præcedentibus simul sumptis multo breviore.

73. *Bilineatus. H. nigropiceus, elytris sulculis punctorum duobus obsoletis, lineâ mediâ punctorum vagorum, aliisque marginalibus.*

Long. corp. $1\frac{3}{16}$.

Insectum præcedenti simillimum, sed differt *corporis* longitudine, *elytrorum* sculpturâ lineisque punctorum vagis marginalibus tribus vel quatuor, *femoribus* brunneis, articulo *palporum* ultimo brevi crassiore subsecuriformi.

Fam. 5. SPHÆRIDIDÆ.

It is not my intention to attempt at present the accurate determination of the natural place and boundaries of this family, because it would require a more minute and detailed investigation than the limits of a local *Fauna* will admit. The remarkably close connexion, however, which exists between M. Latreille's *Hydrophilii* and *Sphæridiota* both in construction and economy, induces me to describe in this place the only two species of *Sphæridium* which are to be found in Dr. Horsfield's collections; and, indeed, although I would not by any means be supposed to lay down my arrangement as certain, or for the present attempt to give more than a general statement of the near affinity which exists between this family and the last, yet I cannot forbear calling the attention of the entomologist to the circumstance of the genus *Sphæridium* possessing those two processes to their maxillæ, which form so prominent a character of the *Philhydrida* as a stirps.

This family is less aquatic than any of the four preceding, and I agree with Fabricius in thinking that such genera as *Phalacrus, Agathidium*, &c., may safely be assigned to it. It is true that Latreille has separated them from *Sphæridium*, because they are tetramerous; but by parity of reasoning, since *Heterocerus* and *Georissus* are also tetramerous, he ought to have separated the first from the vicinity of *Parnus* and the other from that of *Elmis*. It is the evil, however, of half-artificial systems like that which is founded on the number of joints in the tarsi, that while they are at utter variance with natural affinities, they do not even answer the humble purposes of a catalogue.

The similarity of certain species of this family to Petalocerous insects has often been remarked, and in fact it is from these insects that a transition is made to the *Chilognathomorpha* or *Coleoptera* having larvæ which resemble *Chilognatha*.

Genus SPHÆRIDIUM. Fab.

74. *Hydrophiloides. S. atronitidum punctulatum, palpis antennis tarsis thoracisque lateribus nigro-rufescentibus, elytris punctorum striis impressis.*

Long. corp. $\frac{7}{24}$.

Obs. This species indisputably proves the close affinity of *Sphæridium* to the last family.

75. *Marginatum. S. elytris immaculatis maculisve obsoletis, thoracis elytrorumque margine externo pedibusque ferrugineo-lutescentibus.*

Sphæridium Scarabæoides, Var. D. Lat. Gen. Ins. et Crust. vol. ii. p. 72.
Sphæridium marginatum, Fab. Syst. Eleuth. vol. i. p. 93.

Long. corp. $\frac{5}{32}$.

Obs. Without attempting to decide the question, whether all those insects which Illiger considers as varieties of *Sphæridium Scarabæoides* be really distinct species, I shall merely say, that the above

above described Javanese insect will be found to differ from the European *S. marginatum* in no respect, except perhaps that of size. With respect to the general affinities of the genus *Sphæridium*, it may be sufficient to mention, that this insect would have been a *Dermestes* with Linnæus and Geoffroy, and an *Hister* with Degeer.

Stirps 4. NECROPHAGA. Lat.

We now come to a stirps so close in affinity to the *Philhydrida*, that Dumeril has combined them in one groupe, to which he has assigned the name of *Helocera*, from the antennæ in both being in a similar manner clavated.

The *Necrophaga*, however, of Latreille, as this stirps is characterized in the *Genera Insectorum et Crustaceorum*, vol. i. p. 239, is a most natural groupe, distinguished from the *Philhydrida* by their habits being less aquatic, their mouth being prominent, and mandibles generally exserted. The first joint of the maxillary palpi is also evanescent in this stirps, so that these organs may in general be described as three-jointed. Indeed it is only the *Dermestidæ*, or fifth family of the *Necrophaga*, which retains any character of the *Sphæridiдæ*, and the *Dermestidæ* are also among the least Chilopodomorphous insects of the tribe, being closely allied to the *Byrrhidæ*, and so leading to the *Chilognathomorpha*. Linnæus and Geoffroy both observed the affinity existing between the *Dermestidæ* and *Sphæridiдæ*, and have even described the *S. scarabæoides* as a *Dermestes*. It is from insects, situated between the types of these two families, that the *Byrrhidæ* take their rise, and lead us to the tribe of insects having Chilognathiform larvæ or *Chilognathomorpha*.

Although the stirps of *Necrophaga* comprizes many herbivorous insects, we find that each family composing it, has not merely a disposition to feed on animal matter, but retains, moreover, many vestiges of the predaceous habits of the more typical insects of the tribe. Thus among the *Silphidæ*, the *Silpha 4-punctata* climbs the oak for the purpose of devouring the caterpillars, of which so many species infest this tree. Several other *Silphæ* attack live terrestrial *Mollusca*, just as we have seen the neighbouring stirps of *Philhydrida* prey on certain aquatic animals of the same sub-kingdom. The disposition of many of these insects to feed on fungi, is in accord with a general remark to be made on carnivorous *Coleoptera*, namely, that as the aberrant insects of any groupe leave the living animal food, which forms the entire subsistence of the normal part of the same groupe, they prey on dead animal matter, or, in preference to other vegetable matter, on fungi.

With respect to the affinities which connect the families of this stirps, I shall, according to my usual practice, avail myself of the *argumentum ad verecundiam*, in explaining them. True it is, indeed, that no naturalist has yet thought of combining these observations, and the consequence has been, that M. Latreille, among others, has never, in his various works, given the same arrangement of the stirps twice.

M. Latreille has shewn the affinity of the *Dermestidæ* and *Scaphidiдæ*, in what perhaps is the most able of his works, I mean the *Histoire Générale des Insectes, etc.* vol. ix. p. 190 and 233, where he has made one family of them, and thus adopted an opinion of Degeer.

In his *Considérations Générales*, p. 176, as well as the *Histoire Générale*, Latreille has moreover shewn the affinity of the *Scaphidiдæ* to the *Silphidæ*, thus adopting an opinion of Linnæus and Geoffroy.

In

In his *Genera Insectorum et Crustaceorum*, vol. ii. p. 2 and 8, Latreille has proved the affinity of the *Silphidæ* to the *Nitidulidæ*, thus adopting another opinion not only of Linnæus, but of Degeer and Olivier.

In the same *Histoire Générale*, and *Genera Insectorum et Crustaceorum*, Latreille thinks the affinity of the *Nitidulidæ* and *Engidæ* so close, that he makes only one family of them, thus adopting an opinion of Geoffroy and Fabricius.

Finally, in the *Histoire Générale*, vol. x. p. 16, M. Latreille acknowledges that the *Engidæ* have, "*beaucoup de rapport avec les Dermestes*," thus adopting an opinion of Linnæus, Scopoli, Geoffroy, Fabricius, and Olivier.

Now these various affinities have never yet been supposed to lead to any general consequence, and nevertheless if connected, which, as was before said, they never yet have been, they produce the following symmetrical table of the stirps:

Necrophaga.

1. *Aberrant groupe?* Antennarum clava brevis articulis solummodo duobus vel tribus? *Dermestes Lin.*	5. *Dermestidæ.*	
	4. *Engidæ.*	
	3. *Nitidulidæ,*	(leading by *Micropeplus* to the *Brachelytra.*)
2. *Normal groupe?* Antennarum clava elongata valde perfoliata quatuor vel quinque articulis. *Silpha Lin.*	2. *Silphidæ.*	
	1. *Scaphidiidæ.*	

The *Necrophaga* thus comprize almost all those insects which Linnæus called either *Dermestes* or *Silphæ*. So close indeed is the affinity of these two Linnæan genera, that of the modern genus *Nitidula* we find one species assigned by the Swedish naturalist to his genus *Silpha*, and another to his genus *Dermestes*.

The *Nitidulidæ* lead, by means of *Cercus* and *Micropeplus*, to the *Brachelytra*. That *Micropeplus* is an insect which leaves the typical *Necrophaga*, is clear from its different antennæ, and from its having been described as a *Staphylinus* by so many authors.

Many, if not the greatest part, of Latreille's *Taxicornes* belong to this stirps, which, however, has too few Javanese species in it to induce me at present to investigate it accurately. I shall therefore now content myself with saying, that Latreille's groupe of *Clavicornes*, as given in the *Dictionnaire d'Hist. Naturelle*, is altogether artificial. It is a heterogeneous collection, that is not only inferior to all his former groupings of this family, but is even inferior to what M. Dumeril had already done in characterizing his *Helocera*.

Fam. 1. SCAPHIDIDÆ.

The first thing which strikes us in the appearance of this family is the remarkable relation of analogy which it bears to the *Mordellidæ*, the place of which, in their own circle of affinity, is thus pointed out. Mr. Spence has, among other pertinent remarks on the genus *Choleva*, in the 11th volume of the Linnæan Transactions, justly observed, that the resemblance between *Mordella* and *Choleva* is merely superficial. So also is the relation between *Scaphidium* and *Ripiphorus*,

Ripiphorus, which last genus is not nearer in affinity to *Mordella*, than *Scaphidium* is to *Choleva*. M. Latreille, however, in the *Règne Animal*, has sufficiently proved the very obvious and close affinity of *Scaphidium* to *Choleva*, which it is rather surprising that so acute an entomologist as Mr. Spence should ever have doubted. A more than sufficient recompense, however, for the above error is, that Mr. Spence saw that *Choleva* had an affinity both with *Dermestes* and *Silpha*. He has also shewn the relation between it and the genus *Anisotoma* of Knoch, and thus proved his being no servile follower of the Tarsal system. In short, I would recommend the study of his excellent Monograph on *Choleva* to all who may wish to understand something of this family, which seems to be, as he observes, more common in Europe than in the other quarters of the globe. Dr. Horsfield found none in Java.

The external process of the maxillæ in the genus *Choleva*, although not distinctly articulated, is always linear or sublinear, and thus affords some ground for Herbst's describing one species as a *Carabus*, if indeed Mr. Spence be correct in suspecting him to have done this.

Fam. 2. SILPHIDÆ.

That Dr. Horsfield should have brought from Java none of the typical insects of this family, which are also those of the stirps, I attribute rather to their rarity than to there being no *Silphæ* or *Necrophori* on the island. The disgusting nature of the substances in which such insects are to be found, and their peculiar habits, give them often an opportunity of escaping the eye of an observer, even in these temperate climes; and we can easily conceive how the same habits should give them tenfold security in tropical countries, where the putrid effluvia of dead carcases are as dangerous as offensive. That *Silphæ* may be found in the Indian Archipelago I conclude from their being ascertained to exist in New Holland and on the continent of India.

The larvæ of *Silphidæ* possess a flat elongate body, terminated laterally by a somewhat sharp angle, and having the last segment provided with two conical appendages. They enjoy that activity which is the general character of Chilopodiform larvæ, and know how to search out fresh food for themselves, when they have consumed that which the parent insect had provided for them. When fully grown they bury themselves in the earth, and there undergo metamorphosis.

The abbreviated elytra of *Necrophorus* mark the typical insects of the groupe, and shew the strong relation of analogy which they bear to *Creophilus*, and the other corresponding genera of the contiguous stirps of *Brachelytra*.

Genus PELTIS. Fab. *Thymalus* Lat.

76. *Ovalis.* *P. ovata castanea limbo dilutiore, thorace elytrisque punctis impressis.*

Long. corp. $\frac{7}{24}$.

Insectum *P. ferrugineæ* Fab. quodammodo affine, at *corpore* minus convexo minusque oblongo. *Elytra* punctata lineis sex impressis punctulatis, serieque punctorum excavatorum in interstitiis disposità.

Obs. This genus has certainly an affinity to *Colobicus*, and possibly therefore to *Eledona*. It is at the extremity of the family.

Fam.

Fam. 3. NITIDULIDÆ. *Nitidulariæ* Lat.

The larvæ of this family resemble those of the last very closely, as may be seen on inspecting the figure of the larva of *Nitidula varia* Fab. (*Silpha grisea* Lin.) given by the late Mr. Curtis, in the second volume of the Linnæan Transactions. This larva seems to live on putrid vegetable matter.

The perfect insects of the family are to be found in almost all substances, some inhabiting flowers, and others carrion. They differ from the *Silphidæ* by their mandibles being bidentate at the apex, and in general by their anterior tarsi having the three first joints dilated. From the *Engidæ* they may be distinguished by their more peltate form and transverse thorax.

Genus NITIDULA. Fab.

77. *Picta. N. ovalis, fronte bipunctatâ, clypeo truncato, elytris punctulatis : striis elevatis setigeris.*

Long. corp. $\frac{17}{32}$.

Obs. Species *N. griseæ* Lin. (*N. variæ* Fab.) simillima, at brevior et convexior. *Caput* ferrugineum punctulatum fronte utrinque fossulâ impressâ, clypeo antice truncato, labro emarginato. *Thorax* ferrugineus punctulatus pilis albis raris vestitus. *Elytra* nigro ferrugineoque varia.

Fam. 4. ENGIDÆ.

The typical insects of this family differ in general from those of the last by their elongate form, or by the semi-lunar termination of their maxillary palpi, and minuteness of the penultimate joint of their tarsi. In the genus *Cryptophagus* the sexes may be distinguished by a difference in the number of joints of their posterior tarsi. And if *Mycetophagus*, and even *Triplax*, belong to this family, as I suspect they, with their immediate affinities, will be found to do, then tetramerous insects belong to the stirps of *Necrophaga* as well as to the *Philhydrida*. Accurate examination, however, seems to prove that such insects are not truly tetramerous; the penultimate joint of the tarsi, which is so minute in *Engis*, becoming in *Triplax* only more evanescent. The manner in which this change is effected, becomes manifest on comparing the genera *Ips*, *Engis*, *Triplax*, and *Erotylus*. The connexion existing between these, no one can doubt, and, indeed, M. Latreille long since remarked it. I am not however prepared to say, that the *Erotyli* fall into this tribe; but if they should eventually be proved to have this situation in nature, it will be another instance of that manifest relation which exists between the stirps of Necrophagous insects and the Linnæan genera *Cassida*, *Chrysomela*, and *Coccinella*. It is, perhaps, by the *Erotyli* that the opposite points of the circle of *Coleoptera* meet, for I do not think that this genus will go well among the true insects with anopluriform larvæ. As to the *Erotyli* being tetramerous, it is a circumstance to which little importance ought to be attached, since the five articulations of the tarsi are visible in several species, and other insects which are close to the genus, such as Mr. Kirby's genus *Spheniscus*, are heteromerous.

Phaleria and its affinities seem also to have a faint relation to these insects, as well as *Cerylon Sylvanus*, &c. But without estimating the degree of importance that ought to be attached to such relations, I shall not at present attempt to do more than indicate them, since the true limits of this

this most difficult family must depend in a great measure on our better acquaintance with their larvæ. Perhaps it would be better for the present to consider the typical insects of the groupe as unascertained, and the propriety therefore of the family name *Engidæ* as at least doubtful. It is observable, however, that all these insects were *Dermestes* with Linnæus and Fabricius; and, as in another part of the work I shall have to return to this subject, in the mean time I shall merely remark, that from the *Helopidæ* this groupe may easily be distinguished by their clavate antennæ.

Genus DACNE Lat. *Engis* Payk.

M. Latreille, in his *Précis de Genres* founded the genus *Dacne* on the species of insect called by Herbst, *Ips humeralis;* and soon after Paykull, in the *Fauna Suecica*, gave the generic name of *Engis*, with appropriate characters, to the same insect. Fabricius, in the *Systema Eleutheratorum*, adopted this genus with the name given to it by Paykull, and placed in it an American insect, the *Erotylus bifasciatus* of Olivier *(Enc. Meth. Hist. Nat.)*, which insect is, however, sufficiently distinct, by its maxillary palpi having their last joint hammer-shaped, whereas the European insect *(Ips humeralis* of Herbst) has the same joint only obtusely subulate. I leave, therefore, the original name of *Dacne* with the last-mentioned insect, and give the name of *Engis* to those exotic insects which coincide with *Engis fasciata* of Fabricius, in the above description of their palpi, and which differ from true *Erotyli*, in having the penultimate joint of their tarsi visible, although very small.

78. *Sexnotata. D. antice angustior, nigro-nitida, thoracis angulis anticis, elytrorumque fasciis duabus transversis cruentis.*

Engis sexnotata, Wiedemann Zool. Mag. 2. 1. 131.

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

Caput vertice concavo antennarumque clavâ tomentosâ murinâ. *Thorax* antice angustior, ad angulos subproductus lunulâque cruentâ insignis, posticé vix fossulatus. *Scutellum* nigrum. *Elytra* striis punctorum obsoletis, et maculis duabus transversis undatis cruentis, anticâ dentatâ humerum versus. *Corpus* atronitidum. *Pedes* nigri tibiis ad apicem tomento brunneis.

79. *Quadrimacula. D. nigronitida pubescens punctulata, elytris maculis transversis: humerali mediâque rufis, humero scutelloque nigris.*

Engis quadrimacula, Wiedemann Zool. Mag. 2. 1. 132.

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

Antennæ nigræ. *Thorax* niger, antice subangustior. *Elytra* striis punctorum obsoletis, ad scutellum nigra, maculâ humerali utrinque excisâ, mediâ lunulatâ. *Corpus* atronitidum. *Pedes* nigri tibiis ad apicem tomento brunneis.

Genus ENGIS. Nobis.

The genus *Oxyporus* among the *Brachelytra* has its labial palpi somewhat like those of this genus.

80. *Verticalis. E. atra, verticis maculis duabus, thoracis annulo irregulari, elytrorum fasciis duabus apiceque rubris.*

Long. corp. $1\frac{3}{20}$

Caput nigrum, vertice ad oculos bimaculato, antennarumque clavâ tomentosâ. *Thorax* niger, marginatus, fossulis ad marginem posteriorem tribus minutis, annulo medio rubro ad angulos protento et lineam

dorsalem versus obscuriori. *Scutellum* nigrum. *Elytra* nigra marginata punctorum lineis septem obsoletis, apice et fasciis dentatis tribus rufis, suturâ et fasciæ humeralis maculis duabus nigris. *Corpus* oblongum aterrimum. *Pedes* nigri tibiis plantisque tomento brunneis.

81. *Annulata. E. nigro-nitida, thorace postice subpunctato, elytris annulis duobus rufis, pedibus atropiceis.*

Long. corp. $\frac{11}{20}$

Caput palporum articulo maxillarium ultimo rufo antennarumque clavâ tomentosâ. *Elytra* lineis punctorum octo obsoletis, annulis basali et posticali rufis. *Scutellum* nigrum. *Corpus* oblongo-ellipticum.

82. *Cruenta. E. nigronitida, thorace utrinque maculâ longitudinali, elytris lunulâ basali maculâque posticâ sanguineis.*

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

Caput bifossulatum. *Thorax* niger marginatus, fossulis tribus ad marginem posticum obsoletis, lineâ utrinque longitudinali posticé subfurcatâ. *Scutellum* nigrum. *Elytra* nigra lunulâ humerali maculâque apicali rufis. *Corpus* oblongum aterrimum. *Pedes* nigri tibiis plantisque tomento brunneo.

83. *Lunulata. E. nigro-nitida, thoracis maculis tribus anticis, elytrorum cruce basali lunulâque posticâ sanguineis.*

Long. corp. $\frac{11}{20}$

Caput subpunctatum. *Thorax* maculis tribus anticis linearibus brevibus rufis. *Elytra* lineis punctorum obsoletis, cruce humerali vel lunulâ caudatâ humerum amplectente et lunulâ posticali simplice sanguineis. *Pedes* nigri tibiis plantisque tomento brunneis.

84. *Liturata. E. nigronitida, thoracis medio maculis annulato, elytris ad apicem liturâ marginali sanguineâ.*

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

Thorax maculis obscuris rufis annulum quasi in medio formantibus. *Elytra* lineis septem punctorum obsoletis. *Scutellum* nigrum. *Pedes* nigro-picei.

85. *Subrotunda. E. nigronitida, capite thoraceque subpunctatis, elytris fasciis duabus lunulatis dentatis rubris: suturâ nigrâ.*

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

Elytra nigra, lineis punctorum octo obsoletis, lunulisque rubris, anticâ humerum, posticâ apicem amplectentibus. *Pedes* nigro-picei.

Obs. This species comes very near to the genus *Erotylus*, in general habit and the structure of the tarsi.

Genus HELOTA. Nobis.

Antennæ vix capitis longitudine, sub clypeo ad mandibularum basin insertæ, undecim-articulatæ, articulo basilari sub-obconico crasso, secundo subgloboso, tertio obconico longiore; clavâ crassâ tomentosâ compressâ orbiculari tri-articulatâ.

Labrum membranaceum sub clypeo occultum, margine lineari vix apparente.

Mandibulæ subtrigonæ, validæ, corneæ, extus rotundatæ, apice acutæ, intus sub-emarginatæ tenues.

Maxillæ breves, ad basin corneæ, subtrigonæ, apice submembranaceæ, laminatæ, truncatæ, subquadratæ,

subquadratæ, ciliatæ: processu dorsali palporum longitudine, basi subcorneo, apice membranaceo, ciliato.

Palpi maxillares articulo primo obconico, secundo pateriformi, tertio vel ultimo præcedentibus simul sumptis fere longiore, subsubulato.

Palpi labiales clavati, vix labio longiores, articulo primo subgloboso, secundo obconico, tertio vel ultimo maximo crasso cylindrico apice truncato perforato.

Labium membranaceum, medio crassiusculum, apice emarginatum, lobis lateralibus rotundatis ciliatis sub-diaphanis.

Mentum breve, latum, corneum, transverso-quadratum.

Caput horizontale subtrigonum clypeo antice rotundato. *Thorax* magnus subquadratus, supra convexiusculus, posticé lobatus. *Scutellum* minimum. *Corpus* depressiusculum coxis fere æqué dissitis. *Tarsi* breves quinque-articulati, articulo primo minimo vix conspicuo, secundo tertio et quarto subtus setigeris, ultimo aliis simul sumptis longiore infra longitudinaliter fossulato, fossulâ ad apicem inter ungues in processum setis duabus instructum desinente.

Genus *Buprestidarum* habitu quodammodo fruens.

86. *Vigorsii. H. supra viridiæneus punctatus, thorace eminentiis lævissimis, elytris geminatim striatis: liturâ mediâ flavo-bimaculatâ.*

Long. corp. $\frac{7}{10}$.

Caput viridiæneum, antice et ad latera punctatissimum, oculis albis, collo subtus testaceo, antennis basi piceis apicem versus nigrioribus, et clavæ obscuræ articulo ultimo rufescente. *Thorax* viridiæneus, punctatus, lineis duabus mediis postice confluentibus, et maculis duabus lateralibus nigris nitidissimis eminentibus. *Scutellum* nigrum. *Elytra* viridiænea, striis punctorum geminatis, et latera versus lineis elevatis; liturâ mediâ longitudinali nigrâ maculis duabus magnis flavis lævioribus insigni. *Corpus* totum subtus testaceum nitidum. *Pedes* testacei geniculis et unguibus nigris.

Hæc species ab amico tam rei entomologicæ perito quam studioso N. A. Vigors Armigero nomen mutuatur.

Obs. This insect presents perhaps one of the most curious and novel forms of the whole collection. Its brilliancy and variety of colour, its beauty of sculpture and its similarity at first sight to the Linnean genus *Buprestis*, altogether render it a most extraordinary insect to be placed among the *Necrophaga:* yet it cannot be doubted that the true place of this curious insect is in this stirps. The only other insects to which it bears any similarity are the *Buprestidæ*, and it will prove perhaps, by reason of the strong relation of analogy which it bears to this groupe, most useful in shewing their place in their own tribe. That it does not, however, belong to the *Buprestidæ* clearly appears from its horizontal head, the lateral insertion of its clavate antennæ, the structure of the lower surface of its body, and above all from its organs of manducation. In all these particulars, on the other hand, it agrees with the general characters of the *Necrophaga*, some of which, such as the genus *Languria*, display a similar brilliancy of colour, and a form even more longitudinal. Near to this genus, therefore, and to *Dacne* I conceive *Helota Vigorsii* to come, since it also agrees with the latter in the form of its antennæ and structure of mouth. The feet nevertheless are constructed differently from those of both these genera, for although our insect is with still greater difficulty detected to be pentamerous, the minute evanescent joint

is not as with *Dacne* and *Languria* the fourth but the first. *Languria* and the insects immediately allied to it differ from the typical characters which I have ventured to attribute to the aberrant groupe of *Necrophaga*, inasmuch as the clava of their antennæ is often composed of more than three joints and sometimes even of five. *Helota*, however, as before said, has its antennæ and mouth similarly constructed with those of the more typical insects of the stirps or at least with *Dacne*, to which it is much nearer allied than to *Engis*.

The dorsal process of the maxilla is also in this genus beautifully distinct, and even presents a trace of being articulated. This circumstance of itself as well as the number of joints in the palpi separates *Helota* from the *Buprestidæ*, and places it in this family, for although other families in other tribes, as I have before shewn, may analogically present the bilobed maxilla, and thus approach to the typical structure of that organ, the pieces of the maxilla in all the *Buprestidæ*, which I have dissected, are confluent and indeed present a very uniform character wholly different from that of our insect. Moreover the typical character of the maxillary palpi in *Coleoptera* is that they are quadri-articulate, but in the *Necrophaga* generally as well as in our insect, the first joint is evanescent, so that such palpi may be described as tri-articulate in which respect they differ wholly from those of the *Buprestidæ*.

Genus LANGURIA. Lat.

This genus was established by M. Latreille on the examination of an insect, *L. bicolor*, which was brought from North America by M. Bosc. The genus, however, has not been hitherto properly characterized, since under a high lens it appears to be truly pentamerous, the penultimate joint of the tarsi being very minute, as in *Engis*. The validity of M. Latreille's generic character will, therefore, depend on his description of the clava of the antennæ, which he considers as consisting of five articulations—a description which, if true, will exclude all the following Javanese species from the genus. The fact seems to be, that *Languria* is divisible into several subgenera, which may be made to depend on the form of the antennæ. Thus from the West Indies and Brazil, we have *Languriæ* with short antennæ, and a very thick clava composed of five joints; while from the continent of India, we have such species as *Languria elongata* Lat. (*Trogosita elongata* Fab.), which have long filiform antennæ, with a very indistinct attenuated clava, consisting of three joints. The form of *L. bicolor* Lat. seems common to Asia and America. Nevertheless as my object is not to make new genera, but to render new species sufficiently known, I shall leave the following species in the genus *Languria*, of which I reckon the principal characters to be its linear body, clavate antennæ, filiform maxillary palpi, and evanescent fourth joint of the tarsus.

87. PYRAMIDATA. *L. rufa thoracis punctis tribus nigris, capite elytrisque viridi-æneis, antennis chalybeis femoribusque testaceis.*

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

Caput supra viridiæneum subtus nigrum, antennis chalybeis: clavâ quadriarticulatâ. *Thorax* rufus margine antico et postico, puncto medio, alioque utrinque laterali nigris. *Scutellum* nigrum. *Elytra* pyramidata viridiænea nitida striis punctorum impressa. *Abdomen* sublineare pyramidatum vel apicem versus gradatim attenuatum, subtus convexum rufum; ano viridiæneo. *Pedes* chalybei coxis nigris, femoribusque, geniculis exceptis, rufis.

OBS. A

Obs. A Javanese species described by Wiedemann under the name of *L. splendens* comes very near to this species, and his *Languria tripunctata*, a Bengal insect, scarcely differs from it except in size and in its feet being altogether of a greenish black colour.

88. *Morio. L. nigro-nitida, capite thoraceque punctatis, hoc fossulis duabus linearibus, elytris atro-æneis puncto-striatis.*

Long. corp. $\frac{9}{20}$

Caput nigrum punctatum labro piceo antennisque nigris. *Thorax* quadratus, punctatus, fossulis duabus brevibus posticis longitudinalibus impressus. *Scutellum* nigrum. *Elytra* atroænea striis septem punctorum impressa. *Corpus* subtus pedesque nigri.

89. *Testacea. L. nitida, elytris punctato-striatis, antennis pedibusque nigris, coxis femoribusque ad basin ferrugineis.*

Long. corp. fere $\frac{3}{10}$

Insectum supra ferrugineum. *Caput* subpunctatum, articulo antennarum basilari subferrugineo. *Thorax* lævissimus. *Elytra* vix obscuriora striis octo punctorum impressis. *Corpus* subtus ferrugineum.

Obs. An insect which Fabricius describes from Sumatra, under the name of *Trogosita filiformis* (*Syst. Eleuth.* 1, 152, 12), comes very near to the above species; indeed only differs from it, according to the description there given, in that it has the elytra smooth. This, however, may be an error of Fabricius, as the insect I have described above, under the name of *Languria testacea*, appears to be widely dispersed, and occurring in my father's cabinet from the continent of India, seems not unlikely to be also a native of Sumatra.

This insect clearly shews that *Cerylon* and other genera of similar structure are most erroneously placed by Latreille with the *Bostrichidæ*, for it forms a most complete transition from *Languria* to *Cerylon*.

Genus MEGAUCHENIA. Nobis.

Antennæ capite subduplo longiores, thorace tamen breviores, undecim-articulatæ, articulo secundo crasso obconico, tertio brevi, quarto longo, reliquis ad clavam brevibus, subglobosis; clavâ orbiculari compressâ triarticulatâ.

Labrum exertum, transversum, corneum, apice bilobum, angulis rotundatis.

Mandibulæ vix exertæ, depressæ, trigonæ, extus incurvæ, apice acutissimæ intus unidentatæ, et basin versus ciliatæ.

Maxillæ basi corneæ processu apicali magno membranaceo falciformi, intus ciliatæ, processu dorsali inconspicuo.

Palpi maxillares triarticulati, articulis basilaribus brevibus, obconicis, articulo ultimo oblongo ovali, apice subulato, præcedentibus simul sumptis longiore.

Palpi labiales brevissimi articulo basilari inconspicuo, secundo et tertio obconicis.

Labium membranaceum, apice bilobum, lobis subacutis.

Mentum breve, corneum, basi retusum, apice subtrigonum.

Corpus elongato-quadratum, fere parallelopipedum, depressiusculum. *Thorax* quadratus longior quam latior, ab abdomine pedunculo nullo disjunctus. *Elytra* corpore breviora.

Tibiæ

Tibiæ ad apicem latiores, extùs denticulatæ. *Tarsi* articulis quinque primis subpulvillatis vel apice setigeris, articulo quarto minimo.

Obs. *Megauchenia* is a difficult genus, but appears to have a strong affinity to *Languria* and to *Cerylon*, indeed principally differs from M. Latreille's description of this last, according to what I have been able to observe, in having the clava of the antennæ of three distinct joints with the labrum emarginate, and, in being pentamerous, in which last respect it agrees with *Languria*. I suspect, however, that the *Xylophagi* of Latreille (which at present form a most artificial assemblage) are in general pentamerous, and that it is merely owing to the minuteness of the fourth joint, and to the small size of the insects themselves, that they have been placed by the entomologists of the French school between the Linnean genera *Curculio* and *Cerambyx*—groupes between which the transition is immediate and perfect. "*Natura opifex rerum, non facit saltus.*"

It is in this stirps, as has been before said, that we find the maxillæ recede the farthest from their typical form; it is in this stirps therefore that of the whole tribe we find the most herbivorous insects. This is curious, certainly, but corresponds with an observation to be made on the herbivorous tribes of *Coleoptera*, namely, that where in an herbivorous groupe such as the *Petalocera*, we meet with a family such as the *Trogidæ* endued with an appetite for animal matter, we find its maxillæ approaching in structure to those of the *Adephaga*, or at least to be furnished with two processes.

90. Setipennis. *M. atropiceus, capite thoraceque subsetigero punctato-striatis: striis alternatim setigeris.*

Long. corp. $\frac{3}{10}$.

Caput clypeo anticé marginato, antennis piceis clavâ tomentosâ. *Thorax* marginatus lateribus rugosulis. *Elytra* punctorum seriebus striata setisque brevibus spiniformibus instructa. *Corpus* subtus *Pedesque* picei. *Tarsi* sub-pulvillati.

Genus SYLVANUS. Lat. *DERMESTES* Lin. Fab.

This genus is said to have some relation to *Trogosita*, but on the nature and value of such relation, I am not at present able to offer any decided opinion. It may, however, be observed, that M. Latreille has described *Silvanus* as having two processes to the maxillæ, and *Trogosita* as possessing only one. Such a remark may lead us to suspect a relation between *Silvanus* and the *Cucujidæ*, which is not improbable; but however this may be, I repeat that a great portion of doubt must still hang over this arrangement of Latreille's *Xylophagi*, inasmuch as we know not how many of them truly belong to the stirps of *Necrophaga*. No greater service can indeed be rendered to this part of entomology than by accurately dissecting these minute insects, of which so many genera and species are to be found in England; I question, however, whether it may be advisable to attempt at present a natural arrangement of them, because so few of the exotic species are known, and such wide chasms appear between several of the known genera.

91. Denticulatus. *S. fuscus, thorace crenato punctulato: lineis duabus impressis, elytris punctato-striatis, antennarum clavâ quadriarticulatâ.*

Long. corp. $\frac{7}{40}$.

Insectum *S. sexdentato* majus. *Caput* clypeo punctulato utrinque ante oculos unidentato antennis fuscis. *Thorax*

Thorax lateribus sexdentatis, dorso subcarinato, fossulâ utrinque longitudinali anticé posticéque profundiore. *Elytra* pallidiora punctorum seriebus striata. *Corpus* fuscum pedibus fuscis.

Obs. The *Dermestes sexdentatus* of Fabricius, which is the same with his *Colydium frumentarium* and the *Ips frumentaria* of Olivier, but which appears different from the *Corticaria frumentaria* of the Entomologia Britannica, comes so very near to our species that I have little doubt of its food being analogous. It probably infests rice, as other species of the genus are found in moist sugar.

Genus TRIBOLIUM, Nobis. *Colydium* Herbst.

Antennæ undecim-articulatæ, sub clypeo ad mandibularum basin insertæ, articulis basilaribus octo globosis sub-æqualibus, apicem versus vix crassioribus, tribus ultimis clavam laxam efformantibus; articulis nono et decimo subpateriformibus, ultimo transverso ovali.

Os sub clypeo plano transverso ad latera rotundato absconditum.

Oculi clypeo fere cincti. *Thorax* transverso-quadratus submarginatus. *Corpus* depressiusculum sublineare. *Tarsi* articulis quinque.

Obs. This genus appears closely allied to *Colydium* and also to have some sort of relation to *Colobicus*. From the latter it differs in the antennæ and form of body; from the former in the form of head and in being pentamerous. I am indeed inclined to think that the *Colydium rufum* of Latreille (*Gen. Insect. et Crust.* Vol. 3. p. 21.) belongs to this genus, if it be not identical with our species; but the description of the *Colydium rufum* by this entomologist is too vague to admit of certainty on the subject.

As the specimen is unique in the collection of the East-India Company, I have been under the necessity of contenting myself with a generic description founded on external characters alone.

Herbst has very justly remarked the strong connexion which exists between this genus and *Dermestes*, and there is indeed no doubt of its belonging to the stirps of *Necrophaga*, as its larva scarcely differs from that of *Dermestes* except in not being so hirsute.

92. *Castaneum. T. ferrugineum, capite thoraceque subtilissimé punctatis, elytris punctato-striatis.*

Colydium castaneum Herbst. 7. 282. tab. 112. fig. 13. E.

An *Colydium rufum*, Lat. Gen. Ins. et Crust. vol. iii. p. 21?

An *Colydium rufum*, Fab. Syst. Eleuth. 2. 557. 11.?

Trogosita ferruginea, Fab. Syst. Eleuth. 1. 155. 23.

Ips testacea, Fab. Ent. Syst. Suppl. 179. 14?

Synonymia *Trogositæ ferrugineæ* apud Fabricium corrigenda, antennarum enim clava in *Lycto navali* Ent. Syst. 1. 2. 504. 10, est biarticulata.

Long. corp. $\frac{7}{40}$.

Clypeus ante oculos depressus angulis truncatis. *Antennæ* apice pallidiores. *Thorax* fossulâ utrinque ad marginem posticum impressâ. *Elytra* seriebus punctorum inter strias duabus obscuré impressa. *Corpus* subtus obscuro-piceum pedibus rufis.

Obs. This insect is by Fabricius stated to be most destructive to rice, that is if it be the *Ips testacea* of the Supplement, but of this I have great doubts, as the description is so loose and vague that it might suit a *Sylvanus*. I have, however, found the *Tribolium rufum* alive among insects from India, and according to Herbst it is very destructive in such situations, he having received

received it as, he says, an uninvited guest in a collection of insects from the East-Indies. Fabricius says of his *Trogosita ferruginea* "Habitat in India utrâque destruens animalia in Museis asservata, panem, aliaque." The name of *Xylophagi* given to this groupe of insects by Latreille, seems indeed to be one of the most inappropriate that he could have chosen, since I do not know that there is any ascertained instance of a species devouring wood. He grouped them, however, with the *Bostrichidæ*, to which they have little or no immediate affinity, and which are true *Xylophagi*. Many of the present insects indeed are to be found under bark, but this residence may be owing to their taste for the fungi and dead animal matter which usually abound in such situations. Those with the habits of which we are acquainted devour fruits, corn, and decayed animal matters. Thus the celebrated Degeer ascertained that his *Tenebrion du lard*, which is a species of *Latridius*, in its larva state devours bacon. The figure and description of this larva proves satisfactorily that these insects are properly placed among the *Necrophaga* and near the *Dermestidæ*. There appears moreover to be a strong relation of analogy between the form of *Latridius* and certain species of the contiguous stirps of *Philhydrida*, such as for instance the *Hydrænæ* among the *Elophoridæ*.

The *Tribolium castaneum* is often to be found in collections as an English insect, but is only, as I suspect, a visitor of our island.

Fam. 5. DERMESTIDÆ.

That this family was in the opinion of Linnæus closely connected with the last, sufficiently appears from the following sentence in his *Biga Insectorum*, "Unde patet genera insectorum nova admodum esse rara, nisi ante cognita quispiam vellet separata ut *Hydroum* a *Dytiscis*, *Ipsidem* a *Dermestibus*." In several genera of the last family the mandibles are short and thick, concealed under the clypeus, and in these insects the mandibles are always of this construction.

Herbst has given an excellent magnified figure of the larva of the common *Dermestes* and this figure sufficiently proves that we are here at the very extremity of Chilopodiform larvæ. It is indeed from this family that we proceed to the neighbouring tribe of Chilognathiform larvæ.

Genus DERMESTES. Lin.

93. *Vulpinus. D. niger subtus albidus capite thoracisque lateribus cinereo-villosis, scutello testaceo-villoso, elytris submurinis.*

Dermestes vulpinus. Fab. Syst. Eleuth. 1. 314. 12.

Long. corp. $\frac{7}{20}$.

Obs. This destructive insect appears to be very generally dispersed over the old world. It is at least too common in France, the whole of the south of Europe, Africa, and India. In my father's collection there is also one marked as from Cayenne. The ubiquity, however, of such insects as these which inhabit skins, &c. may be owing to their attendance on man.

Genus CHELONARIUM. Fab.

94. *Villosum. C. nigropiceum nitidum subpunctatum, elytris substriatis, tarsis rufescentibus, antennarum articulis ultimis pallidis.*

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

Insectum totum villo denso cinereo obtectum.

Obs.

Obs. The occurrence in Java of genera like this, hitherto supposed to be peculiar to America, is a circumstance important in entomological geography, and which we shall frequently have occasion to allude to. In the mean time I shall observe that the antennæ of the only specimen in the East-India Company's collection have lost their last joints, having only two of that setiform part which so singularly distinguishes this genus from all others known. (Vide *Lat. Gen. Ins. et Crust.* Vol. 2. p. 44.) Such antennæ agree in scarcely any respect with those of other *Chilopodomorpha*, and I am therefore by no means convinced of the propriety of placing this insect here, and must consider the matter as undecided until a more accurate investigation shall have been made from an unmutilated specimen.

Stirps 5. BRACHELYTRA. Lat.

It is a singular circumstance that no insect of this stirps, which is the same as the Linnean genus *Staphylinus* was collected by Dr. Horsfield. This at all events proves the extreme rarity of such insects in Java. Of their existence in the island I have no doubt, since they have been brought both from New Holland and the Continent of India, and it would therefore be remarkable did they not occur in the intervening islands. When it is considered that the British species of this stirps are so numerous, it appears very extraordinary that not one should have occurred in Java. But in this, as in all other tropical climates, the surface of the earth is almost exclusively occupied by ants, and according to Dr. Horsfield, where the common ants are not found the *Termites* or white ants possess the territory. These two tribes, which are constantly at war, or rather, which clear away and destroy each other as their numbers respectively predominate, have in a great measure divided the surface of the island among themselves. From their incredible numbers, particularly of the common ant, little is left on the surface for other insects. Swarming on every spot, and incessantly in motion, they attack and devour whatever animal matter they meet with in a much shorter period than would be thought possible by a person who had not witnessed the fact. But nevertheless whenever in his excursions Dr. Horsfield observed the carcase of any animal, he and his assistants carefully examined it, and from the care they took in such labours, he is convinced that had *Silphidæ*, *Staphylinidæ* and such carrion-feeding families of insects occurred in any tolerable abundance, they could scarcely have escaped his researches. With respect to such genera of *Brachelytra* as inhabit flowers, he scarcely conceives, had they been common, that they could have escaped him, as he was in constant habit of collecting on plants and flowers.

In the third volume of the *Règne Animal*, M. Latreille has divided his groupe of *Brachelytres* into four sections, which he terms *Fissilabres*, *Longipalpes*, *Applatis* and *Microcephales*, all of which are apparently natural groupes. Now if to these we add his grand division of Dimerous insects, we have the whole of the *Brachelytra*, which may therefore be arranged thus:

Brachelytra.

2. Aberrant groupe? Caput haud thoracis magnitudine.	5. *Tachyporidæ*,	vel	*Microcephales* Lat.
	4. *Pselaphidæ*, Leach	vel	*Dimera* Lat.
	3. *Omalidæ*,	vel	*Applatis* Lat.
1. *Normal groupe?* Caput thoracis magnitudine.	2. *Stenidæ*,	vel	*Longipalpes* Lat.
	1. *Staphylinidæ*,	vel	*Fissilabres* Lat.

The apparently dimerous tarsi of the *Pselaphidæ* are not of themselves alone sufficient to throw these insects out of the stirps, for we may perceive the articulations of the tarsi to disappear in *Oxytelus* and several genera of the neighbouring family, which the Tarsal System with its usual inconsistency, places widely apart from the *Pselaphidæ*.

From the *Omalidæ* by means of the genus *Lesteva*, we return to the *Geodephaga* into which stirps we enter by *Lebia* and other of the *Brachinidæ*, a family of which the distinguishing or typical character depends on an approach to the short truncated elytra of the *Brachelytra*. In *Lesteva*, moreover, and such other genera of this stirps as come nearest to the *Geodephaga*, the outer process of the maxilla is slender and palpiform. So it is that, whether nature be regarded at the root or at the extreme branches of her tree, we always find her pursuing the same plan, and constantly displaying as much unity as beauty.

This Work, which is intended to contain systematic Descriptions of all the Insects collected by Dr. Horsfield in Java, will be published in Numbers. The Species will be arranged, as nearly as possible, according to their natural affinities; and in order to make this, the important part of the Science, more clear, the Descriptions will be interspersed with such leading observations on the economy and anatomical structure of the Families, as may, it is hoped, render the work interesting to Naturalists in general, as well as to the Entomologist.

The plan of the Author, however, will be best understood on a perusal of the first Number. The second Number is now in progress for publication, and will contain the whole of the Coleoptera having Iuliform Larvæ.

The Insects described are arranged in the Museum of the Honourable East-India Company, where they may be inspected under the regulations established at their Library.

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