

ILLUSTRATIONS
OF
EXOTIC ENTOMOLOGY,

CONTAINING
UPWARDS OF SIX HUNDRED AND FIFTY
FIGURES AND DESCRIPTIONS

OF
FOREIGN INSECTS,

INTERSPERSED WITH
REMARKS AND REFLECTIONS ON THEIR NATURE AND PROPERTIES.

BY DRU DRURY.

A NEW EDITION,
BROUGHT DOWN TO THE PRESENT STATE OF THE SCIENCE,
WITH THE SYSTEMATIC CHARACTERS OF EACH SPECIES, SYNONYMS, INDEXES,
AND OTHER ADDITIONAL MATTER.

BY J. O. WESTWOOD, F.L.S.

SOC. CÆS. NAT. CUR. MOSQ. SOC.
ETC. ETC.

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PREFACE

TO THE PRESENT EDITION.

THE acknowledged value of the figures contained in Drury's "Illustrations,"* the extreme rarity of many of the insects figured therein, which continue up to the present day to be unique, and the scarcity of the work itself, which appears almost unknown to Continental Entomologists, having induced the proprietor of the plates to republish the work, I have consented to undertake the charge of bringing it forth in a form more adapted to the present greatly advanced state of Entomology. How far I have succeeded must be left for the candid Entomologist to decide. It is fit however that, by way of bespeaking indulgence for the numerous errors into which I fear that I have, notwithstanding all my care, fallen, I should mention the obstacles which have operated against my giving the work that perfect style which I could have wished it to possess. Of these the chief difficulty has arisen from the non-possession of the specimens which served for the original illustrations, without which it may be readily conceived that it has been impossible to ascertain with precision many of the more minute characters, of which the present state of the science requires the investigation; thus in many cases I have been obliged to remain in ignorance of the particular structure of the antennæ, trophi and legs, and the disposition of the veins of the wings, in many of the smaller species of Lepidoptera, so that the precise genera may not in some instances be correctly stated; and to many I have been compelled to attach marks of interrogation for the like reason. Another and equally strong obstacle has been produced from the little attention paid to exotic

* The original title of this work, Vol. I., was "Illustrations of Natural History, wherein are exhibited upwards of two hundred and forty figures of EXOTIC INSECTS, according to their different genera, very few of which have hitherto been figured by any author, being engraved and coloured from nature, with the greatest accuracy, and under the author's own inspection; on fifty copper-plates; with a particular description of each Insect, interspersed with remarks and reflections on the nature and properties of many of them, by D. Drury, 1770." The second volume containing upwards of two hundred and twenty figures, on fifty copper-plates, appeared in 1773; and the third containing upwards of two hundred figures, also on fifty plates, was not published until 1782. The majority of the plates were drawn and engraved by the celebrated Moses Harris, but some of the plates in the last volume were by a different hand.

Lepidoptera by modern Entomologists. More than two-thirds of these Illustrations are illustrative of that beautiful order of insects ; and yet, with the exception of some of the showy butterflies and moths, scarcely a reference is to be found even in the works of Fabricius, the personal friend of Drury, whose *Entomologia Systematica*, published in 1793 and 1794, contains the last general summary of the species of this order ; Gmelin also, whose *Systema Naturæ* it has been the fashion to decry, but which, as a laborious compilation from the works of preceding and chiefly Continental authors, is of great service,* was only acquainted with these illustrations through the early works of Fabricius.† It is true that M. M. Boisduval and Guérin have respectively published various new exotic Lepidoptera, especially of the Nocturnal group, in the *Voyages* of the Coquille and *Astrolabe* ; but we still want a general revision, not only of the species but of the genera of this order. It was to have been hoped that, as regarded the Javanese species, this would have been effected by Dr. Horsfield, whose work upon the Lepidoptera of Java, as far as published, leaves nothing to be desired of the structural details of the species illustrated therein. M. Boisduval also, in his *Histoire Naturelle des Lépidoptères*, has treated the subject in a masterly manner, availing himself both of the preparatory states and veining of the wings ; but we greatly miss those beautiful details which render the works of Horsfield and Curtis invaluable. It is in this comparative ignorance, both of the structural and metamorphic details of exotic Lepidoptera, that we may attribute the want of a sound and philosophical distribution of the order in question ; and which at the same time prevents us from determining the situation of many remarkable and anomalous groups. Of these the genera *Castnia*, *Urania*, &c. and the whole tribe of the *Zygænidæ* may especially be mentioned ; and it is with the view of inciting enquiry into this part of the subject, that I have introduced many of the latter species into the genus *Callimorpha* amongst the Nocturnal moths.

Another obstacle has been produced by the little attention paid by the Entomologists of the last century to the geographical situation of their insects ; as an instance of this, it will be sufficient to mention that Linnæus and Fabricius made use of the term “ *In Indiis* ” generally, to indicate that an insect was an inhabitant either of the West or East Indies. Drury indeed appears to have paid more than the ordinary degree of attention to this part of the subject, as appears from the *Catalogue* of his *Insects*, which I obtained at the sale of Mr. Donovan’s collections, to whom, as appears by a note, they were presented by Mr. Drury. Thus under *Lucanus interruptus*, (Genus *Passalus*, Fabricius,) we find the following entries :—

* A similar compilation bringing down the science to the present time would be invaluable, even with all the inaccuracies charged to Gmelin.

† This is evident from Gmelin’s occasionally copying some of Fabricius’ erroneous references, e. g. *Bombyx ornatrix*, Gmel. p. 2444. with a reference to Drury, v. 1. t. 74. as in Fabr. *Syst. Ent.* p. 586. instead of tab. 24.

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|-----|----|-----------------|----------------|--|--|
| 7. | 3. | Interruptus, | Muskito Shore, | Capt. Keay, | } also at Maryland, New York, Carolina, where they are very large. |
| 8. | 3. | Interruptus, | Sierra Leone, | Mr. Smeathman, | |
| 9. | 3. | Interruptus, | Maryland, | Mr. Milward, 1756, Lin. Syst. p. 560, f. 4. | |
| 10. | 4. | Interrupt. var. | Rio Janeiro, | Mr. Bonifas, 1775, that on the right hand from Mr. Laing, at Tobago. | |
| 12. | | Interrupt. var. | | Bought at Seymour's sale. | |

Here it is quite evident that Drury had carefully noted down the localities of all the specimens of this insect which he possessed, and which are now described as distinct species; and this extract will I think be quite sufficient to shew, that from the careful manner in which these Catalogues were kept by Mr. Drury, we are entitled to regard them, when there happens to be a difference between the works of Drury and Fabricius, Linnæus, &c. as at least of equal authority with the writings of these authors. I regret that these Catalogues did not come into my hands until after the first and second volumes of this edition were printed off. I have incorporated the notes in the third volume; and have given, as an Appendix, extracts from these Catalogues, where there happens to be any variation or doubt as to the locality of any of the species figured in the first two volumes.

I have almost invariably adopted the very proper principle of referring to that name, either generic or specific, which has the priority in point of date. In the first edition, the first volume appeared without specific names, which were at that time a novelty but recently introduced by Linnæus. In the second volume, however, an appendix was given, containing specific names both of the first and second volumes, and a similar appendix was given at the end of the third volume; but no specific names appeared in the body of the work. To many of the names contained in the appendices Fabricius referred, many he entirely omitted, and for many he substituted others. These last I have of course rejected; and have in many instances given the dates when the names were first imposed by the different authors—a plan which would be very serviceable if generally adopted. I have, likewise, made a point in many cases of restoring the specific *proper* names, where, in consequence of a change in the sex of the generic name, a corresponding change had been made in such specific name. This alteration had been carried to a great extent in the *Encyclopédie Méthodique*; and many male and female *proper* names had been completely altered, in order to suit them to the sex of the new genera in which they were placed. This was, however, an error on the wrong side; because it is admitted as an established principle, that if it should be thought necessary to subdivide a genus, the names of the subdivisions should be of the sex of the original generic name.

The plan upon which the first edition of this work was published may be seen from the following specimen, which is one of the shortest given, but which will be sufficient to shew not only the style of the former edition, but also the manner in which I have treated the subject and the additions which I have introduced.

Fig. III.—Expands about three inches.

Upper Side.—The antennæ are black. The head, thorax, and abdomen brown. All the wings (the edges of which are even not dentated) are of a deep brown, with a shade of clay colour, rising near the anterior edges of the superior ones, runs along near the tips and ends at the external edges.

Under Side.—The eyes are black, the palpi yellow. All the wings are the same brown colour as the upper side, with the clay-coloured shade near the tips as on that. The superior wings have five whitish spots on each placed on a row near the external edges, the inferior ones have on each sometimes five and sometimes seven spots of the same colour placed in a circular row, that meets near the extremity of the body.

I received it from China. I cannot find it any where described.

Fig. III.—Il deploye ses ailes environ trois pouces.

Le Dessus.—Les antennes sont noires. La tête le corcelet et l'abdomen bruns. Les ailes (dont les bords sont unis ou point dentelés) sont d'une couleur brune foncee, avec une nuance couleur d'argille se levant proche des bords antérieurs des ailes supérieures, qui court le long près des bouts et finit aux bords extérieurs.

Le Dessous.—Les yeux sont noires, les antennes jaunes. Toutes les ailes sont de la même couleur brune que en dessus, avec la nuance d'argille proche des bouts chacune des ailes supérieures a cinq taches blanchâtres, placées sur une ligne près des bords extérieurs. Les inférieures ont chacune quelquefois cinq et quelquefois sept taches de la même couleur rangées circulairement et se rencontrant près de l'extrémité du corps.

Il l'ai reçue de la Chine. Je ne le trouve point décrit.

The name of *Papilio Eumeus* was consequently proposed for this insect in the Appendix to the second volume.

Amongst the manuscripts with which I have been favoured by the relatives of Mr. Drury, or have obtained elsewhere, are comprised a variety of notes relative to the publication of this work, and of observations from which the following are selected. He notices that “his *descriptions* are only intended to assist the reader in ascertaining the different species; and that they are not intended to be so complete as to give a perfect idea of the animal without the help of the figure.” He alludes to the difficulty not only “of ascertaining true colours or calling them by their proper names,” but also of “colouring the prints so, as to exactly represent the natural specimens,”—that he has mentioned and given English names to no more parts of insects than had suited his purpose for describing them,—that “there are some parts mentioned in the descriptions which cannot be seen in the plates, such as the Gorget (Sternum), &c. which may serve not only to assist in classing them, but to ascertain their species.” “The descriptions of the Hymenoptera are not intended to be so complete as to give a perfect idea of the insect, but are only given to assist the reader in observing the figures.”

“All the descriptions are taken from the insects themselves; whatever defects, therefore, are to be observed in comparing them with the coloured figures must be imputed to the artist, as it would not be proper to describe them according to the prints, but to nature.”—

It is in consequence of this last remark that I have been careful to omit nothing of the original edition in this edition of the least importance, but have given the description as much as possible in the words of the author himself.

I have also added a general Systematic Index to the entire work, and an Alphabetic Index, in which the names employed in the first edition are distinguished by an asterisk.

The collection formed by Drury was exceedingly choice, and had occupied nearly thirty years in its formation; for although, as Drury himself says (in one of the printed circulars which he distributed with a view to its sale) “there may be in Holland collections more numerous, having in many instances a great number of a single species) yet no collection abounds with such a wonderful variety in all the different genera as this. All the specimens of which it is composed, are in the highest and most exquisite state of preservation, such an extensive collection can be supposed to be, and a very considerable number are *unique*, such as are not to be found in any other Cabinet whatever, and of considerable value; many of which, coming from countries exceedingly unhealthy, where the collectors, in procuring them, have perished by the severity of the climate, give but little room to expect any duplicate will ever be obtained during the present age; and the learned quotations that have been taken from it by those celebrated authors Linnæus and Fabricius, in all their late editions, are incontestable proofs of the high degrees of estimation they entertained of it.”

This statement was made in 1788, when the author had consumed upwards of twenty-five years in its formation, and at which period no less a sum than £4,000. had been expended upon the collection. At this period the collection consisted of—

	Subjects.	Different Species
Coleoptera.....	2218	2136
Hemiptera	895	778
Lepidoptera	2462	2148
Neuroptera	172	171
Hymenoptera	533	533
Diptera	552	402
Aptera	105	96
English Collection	2641	2070
	<hr/> 9578	<hr/> 8370

Subsequently great additions were made to the collection, which, as will be seen from the localities affixed to the species figured in these Illustrations was received from all parts of the world with which England at that period had intercourse. Of the earnest zeal with which this collection was made, an idea may be obtained from a copy of a letter addressed to a gentleman residing in Africa, with whom he was anxious to enter into correspondence.

SIR,

London, Dec. 13th, 1766.

My being an utter stranger to you compels me to apologize for the liberty I take in sending you this. Mr. Carghill's recommendation is the occasion of my doing so, and he has assured me of your

kind disposition to oblige me in those articles that are the subject of the following lines; I must therefore inform you that I am engaged in the study of Natural History, but as the extensiveness of it in all its several parts is very great, I confine myself entirely to one single branch, and that is Insects. A branch I find fully sufficient to engage my attention without entering into any of the others, and in consequence of this I am endeavouring to obtain as large a collection of foreign ones as I possibly can; to this end I am under a necessity of getting various recommendations from my friends to gentlemen settled in foreign parts, who I must consider as the only persons that can effectually assist me in this scheme. Permit me therefore, Sir, to beg your concurrence herein, and if the highest ideas of gratitude can prompt a man to make an adequate return for any favour of this kind, be assured I shall take the earliest opportunity of manifesting mine for any thing you shall think proper to oblige me with. The great distance the continent of Africa is situated from London, the ignorance we labour under of its produce in the insect world, and the great difficulty I have found in procuring any insects from those parts, are circumstances that rather increase than blunt my desire for them; but as in the course of fourteen years I have not been able to procure any great number, I can only attribute this disappointment to my having never been able to apply to any gentleman settled there, for the persons that I have hitherto commissioned to this purpose were those that returned with the ships they went in, and I imagine their time was too short to be able to procure such things for me; but as Mr. Carghill has informed me your residence in Africa will afford you many leisure hours, permit me to indulge the hope of your complying with this request. It is necessary for me to inform you that there is no occasion for your bestowing any time of your own in this pursuit, as I imagine it might be done by people to be hired in Africa to that purpose for a very trifle; and as it is necessary I should inform you where and in what manner insects in general are to be taken, give me leave therefore to explain the use of the things I have sent for that purpose: you will observe the bows of the forceps being covered with gauze, and folding so close together as to prevent any small insect's getting out when once enclosed, constitutes a contrivance the best adapted of any thing I ever saw for that purpose, it is small enough to be carried in the pocket, and if you have curiosity enough to employ an hour in this amusement, permit me to say you will have a scene of wonders opened to you in the insect world, you will have such a number of objects of speculation present themselves, that will amaze you. When an insect is inclosed in these nets it is to be stuck through the body with a pin (I have sent some for this purpose), and in that manner placed in the box, whose top and bottom are lined with cork. Suffer me to beg of you (if you will be so obliging to procure me some of those things) to get a larger box made in Africa of soft wood, in which a pin will easily enter, and replace the insects out of the oval box now sent into that, and when filled I will entreat you to commit it to the care of a friend to be conveyed to England, giving him at the same time a charge to keep it from being tumbled about by the rolling of the ship, which will certainly damage the contents, and favouring me with a letter of advice; it is necessary to beg you to paste a slip of fine linen or paper all round the crevice and opening of the box, to prevent the cockroaches, ants, &c. getting in, who will infallibly damage and destroy the insects in it; I forgot to mention that they should not be removed out of the oval box into the great one till they are dead, because they will scratch and tear one another to pieces, therefore when the person comes home from collecting, they may be taken out singly and stuck on a piece of board or stick, and held close to the fire (not so as to burn or scorch them), and this in less than a minute will effectually kill them, afterwards they may be stuck very close together in the large box, and in that manner sent to England. I will just mention what kinds will be most acceptable, and where they are to be found, viz. beetles or insects with hard cased wings, insects with transparent wings, such as wasps,

bees, waterflies, also locusts or grasshoppers, ants, fireflies, or in short any kind except cockroaches, centipes, or scorpions, which in general are so very common they cease to be valuable—of all the other kinds there is an infinite variety, differing in size, shape, and colour, any of which will be very acceptable, either large or small; and of which, give me leave to observe, the most ugly disagreeable insects (as they appear to be) are the most desirable. They are found in various places, some on flowers, some in horse-dung or cow-dung, some under stones and logs of wood, some under the bark of trees where it separates or divides itself from the body, which by tearing up will expose many kinds to view; but no place abounds more than rotten trees, for there they hide and secrete themselves in holes among the rotten wood, and are never seen unless they are searched for. Let me here observe, that the different seasons will yield different species of insects, some being to be found in one week that were not to be seen the preceding ones, and the next will afford others differing from the former, while the succeeding one shall produce some other sorts that were not to be seen before; so that by searching for them at different times, you perceive great varieties will be collected. I must also beg you to preserve the horns of them as much as possible, as they in a great measure determine their genus, and as such should not be broke off. The insects placed in the box will serve as samples to shew the person you may hire what kinds of things are meant to be collected, who for want of them might not be able to understand your instructions.

I have now, Sir, mentioned every article necessary to be known, therefore shall conclude with once more begging you to assist me in this scheme; and if there is any business, or any other thing, in which I can be serviceable to you here, I beg you would command me; but if there is nothing of that kind by which I can express my gratitude, permit me again to repeat I shall take the first opportunity of making a return fully adequate to your favour.

I am, Sir, with great respect, your most obedient servant,

D. DRURY,

At No. 1. in Love Lane, Aldermanbury,
London.

P. S. I forgot to mention that when you employ an agent to collect insects, please to tell him it is not the great number but the variety that I desire, six or eight being enough of any one species.

Subsequently, this fine collection came to the hammer, on Thursday, May 23, 1805, and the two following days. A few of the more interesting lots, with the prices obtained for them, and the names of the purchasers, are given below as an interesting record.

Lot 3	Phalæna Aprilina, Graminis, and 22 others.....	26	.....	£7	12	0	G. Humphrey.
8	Sphinx Convolvuli, and 8 others	9	.....	4	1	0	Donovan.
46	Papilio Priamus.....	1	.....	4	14	6	General Davies.
64	—— Claviger, and 5 others	6	.....	7	10	0	MacLeay.
69	A variety of curious Spiders, chiefly from Georgia	110	.....	4	4	0	Donovan.
90	Papilio Iris, Edusa, Hyale, and various.....	.....	.....	4	10	0	Humphrey.
94	Sixteen curious Curculiones	16	.....	11	11	0	Ditto.
95	Scarabæus Goliathus, var.	1	.....	12	1	6	Ditto.
100	Cerambyx Gigas, and 2 others	3	.....	4	8	0	Haworth.
104	Thirteen Species of the Buprestis Genus	13	.....	8	0	0	MacLeay.
105	Elater Flabellicornis, virens, and 8 others	10	.....	4	6	0	Latham.

Lot 112	<i>Cetonia hamata. nitens, grandis, Scarabæus</i>								
	<i>festivus, and 12 others</i>	16	.....	£17	0	0		MacLeay.	
123	A variety of small Insects of the <i>Mordella</i> , <i>Forficula</i> , and other Genera, among which are <i>Diopsis ichneumonea</i> (and also a species of <i>Paussus</i>)	31	.....	7	0	0		Ditto.	
201	<i>Mutilla bimaculata, thoracica, Scolia signata</i> , and 24 others	27	.....	3	5	0		Kirby.	
269	<i>Spheg tropica, frontalis, Africana, &c.</i>	128	.....	6	6	0		Ditto.	

The total amount obtained for the Insects was £614. 8s. 6*d.*; and about £300. more for the Cabinets, Books, &c. with the Copper-plates of the Illustrations.

Of the estimation in which the works and collections of Drury were held by Linnæus, Fabricius, &c. the constant references (especially by the latter) made to them, will sufficiently prove. The former dedicated a fine species of *Cimex* to Drury, figured in the first volume of these Illustrations, pl. 42. f. 1. 5. ; whilst the latter described an American species of *Stenocorus* from Drury's collection, under the name of *St. Drurii* (Ent. Syst. 1. 2. p. 302.) and also a Danish *Tinea* under the name of *T. Drurella*. The Rev. W. Kirby also in his Monograph upon the English Bees, has named a rare species belonging to the modern genus *Eucera*, *Apis Drurella*, with the remark—"In honorem D. Drury, operis entomologici splendidissimi auctoris, ejus museum insectorum rarissimorum undique conquisitorum gazophylacium ditissimum, hanc apem ab illo acceptam nominavi." (Mon. Ap. Angl. 2. p. 286.)

That Drury was in correspondence with these "Heroes Scientiæ" will therefore be unquestioned ; and the following letter from the younger Linnæus, communicated to me by the relatives of the former is interesting not only on this account, but for the curious statement relative to the *Œstrus humanus* then recently discovered in South America.

Celeberrimo Viro

D. Drury.

S. pl. d.

Carolus a Linne.

Dum post mortem dilectissimi parentis occupatus fui in redigendo naturalia ab illo in Syst. Nat. nondum determinata, et ut his nomenclaturam pro scientia naturali maxime necessariam continuarem, maxime sollicitus fui illa, quantum mihi possibile foret, synonymis ex præstantioribus auctoribus scientiæ illustrare, imprimis illorum qui pulcherrimis individuorum figuris sint ornati. Tu, Vir Celeberrime, es ex illis, qui in Insectis pulcherrima præstitisti; ex Tuo opere volumina habeo duo, quæ in hereditario cum reliqua Bibliotheca* Parentis habeo; sed an tertius termines s. plures post secundum prodire est quod ignoro, et de qua re rogarem tuam informationem? et si prodire ubi inveniuntur? et quo prætio? Amicitiam quam erga Parentem habuisti, spero hanc filiolo permittere licentiam. Optandum esset a Te in his majorem videre augmentum, requirunt insecta figuras; nam vix differentiis determinanda sunt. Insecta australioris plaga mundi a Banksio et Forsteriis indagata, pulcherrime et utilissime pro scientia methodo Tua illustrari possent. Utinam facere vellis, immortalitatem Tuam conservaret scientia hæc !

* Subsequently purchased by the Linnæan Society.

Ego qui nunc novam paro editionem Zoologicam Syst. Nat.* summam in insectis sentio difficultatem ita exprimere, ut aliis intelligas quod tam facile figuris lævatur. Multa præstitit noster De Geer de Insectis, sed majora adhuc præstitisset, si figuræ vivis coloribus ornatæ fuissent. Quis Entomologus est alius apud vos qui collectionem Insectorum possidet ex India occidentali, si quis esset qui desideraret insecta Suecica lubenter Illi ea præstare vellem.

Nuper litteras habui ex America Meridionali ubi morbus endemius est hominum etiam Europeos aggredit illuc venientes quæ causatur a larva *Æstri*, quæ intra cutem per integrum annum cœlatus et nullo remedio expelli potest nisi periculo vitæ; est nova species *Æstri*.

Sed hic vale et mihi fave.

Dabam Upsaliæ, d. 10 Mart. 1780.

To Mr. D. Drury, Goldsmith in the Strand, in London.

My late friend A. H. Haworth, Esq. thus spoke of Drury and his works in the year 1807. "In the year 1770 we arrive at the time of publication of a beautiful work on Entomology, that of my late and regretted friend D. Drury, F.L.S. in one vol. 4to. printed at London, and containing comprehensive descriptions in English and French, with an Index of Linnæan names at the end, and a great many coloured copper-plates of such interesting exotic Insects, as had not been before or insufficiently figured. The icons were executed by Moses Harris, in his best style; and are far superior to any of their predecessors in Britain.

"It is also unquestionably the first work in this country in which the trivial names of Linnæus are suffered to make their appearance, and although only given in the shape of an index, their extensive value throws a lustre on the utility of the work, which, unaided by them, would not have reached a second volume, published in 1773, and a third in 1782; and even a fourth would have appeared if the author had lived much longer;† as he himself assured me, some time prior to his decease; wherein would have been delineated some of the gigantic and extraordinary insects of Demerara, in which remote territory he had successfully employed a collecting agent. Mr. Drury's Cabinet was one of the most extensive ever made; and is said to have contained, in species and varieties, the surprising number of 11,000 insects. He spared neither pains nor cost in getting them together, and like Petiver of old, sent printed instructions, in various languages, all over the world for that purpose, by captains of ships and others.

"Soon after his decease, at an advanced age, which happened about two years since, his valuable collection was disposed of in London, by public auction."—(Trans. Ent. Soc. Vol. I. 1807. p. 34.)

The decease of Mr. Dru Drury occurred on the 15th of January, 1804, at the age of eighty, and he was buried at the parish church of St. Martins in the Fields.

J. O. W.

* This contemplated edition of the Syst. Nat. never appears to have been published.

† I find no notice of this contemplated fourth volume amongst Drury's manuscripts.

M R. D R U R Y ' S P R E F A C E

T O T H E F I R S T E D I T I O N .

V O L . I .

It is universally allowed that the study of nature is one of the most pleasing employments that can engage the mind of man. The entertainment it affords is as infinite as the variety of subjects of which it is composed ; and such a vast field of speculation lies open to our view, either in the animal, vegetable, or mineral worlds, that each of them is fully sufficient to engross the attention of a single person. It must be allowed, that the study of natural history is so far from having attained that degree of perfection it might have done, by the assiduity of the curious, that it cannot, at present, be considered as having attained its meridian ; and the slow manner in which it arrived even to that, has subjected us very much to the reflections of foreigners ; many of whom appear surprised, that a nation, not inferior to others in every branch of science and knowledge, should discover so great a want of curiosity, and little attention to a study that has been productive of so many advantages to mankind, and probably, may hereafter produce many more. Certainly, such opportunities for improvement never presented themselves in this kingdom, as in the present age. All corners of the world are visited by our ships ; the remotest shores of Europe, Asia, Africa, and America, are not unknown to our countrymen ; but feel the effects of that insatiable thirst for traffic and gain, that animates the present generation. Every lover, therefore, of this study must naturally hope, that such noble occasions of increasing the knowledge of nature, may not be neglected. It is indeed true, that the number of its votaries, in England, are but few, in proportion to other states, where professorships and societies are established under the patronage and protection of the chief personages : yet if we consider it as affording an inconceivable fund of entertainment to its followers, it is rather to be wondered it is not more encouraged and propagated among us, than that we should find a few who have resolution enough to judge for themselves, and follow a study that is always new and always pleasing. The sneers and contempt thrown on it by men of narrow minds, who are impatient at hearing of persons bestowing their time in collecting a plant, an insect, or a stone, may perhaps contribute

not a little to prevent its progress ; but whatever character may be stamped, either upon the study, or its professors, by such persons ; it is certain, none but men fit to be placed in the first rank, have usually philosophy enough to prompt them to make enquiries into the works of nature. To some the task appears too arduous, to others too intricate, and to the generality too trifling ; who are apt to look with contempt on every pursuit that does not coincide with their own opinions ; nor must we, from vulgar minds, expect any conclusions in its favour : with these, a horse, a dog, or a cock, seem to bound the utmost limits of their gratifications. But men of refined tastes will judge otherways. They know that the inexhaustible store of entertainment nature affords in the contemplation of her works, is unbounded. It is not to be enjoyed all at once ; the more we pursue, the more we shall possess, in proportion as we manifest a greater or less ardour. Nor is the serene placid enjoyment found therein, to be measured by the common gratifications of *sense* ; as these often leave stings behind that worry the soul, and subvert the end they intended to promote ; while the other offers to us its friendly aid, replete with happiness, health, and peace. And further, if the contemplation of the works of the Sovereign Architect, tends to promote that serious and attentive state of mind which disposes men to the pursuit of virtue, in order to be happy ; and if the knowledge and practice of virtue are the means of supporting the mind through all the difficult passages and rugged paths of life ; the naturalist bids as fair to be happy as any of the human race. His pleasures are not chequered by remorse, or damped by despair ; his pursuits leave no horrors on the mind, or clash with the duty he owes his Maker, his neighbour, or his prince ; his conscience suffers not for the indulgence of his mind, nor has repentance need to stalk behind him with an uplifted arm, for injustice committed on his fellow-creatures ; on the contrary, it is for them ultimately his labours are pursued, for them he inquires into the various arcana of nature ; every part of the earth is searched for their benefit, and its bowels are torn out and examined for their advantage.

On the other hand, if we consider natural history as connected with religion, we shall find them so interwoven and blended together as not to be separated. In this view we shall find it the best adapted for opening the mind, enlarging its conceptions, and giving us the most exalted ideas of the Deity, of any science whatever, astronomy not excepted, whose study, however noble it may be thought, tends not more to the same improvement ; for certainly the power, wisdom, and goodness of the Almighty are as conspicuous in the smallest objects, as those of the first magnitude, if *great* and *little* be only relative terms. If, therefore, natural history is able to accomplish this, nothing surely can afford a more effectual cure for infidelity. For whoever heard of a naturalist being an atheist ? or of an infidel, who had spent his life in studying and observing the works of nature ? I believe none will hesitate to pronounce the man, who has made any considerable progress in this study, and who could entertain thoughts so injurious to the honour of his Maker, to be a more wonderful being than any that ever went before him.

The train of reflections that arise from these considerations, is greater than is consistent with the plan I have prescribed to myself in these pages. If the reader is desirous of being further informed of the uses and advantages of natural history, I shall refer him to Stillingfleet's Tracts, taken from the *Amœnitates Academicæ*, published at Upsal; where he may be acquainted with many curious and interesting particulars, which I have not room to insert here; my speculations having been confined to one single branch (insects) I shall only mention such observations relative thereto as may be proper for an introduction of this kind.

Insects may, with great truth, be considered as a rank of beings so wonderful and extraordinary, as to strike with astonishment every observer, if we regard either their structure, powers, or use; and creatures, who, at the same time that they challenge our regard, loudly proclaim the wisdom, goodness, and omnipotence of their great Creator. If their shape and beauty are capable of attracting our notice, their ways of living are no less adapted for exciting our admiration; and the more we enquire into their nature and history, the more occasion we shall find for confessing this great truth, "nothing is created in vain." The wondrous manner in which numbers of them pass their lives, during their first states, is unknown to the greater part of mankind. Most people, indeed, know that a Caterpillar produces a Butterfly; but thousands of persons do not know that a Caterpillar is a Butterfly in disguise, as Dr. Lister ingeniously observes,* and as Swammerdam† proved to the great Duke of Tuscany, by stripping off the external skins, and displaying the butterfly concealed beneath them. Many persons are ignorant that plants (even of the most poisonous nature) are the beloved and favourite food of some species of insects, and that what is wholesome and nourishing to one, is pernicious and destructive to another. Who would believe that the hard substance of the soundest Oak was capable of being macerated by an insect, and received into its stomach as food? that it should there yield a proper nutriment for its growth, and that nothing but a substance as hard and firm as that could possibly contribute to the creature's health and increase? Who would imagine that a colony of Ants, an insect so contemptible in size, considered singly, were capable of making animals, of considerable bulk and strength, retreat from them as from a formidable enemy?‡ Who would suspect that numbers of insects are appointed to live, during the greatest part of their lives, within the bodies of other animals, many of whom receive no material injury thereby; some become frantic and

* See Goedartius, translated by Dr. Lister.

† See Swammerdam's Book of Nature, translated by Dr. Hill.

‡ There is a species of ants in Africa, exceedingly numerous, and continually ranging from place to place; not dwelling in colonies or hills, as we see them in England; being armed with strong jaws or forceps, and whatever animal they assail in the course of their travels, they generally by means of their numbers overcome; there being no method of securing themselves, or preserving their lives, but by running into the water. The blacks, as I have been informed by gentlemen who have lived there, will get out of their way, or quit their habitations, taking their children, &c. with them, and wait till the ants have passed them. So numerous is this host, that a deer, hog, &c. being killed and left on the ground, in one night will have the flesh entirely cleared from the bones, and made a complete skeleton.

diseased, and others are doomed to perish, and by their deaths give birth to these their inbred enemies? Who, that is a stranger to natural history, would believe that there are insects destined to live in the waters many months, where their principal employment is the destruction of animals less than themselves, on whom they feed and thrive, till they become inhabitants of the air, when their lives are terminated in a few weeks, perishing by the depredations of old age, if they are lucky enough to escape the power of other animals stronger than themselves? Yet such are the truths existing in nature; truths known to every one conversant with this study. In short, there is no part of the kingdom of nature, where so many wonders are unfolded to us, as in this of insects.

Nor are they to be considered in that contemptible light in which the generality of mankind are apt to place them. We are too prone to think every thing noxious and unnecessary, if we are not fully acquainted with its use. "The poor Beetle that we tread on," serves to fill up an order of beings, as useful and proper in the economy of nature, as that of a partridge or a hare, whose preservation and increase we are so solicitous for. Many others, whose very sight create the most disagreeable sensations, are not less useful and proper, under the same predicament. The carcasses of dead animals, which, when putrid, send forth a most nauseous stench, would remain so for a great length of time, were it not for the various kinds of Flesh Flies, who, by depositing their eggs there, help to consume it very quickly, and prevent a continuance so offensive to our nostrils and health. Many kinds of insects are to be found here in England, in great plenty, who, it is highly probable, by a close enquiry into their natures might be rendered very serviceable to us, either mediately or immediately. The blue Dung Beetle (*Scarabæus Stercorarius* of Linnæus) found in great plenty in July, under horse-dung and cow-dung, it is not unlikely may yield effects, either in medicine or dyeing, that at present we are ignorant of. It is certain, it abounds with salts that are strong and pungent; but the examination of them must be left to time, and the enquiry of some ingenious person.

The *Meloe Proscarebeus* of Linnæus, or English Oil Beetle, described by Moffat, lib. i. cap. 23., also by Godartius in Lister's translation, number 120. yields an oil by expression in considerable quantity, which is used in Sweden, with the greatest success, in the cure of the rheumatism, by bathing the afflicted part. Of this I have been well assured by an ingenious physician who resided there? Might not the same effects be expected from it here as there. Its virtues, I imagine, are not confined to a single country; nor can I suppose the different situations of them will prevent its being equally efficacious here as in Sweden. However, it is certainly worth while to make the experiment.*

* If any person is inclinable to make this trial, I must advise him to collect them in the spring, when they abound with this liquor, and to choose only the females, whose bodies at that season are so large, being as it were overcharged with oil and a great number of eggs, that they seem with difficulty to drag them along. When they have discharged their eggs, they appear much less, and are not furnished with that oil they before abounded with. The males have little, if any of it, therefore are not proper

The Cantharides or Spanish Flies, is a species of insect every one has heard of. They are brought us from abroad, and used medicinally ; but principally to raise blisters. For these we pay great sums of money to foreign countries : but a proper examination into the nature of insects might save us the necessity of doing so ; for let me not be disbelieved, when I say this very species of the cantharides is found in England.* Might, not, therefore, a close inquiry into the subject, spare us the trouble and expense of applying to foreigners for this article ? But are the medicinal virtues of the cantharides confined entirely to that species ? Is there none other found in England, answering the same purpose, which we might have by seeking for ? If I am not mis-informed, there is. The Musk Beetle, or *Cerambyx Moschata* of Linnæus, is found on the bodies of willow-trees in the month of July, or sooner, if the weather is favourable. This insect, I have been confidently informed by an eminent surgeon (the late Mr. Guy) who tried it, has the same virtues, and produces the same effects as the cantharides ; being capable, when properly prepared, of procuring a strong blister in as short a space of time as the other. Whether there is not other insects to be found in this kingdom, whose properties, when examined, might be found similar to the cantharides, is a matter that time only will clear up.

I cannot here pass unmentioned the effects of ants, whose volatile effluvia, arising from their colonies or nests is so great, that a hand rubbed thereon, and applied immediately to the nose of a fainting person, exhilarates and refreshes equal to the spirit of hartshorn, or what is called *sal volatile*. •

Such are the known medicinal uses of insects ; and under the article of clothing they serve us in a more conspicuous manner. To many thousands of persons they afford the means of living with comfort and happiness. Even kings are indebted to them for their grandest garments. Immense fortunes have been procured, by their means, to persons in trade, and the great number of people who daily subsist by manufacturing silk, either by spinning, weaving, or dyeing it, have the greatest reason to thank Providence for the institution of this insect. To the last, the Cochineal (*Coccinella Cacti* of Linnæus) affords him the power of giving our silks and cloths the most beautiful and lasting colours ; being without it unable to produce such proofs of his ingenuity ; not to mention many other occasions wherein this insect is peculiarly serviceable. Nor is there any part of the world where they do not directly, or secondarily, serve mankind for food. In every kingdom of the earth, where they are to be found, shrimps, prawns and crabs are eaten by all ranks and degrees of people, if animal food is allowed them ; and our cray-fish or lobsters must not

for the purpose. This insect is of a blue colour, and found in the fields during the months of April and May, in the state I have mentioned ; the blue colour is not shining and beautiful as that on the belly and legs of the blue dung beetle, but of a fine mazarine blue, without that polish. It is about an inch and half long (the males are shorter), the head and thorax about five-eighths of an inch, being very small and slender for the size of the insect.

* I have seen in the cabinet of a very curious lady, sister to Ralph Willett, Esq. of Dean Street, Soho, not less than forty of this species, being taken near his seat at Morley Place, near Winbourn, in Dorsetshire, where she informed me they were found in great plenty during the month of June or July, frequenting the privet trees. I have also found them in the environs of London, but not plentifully.

be excluded from the same order. The Locust represented in Plate 50. Fig. 2. is eaten by many tribes, and, I may say, nations of people, in Asia and Africa. These animals are frequently driven from their native soils, by strong winds, into foreign countries, where, for several days together, by their inconceivable numbers, they obscure the light of the sun, and make the inhabitants tremble for their vegetables. It is at those times the Asiatics and Africans gather them, and eat them with much delight, dressing them, either by stewing, or frying them with oil; they also pickle and sell them publicly in some of the markets of the Levant, and many other parts.

The caterpillar belonging to Fig. 1. of Plate 38. which I have mentioned in my description of that insect to be eaten in the West Indies, and considered as a dainty, is sought for by those persons who are admirers of that food, in the most diligent manner; and I have been informed, by gentlemen of undoubted veracity, that so exceedingly delighted are they with it, as to employ negroes on no other business but to go into the woods on purpose to procure these caterpillars, by digging them out of the bodies of certain trees, the only places where they are to be found. Perhaps the *cossi* of the Romans, a kind of food we are told they were much delighted with, might be a species not much unlike this; however that be, these are considered as amply recompensing, by their delicious flavour, the pains taken to procure them.

Honey is a substance known to every one, and the agreeable liquor made from it, which in some countries serves the inhabitants for their constant drink, is not to be procured but by the industry of the agile bee.

In fine, the limits of this preface will not permit me to dwell minutely, and point out the benefits mankind does, and may receive, by the institution of this order of animals. I shall again refer my reader to the book I mentioned before, "*Stillingfleet's Tracts*;" where he will find these and many other advantages I have not mentioned, treated of in a most ingenious manner; being the observations of some of the greatest men of the university of Upsal in Sweden; for this reason, therefore, I shall consider this subject no farther, but proceed to describe the plan of the work; wherein, if the reader expects to find the insects classed in systematic order, as well as represented, he will be greatly disappointed. It is not my present design to enter into the scientific part of the study, by arranging the insects according to any system now established; nor will the reader find that I have given a single name to any one here figured. This, indeed, must be the consequence of not following the system of any author, unless I had formed one of my own; for it is impossible I should give names to them, particularly trivial ones, without doing one or the other. The calling an insect by the general appellation of moth, butterfly, &c. I cannot consider as derogatory to what I have said. Hence I flatter myself I shall avoid all occasion for reflection by the disciples of different authors, in not following the method established by others; and, therefore, my desire of giving no room for exceptions of this kind, has induced me to follow no one whatever. By this, also, I have left it in the power of every person to

class them according to his own fancy ; and, as every one has thus an opportunity of following his favourite author, none, I hope, will object to a method, that will put it in his power of indulging his own inclination.

I must here inform my readers, that this work can by no means be considered as a complete one. The most transitory view will confirm this. Nor can I take any merit to myself by its publication, unless the great care that has been taken to give just and accurate figures of the subjects, in which the different generical characters, according to the several authors I am acquainted with, are truly represented, will entitle me to any.

Indeed, the many opportunities I have had of observing the great tendency all kinds of insects have to perish and decay, particularly moths and butterflies, first gave me the hint of preserving them from oblivion, by thus delineating them on paper. For these last are of such tender and delicate natures, that however pleasing and agreeable they may be to our sight, they are not easily to be preserved with all their gay and striking plumage. Our utmost care can only secure them to us a few years ; and if they are exposed to air or sunshine, we are quickly robbed of them ; the latter being capable, in a few months, of entirely destroying their colours, and the first in as short a space, will totally consume every part of them, leaving nothing behind but a little dust.

Hence it is, I have been induced to give figures of foreign insects. In prosecuting which, the reader will find many that have never been described by any author ; and if the rescuing them by this method from the ravages of time, if the delight and amusement arising from contemplating subjects of this kind, or if an attempt to promote and encourage this branch of natural history meets with the encouragement I hope for, I must assure the public, no labour on my side shall be wanting to render it complete, by adding future volumes, as the subjects I should receive from abroad, and my own leisure, will enable me to do ; and this, I flatter myself, I shall be able to accomplish by the means of a few ingenious gentlemen situated in different parts of the world, whose correspondence I am honoured with, and by whose assistance I shall be able to give sometimes a tolerable history of an insect, or as much of it as has fallen within their observation ; by which means, new subjects of speculation, some unnoticed circumstances in insect life, may arise, that cannot fail of being an acceptable embellishment. But I must observe, such pieces of information cannot be expected to be numerous ; for the difficulty of procuring the natural history of foreign insects is so exceedingly great, that it is better conceived than described. Few persons, who visit foreign countries, have curiosity sufficient to prompt them to make such observations, or indeed any enquiry, into the works of nature. The desire of acquiring wealth, by the means of trade, is the grand motive that induces them to leave their native country ; observations in natural history being generally quite foreign to their thoughts ; the desire of extending their commerce, and making their fortunes, taking entire possession of their minds, and swallowing up every other consideration. Thus, we see, it is not from such persons we must expect any improvements tending to promote this study ; it is

only from men of a liberal and ingenious turn of mind, settled there, that we can hope to have any information of the state of nature in distant regions ; and the scarcity of such men I have found to be exceeding great. For these reasons the reader must not expect to find the caterpillar and chrysalis of every insect represented. It is sufficient if I am able to give figures of many exotics that have hitherto been unknown. The natural history, the forms of the caterpillars, ways of life, haunts, &c. can, in such cases, be known only to persons living on the spot, and who have speculation enough to observe them. Whenever I receive such pieces of information, they shall, certainly, not be withheld from the public.

When I first engaged in the business of describing the different insects that compose the following work, I found myself surrounded with difficulties of so unexpected a nature, that I had more than once entertained thoughts of postponing, if not totally relinquishing so arduous a task. Nothing but the strong desire I had of promoting the study of natural history, could have led me to overcome a sense of my own incapacity of writing with that precision, which the public eye demands ; and, therefore, I have reason to hope for the candid allowance of the ingenious, to faults, which might, perhaps, escape from the pen of a *master*, on a subject so new as the present. Among the rest, I laboured under no little trouble from a want of knowing what names to give to many colours found on the wings of some of the farinaceous tribe. The want of a *series*, or standard for names to colours, is a matter much to be lamented in this kingdom. I know no English author that has attempted it ; perhaps the arduousness of the task may be the reason it has not been done ; for if we form to ourselves an idea of the difficulty of bringing forth that innumerable train of colours that is to be done from only a yellow, a red and a blue, we may partly judge of the labour that man has to undergo who shall attempt it. In my case, the great variety of tints to be found on the insects, the harshness of some, the softness of others, together with the manner of their running into one another, increases the difficulty, and renders descriptions a matter of such labour, that nothing but the strongest resolution and perseverance could overcome. From hence, I hope, if the reader should chance to meet with any part among them, that does not entirely correspond with the colour given to the print, he will impute it to its proper cause, the painter. I know of no defects of this kind ; but it is not impossible some may have escaped my observation, among such a multitude of figures which I had to correct. It is necessary I should inform the reader, that all my descriptions have been taken from the *natural subjects* themselves, and not from the *coloured prints* of them ; and that my intention therein, is not to give a perfect idea of the insects, without the help of the figures, but only to assist the imagination in knowing what is described. And when we consider the advantages that good engravings have over verbal descriptions, the former representing to the mind, at first view, the object designed to be understood, without putting us to the trouble of calling all our ideas, all our powers of conception to our assistance, in order to discover what is intended to be described ;

while the latter, though given by the best writers, often puzzles and confounds the mind, if our ideas do not keep pace with the author's meaning, the present work, by having every coloured figure explained, must render it superior to any hitherto published in this kingdom. The last author that published any figures of exotic subjects in natural history, was Mr. Petiver, who, in his *Gazophylacium*, delineated a great variety of all the different *orders*; many of them exceeding curious and uncommon, being collected from various parts of the world. But they were sent forth uncoloured, and almost undescribed; circumstances that render them less estimable by the difficulty there is, in many instances, of knowing what the author meant; the shape of the animal, plant, &c. being the principal, and, sometimes, the only thing, we can understand. But although many of the figures consist of mere outlines, not exquisitely well engraved, it is not without merit. There are a great many very uncommon subjects exhibited, that were not known to exist in nature, till he held them forth to public view. It is, in short, a work, that, at the same time it manifested his desire for promoting his favourite study, was a proof of his assiduity, affording great room for speculation; and as the present is an improvement on his plan, I flatter myself it will not be unacceptable to the lovers of natural history. There is yet another advantage arising from the descriptions, that is not less than what I have already mentioned. If this work should fall into the hands of a bookseller, after my decease, the public would not probably be pestered with copies so execrably coloured, as is generally the case with books of this sort, after the author's death; the descriptions will be such a guide for colouring the prints, that capital errors will not be able to find admittance: the grossness of colouring a part yellow that should be red, or green, that ought to be blue, would immediately be detected; and the publisher, for his own sake, would undoubtedly be careful to have the prints justly and accurately done.

The experienced naturalist will perceive, that, throughout the quotations, I have not availed myself of any of the ancient authors. I have scarcely mentioned Mouffet, Aldrovandus, and others. It is certain, the figures to be seen in the works of most of the ancients are so bad, I dared not give any quotation from them. The incorrectness of the outlines, the irregularity and impropriety of the spots and marks, together with the looseness of the engravings, renders them too imperfect for any one to venture mentioning them. Indeed they are, in general, so little expressive of the insect intended to be represented, that no dependance can be had on their figures, especially the farinaceous winged tribe. Clerck, Merian, Roesel, Petiver, &c. are the authors I have principally mentioned, among the iconographers; and if the insect has been figured by a great many authors, as particularly Plate 31. Fig. 7, 8. I have only mentioned a few: the rest may be known by looking into the *Systema* of Linnæus*, under the title mentioned in the quotation. This author is the principal one I have quoted among the descriptive writers: his great judgment in this study, the plain method he has laid down for the classing of insects, together with the

* The synonyms of this author are all taken from the 12th edition.

excellency of his generical characters, are what must endear him to every professor of this study. I speak only of that part relating to the insect kingdom ; the merits of the other parts are best known to those conversant in the respective branches. I must not here pass over a circumstance, which it is proper to apprise my readers of, by way of apology for giving a few figures (but a few) that have been published already in this kingdom. When I first laid down the plan of this work, I had no intention of confining myself to those subjects that were non-descripts ; but proposed to give figures of any exotic insects that might fall into my possession, or what I could procure drawings of, by the assistance of those gentlemen who were friends to an attempt of this sort. I was willing to promote this branch of natural history, by any method that lay within the compass of my little sphere. This I was the rather prompted to, by the consideration of its being an attempt entirely novel in this nation, and conducted in a way different from any yet pursued. But a little recollection convinced me I was wrong. I was soon sensible, that the giving figures, already known and published here, could do no service to the study, or benefit the reader ; it is possible I might give a better figure than that before published ; the engraving might be softer, more delicate, and better becoming the subject ; or the colouring more exact and just : but this would not be improving the reader's judgment, or increasing his knowledge. In short, from that moment I altered my plan ; and it is to this mistake a few figures are inserted in different places, which have before made their appearance in England, either separately, or mixed with other subjects of natural history. From that time I took care to delineate none that I was conscious had engaged the pencil of any preceding author ; but confined myself to such, whose novelty and striking appearances could not fail to recommend them. To such non-descripts I have paid the greatest deference ; for in some of the plates, among the butterflies and moths, I have given complete figures of both the upper and under sides ; a practice that, as deviating from my general rule, I should not have done, if the richness and softness of the colouring had not been so extremely pleasing, as to render it scarcely possible to dispense with it. It is only to a few I have paid this particular respect. In general, I have given to the butterflies, only figures of one half their under sides, but whole upper ones ; and of those moths that have no representations of their under sides, the reader may conclude there is no material difference between their upper and under ones, or else the latter is too poor and mean to justify the giving a figure of it. I must just mention, that although I used this forbearance to those figures that had been heretofore published, I by no means meant to debar myself from representing such as had been only *verbally* described ; as is the case with a great many to be met with in the Systema of Linnæus, and in other authors. The refraining, therefore, from such subjects, would have been rather condemnable than fit to be approved, for the reasons I mentioned before, of the great difficulty there is in understanding, sometimes, the best verbal descriptions that ever were given ; therefore figures of this kind may not improperly be considered as explanatory, or as illustrations to

such verbal descriptions, affording the student a two-fold pleasure, by comparing them together.

If the reader has made no progress in the study of natural history, he will probably find it difficult to understand the several *names*, or *terms*, the different parts of insects are called by; and which occur in every description. For this reason I think it incumbent on me to give the most plain and familiar explanation of them I possibly can. This I have done two ways; by methodical definitions, and figures; and in both of them shall make no scruple to follow the method laid down by that great master of natural history, the judicious Linnæus, whose excellent plan, for the knowledge and classing of insects, demands the utmost thanks and regard from every lover of this branch of science. From his plan I have taken the hint of giving some figures of different genera, with the proper names of the respective parts in a plate by themselves. By these the reader will not only be greatly assisted in understanding the descriptions; but it will enable him to class them with more facility, if he is inclined to do so. I therefore go on to explain, first the *terms* used throughout the whole; and afterwards the distinct and different *parts* of insects. In doing this, I divide them into

ORDER, CLASS, GENUS, and SPECIES.

Order, is a general term, applicable to a whole race of animals, whereby they are distinguished from each other, as beasts, birds, fishes, &c.*

Class, a term by which insects, as well as other animals, are divided into their respective genera or tribes, as the farinaceous, crustaceous, transparent, &c.†

Genus, a term dividing each class, as butterfly, moth, hawk-moth, constitute the farinaceous (Lepidoptera); dung-beetle, lady-bird, goat-chaffer, and many others, make up the crustaceous (Coleoptera); cockroach, locust, bug, and some others, form the semi-crustaceous (Hemiptera, Linn.), &c.‡

Species, a term comprehending a distinct or individual sort in each genus, as the pearl-bordered, admirable, skipper, &c. among the butterflies; egger, drinker, peppered, &c. among moths, &c.

To these I must add the word

Variety, a term by which two insects of the same species are known, though differing a little (not characteristically) in colour, size, &c.§

* The primary division of the Annulose subkingdom, now adopted, is into classes, Crustacea, Arachnida, Insecta.

† The primary division of the class Insecta, now adopted, is into orders, Lepidoptera (called farinaceous by Drury), Coleoptera (called crustaceous by Drury), &c.

‡ In consequence of the great increase of the science it has been found necessary to divide the Orders of Insects into Sections, Families, Subfamilies, &c. before arriving at Genera, which are now much more limited than in the time of Linnæus.

§ There is no branch of natural history where the existence of a *Lusus Naturæ* is so plain and observable as in this, particularly among the insects brought from warm climates; where the wantonness and luxuriance of nature is so great; that its laws, strict and regular as they are, through the rest of the animal creation, almost seem to be invaded and broke in upon. Instances, also, are frequent in this study, of a cluster of eggs being discharged by a female, the insects springing from which, have differed in the circumstances above-mentioned so very greatly, as in some cases to be mistaken for different species.

I shall next proceed to explain and describe the different parts composing insects, by dividing them into the Head, Thorax, Abdomen, and Limbs.*

The HEAD (Fig. 1, 2, 3, *a*.) includes the ANTENNÆ, MOUTH, PALPI, EYES, TONGUE, JAWS, and HORNS.

The *Antennæ* are formed of various shapes, according to the different genera, as may be observed in the figures, and seem instituted by nature not only for guiding the animal in its passage, but likewise for other purposes; being endued with an exquisite sense of feeling and perception. Fig. 1. *d d*. Fig. 2. *c*. Fig. 3. *c c*.

The *Mouth* is placed in the head, but sometimes close to the breast, as in the spider tribe; sometimes terminating in a horny beak, as in Plate 32. Fig. 1. also in Plate 42. Fig. 3 and 7. In some it is furnished with strong mandibles like pincers, as in Plate 32. Fig. 6. and Plate 37. Fig. 1, 2, 3, 4, 5, 6. In others it is so covered and guarded by the palpi, particularly among the moths, that it is not to be seen.

The *Palpi* are parts placed close to the mouth, and variously shaped; as may be seen by comparing those of the Lepidopterous with those of the Coleopterous, and other tribes; consisting of a greater or less number according to the species or genus; in some being only two, in most of them four, and in some six, (*Cicindela*, *Carabus*, Linn.) The use and purpose of these parts we are ignorant of. Fig. 1. *c c*. Fig. 2. *b*. Fig. 3. *b b*.

The *Eyes* are generally immoveable, and suited differently; in some to see only in the night, in others in the day; and differ in number according to the genera and species, having in general two only, but in some five,† in others eight, as the spiders. Fig. 1. *b b*. Fig. 3. *d d*.

The *Tongue* (elongated maxillæ) is sometimes curled up spirally like the spring of a watch, as in butterflies and some moths, &c. in others it (including the labium) is doubled under the head, as in bees and wasps; but a great many species are destitute of this elongated part.

The THORAX is principally composed of the BACK, BREAST, and in some the SCUTELLUM, in others the MESOSTERNUM and DILATED POSTERIOR COXÆ.

The *Back*, dorsum or upper part, answering to the back in some animals, terminates in some species in a triangular manner, so as to represent the scutellum, as in Plate 33. Fig. 5, 6, and 8. Tab. Ann. Fig. 1. *f*. Fig. 2. *e*.

The *Breast*, or sternum, is the under part of the thorax, and always furnished with legs.

The *Scutellum* is a small but hard part like a scale, frequently of a triangular shape, placed behind the dorsum of the prothorax, and joining to it. It is not developed in every genus, being chiefly perceived in the Coleopterous, Hemipterous, and transparent-winged orders.

The *Mesosternum* is united to the fore part of the breast, extending beyond the middle legs towards the fore ones; and observable only in some species of the Coleopterous order. By Linnæus and several other authors it is called sternum.

* In these definitions, I have thought it serviceable to give the modern names without introducing those, now out of use, employed by Drury, &c. The most conspicuous parts are alone noticed. (*J. O. W.*)

† By five eyes, I mean those that have three lesser ones, as in Plate 43, 44, 45, &c. See the Plate in the Preface, fig. 4.

The *Posterior Coxæ* are only conspicuously enlarged in some particular species (dung beetles). There are two of them placed on the sides of the breast next to the abdomen, under the hinder thighs. In some they are placed remote and distinct from it, in others they lie close; being moveable in some, in others they are fixed. The use of these parts we are ignorant of.*

The *Abdomen* consists of a number of annuli or rings, and contains the greatest part of the intestines and other viscera; being united to the trunk, and formed with holes on the sides, through which the insect breathes.

The LIMBS comprehend the TAIL, LEGS, and WINGS, with their cases.

The *Tail* is placed at the extremity of the abdomen; and in some is furnished with a sting, in others it is armed with a pair of forceps; sometimes with a single bristle, sometimes with a double one; in some with a pair of claws like a crab, in others like a fork.

The *Legs* include the coxæ, trochanters, femora, tibiæ, and tarsi; the latter consisting of two, sometimes of three, four, or five articulations. In some the fore ones resemble a crab's claws. Some are furnished with spines, others are smooth and plain. The hinder ones are formed for running, leaping, or swimming.

The *Wings*, being always two or four, are either plain or folded, erect or open, lying flat or inclining downwards, &c. In some they are dentated or scalloped; and some are furnished with two projections like tails. They are also membranaceous, reticulated, or transparent, and frequently adorned with beautiful colours. In some they are curiously folded within two crustaceous cases, that are either smooth or rough, striated, furrowed, punctated, &c. in some these cases are soft and flexible, in others hard like horn; the Hemipterous are partly soft and transparent, as in Plate 49. Fig. 2. and partly opaque and hard, as in Plate 42. Fig. 1. Plate 43. Fig. 2. and Plate 45. Fig. 5.

It is necessary to observe, that I have not been so prolix and explanatory in the foregoing definitions as I should be, if I intended to arrange the figures under their respective classes, or establish any system for doing so; I have explained no more *terms* or *parts* than what are sufficient to enable the reader (if he is not an adept) easily and clearly to understand the descriptions. It is likewise necessary to mention, that I have given English names to most of the parts, where I could do it with the necessary propriety for serving this particular purpose; and where I could not substitute an English word, that was apposite and significant, I have preserved the Latin one, as used by Linnæus and others. Thus, for instance, the term *palpi* I would have altered, if I could have found an English word that conveyed the same idea; but not easily finding one, I have kept to the original. I have not forgot the terms *mustachios*, *whiskers*, &c. which I might have used in its stead; but as these parts in many insects bore no analogy or resemblance thereto, it being in a great many of them like a short jointed filament or thread, I rather chose to preserve the Latin one. The same practice I have observed with the term *antennæ*. For though *feelers* is the general explanation given to this word, I could not prevail with myself to use it. The reason is, because these animals seem to have a power

* They are part of and give support to the hind pair of legs.

of applying these parts to purposes different from that of feeling. By the antennæ they are capable of distinguishing and perceiving, as well as feeling; and I am strongly inclined to believe, it is by them the males are capable of discovering the females at a great distance. It is certain their powers of perception are very obvious and remarkable, which, by close observations, we may soon discover; and unless we allow them capable of smelling without nostrils, I do not know what parts they exercise, or by what means they so readily discover, not only their females but their respective kinds of food, the places proper for depositing their eggs, &c. The male moths appear to have this faculty of discovering their females in a greater degree than most other insects; for there are but a very few, if any, belonging to this genus, whose females pass the first night after they quit the chrysalis without coupling with the males; owing to unconquerable *desire* in the latter, and the strong effluvia or scent emitted by the former for attracting their mates. Every adept is fully acquainted that a female moth, known by the name of the Egger (*Phalæna Quercus* of Linnæus), taken into the fields the first day it is hatched, will most certainly (though shut up in a box) allure all the males round the country that are within the sphere of its attraction, and even from a great distance; who will at first fly round the box with wonderful swiftness and eagerness, and afterwards settling thereon will hunt and run about it with the greatest impatience, endeavouring to get at the inclosed female; and all this from the strongest desire of copulation; for the minute that action is performed by a male, the attractive property of the other ceases. The powers of perception and distinction, therefore, are very great; and what parts of the insects, unless it be the antennæ, are employed in this search I am at a loss to discover. However, at present, I presume it will not be necessary to offer any further reasons for using this term, as the name substituted is sufficient for it to be known by, it will fully answer the intended purpose.

The names of the other parts are too intelligible to require any explanation.

The plate annexed (being the last thing I shall speak of) requires but little to be said in its favour. The use and advantage of it is too obvious to dwell on. I have already mentioned, that engravings and delineations claim the preference in the highest degree of verbal descriptions; and as such, I presume, the reader will find this plate of the greatest service in assisting him to understand the descriptive parts with clearness and ease. I must only recommend it to him, if he is desirous of avoiding difficulty and trouble, to make himself fully acquainted with the terms and names of all the parts of insects, before he begins to read the descriptions.

Explanation of Fig. I.

a The head.
b b The eyes.
c c The palpi.
d d The antennæ.

e e The shoulders. The patagia, or tippets, are placed here.
f The thorax. The part underneath and opposite to this is termed the breast.

- g* The abdomen, with the annuli or rings of which this part is composed; very conspicuous in such of the *Lepidoptera* as are figured in Plate 27, 28, and 29.
- A A* The anterior wings.
- B B* The posterior wings.
- h h* The bases of the wings.
- i i* The tips.
- k k k k* The anterior margin.
- l l* The posterior or internal margin.
- m m m m* The external edges.
- n n* The lower corners of the anterior wings.
- o o* The upper corners of the posterior wings.
- p p* The abdominal edges. In the butterfly tribe this part forms the abdominal groove.
- q q* The anal angle.
- r r* The tails; whereof some species have four, as in Plate 1, 2, and 7.
- s s* The eyes on the wings. From round spots resembling an eye.
- t* A waved bar.
- u u* An irregular indented bar.

The terms upper side and under side, mentioned in all the descriptions of the farinaceous tribe, require no explanation.

Explanation of Fig. II.

- a* The head.
- b* The palpi.
- c* The antennæ.
- d* The eyes.
- e* The dorsum of the prothorax, commonly called the thorax in beetles; whereof the under part is the prosternum.
- f* The lateral margin of the thorax.
- g* The posterior margin of the thorax.
- h h* The upper horn.
- i i* The lower horn.
- k* The scutellum.
- l l* The wing cases, or elytra.
- m m* The suture.
- n n* The lateral margin of the wing cases.
- o* The anus.
- p* The fore thigh.
- q* The middle thigh.
- r* The hinder thigh.
- s s* The fore tibiæ.
- t t* The middle tibiæ.
- u u* The hinder tibiæ.
- w w w w w w* The tarsi.
- x x x x x x* The articulation of the tarsi with the tibiæ.
- y y y* The articulation of the tibiæ with the femora.
- z z z* The hooks or claws, (ungues.)

Explanation of Fig. III.

- a* The head.
- b b* The palpi.
- c c* The antennæ.
- d d* The eyes.
- e* The prosternum; whereof the upper part is the prothorax.
- f* The mesosternum.
- g g* The dilated posterior coxæ.
- h h h h* The abdomen, with its annuli or rings.
- o* The anus.
- p* The fore thighs.
- q q* The middle thighs.
- r r* The hinder thighs.
- s s* The fore tibiæ.
- t t* The middle tibiæ.
- u u* The hinder tibiæ.
- w w w w w w* The tarsi.
- x x x x x x* The articulation of the tarsi with the tibiæ.
- y y y y y y* The articulation of the tibiæ with the femora, or thighs.
- z z* The hooks or claws, (ungues.)

Fig. IV. is inserted only to shew the three little eyes, which are placed in a triangular manner, and mentioned in some of the descriptions, viz. Plate 43. Fig. 4, 5, 6, &c.

ILLUSTRATIONS

OF

EXOTIC ENTOMOLOGY.

NYMPHALIS (CHARAXES) JASON.

Plate I. fig. 1.

ORDER: Lepidoptera, *Linn.* SECTION: Diurna, *Latr.* FAMILY: Nymphalidæ, *Swainson.*

GENUS. NYMPHALIS, *Latr.* Papilio Eq. Achiv. *Linn. Drury.* Papilio Nymphalis, *Fabr.*

SUBGENUS. Jasia, *Swainson.* Charaxes, *Boisduval.*

NYMPHALIS (CHARAXES) JASON. Alis fuscis, anticis utrinque strigâ maculari limboque apicali fulvis, posticis bicaudatis, ordine postico macularum sublunarium fulvescentium, omnibus subtus ad basin ferrugineis caracteribus fasciâque albis. (Expans. Alar. 3—4. unc.)

SYN. Papilio Jason, *Linn. Syst. Nat.* 2. 749. No. 26. *Herbst. tab.* 64. f. 3. 4. 5. *Cram. pl.* 339. f. A. B. *Drury, vol.* 1. p. 2.

Pap. (Nymphalis) Jasius, *Fab. Ent. Syst. t.* 111. part 1. p. 61. 191. *Drury, vol.* 2. App.

Nymphalis Jasius, *Latr. et Godart. Enc. Meth. v.* 9. p. 350. 1.

Charaxes Jasius, *Boisduval Hist. Nat. Lepidopt. pl.* 7. f. 12. (imago) pl. 3. A. f. 9. (larva and pupa.)

HABITAT: Barbary, Asia Minor, and the Northern Coast of the Mediterranean Sea.

Upper Side. The anterior wings are of a fine chocolate, with an orange-coloured margin running along the exterior edge, within which are some faint round orange spots; those next the anterior edge, where they begin, being strongest. The posterior wings are furnished with four tails (the outer ones being the shortest) and are of a blue black. A yellow scalloped margin runs round their external edges, verged with black; above which are some lunate spots of a sky blue.

Under Side. The anterior wings, next the body, are of a faint dark red, with many spots and marks of a dirty olive, differently shaped, margined with white. An orange margin runs along the exterior edge, intersected by the blue tendons; and above it are several triangular marks of a faint orange, on a blueish hazel ground, which deadens as it approaches the margin. The posterior wings have on each a white band, running transversely, and meeting just below the extremity of the body; within which, and including the anal groove, are many round, oval, and other shaped marks of chocolate and dark olive; verged with white. A scalloped margin, of a deep lemon colour, runs along the posterior edges, verged with dirty green, and separated from the white band by a bar of hazel colour, and some large brown reddish spots and marks. Two blue spots are placed just above the two longest tails, with several lesser ones, just above the lemon-coloured margin.

I have thought it more in accordance with the principles which are now almost universally adopted, in regulating specific nomenclature, to revert to the original Linnæan

name of Jason in preference to that of Fabricius. This butterfly may be regarded as one of the most splendid of the Lepidoptera of Europe, to the southern portion of which and to the northern shores of Africa it appears to be confined. The strength of its general structure indicates great powers of flight, and we accordingly find that it is able to sustain itself in the air with very little motion of the wings. The female differs from the male only by having the centre of the posterior wings adorned with small blue spots on the upper side. There are two broods in the year, namely in June and September, and, according to M. De Villiers, the insect emits a strong scent of musk. The caterpillar is naked and thickened in the middle of the body; the tail tapering into two short points, the head is also armed with two conical erect horns. In this respect, therefore, this insect very nearly approaches the genus *Apatura*, of which the purple Emperor, *Ap. Iris* is the type, thus proving the advantages to be obtained, in studying the natural relations of this difficult order of *Annulosa*, from an accurate acquaintance with the structure and habits of the early stages of the insect.

There are several species, having the same general form as the Jason, including *Athamas*, pl. 2. fig. 3. 4; *Eudoxus*, vol. iii. pl. 33. f. 1. 4; *Camulus*, vol. iii. pl. 30. f. 1. 2. Mr. Swainson has, accordingly, formed them into a distinct group, to which he has given the name of *Jasia*, in pursuance with his customary, but scarcely correct plan, of raising the specific name of the typical species into a generic name, and then giving a new specific name to such type. M. Boisduval, rejecting this system of nomenclature, has more recently proposed for the same group the name of *Charaxes*, which I have adopted.

Amongst the species very nearly resembling Jason, is one sent from Africa* to Mr. Drury by Mr. Smeathman, which, according to the observations of that traveller, published by Drury, in the introduction to his third volume, flies in the heat of the day with amazing rapidity, and seldom descends within eight feet of the ground. It glances from the prominent branches of one tree to those of another, as swift as a swallow, and turns its head about instantly to the glade, or path, and will not suffer any person to approach within a striking distance of it, but darts away on the least motion of the body. If the collector exert his patience it will at last become more familiar and careless, and is then to be caught upon some particular branch, to which it will appear more attached than to another.

* The name of this African species has not been recorded. The following additional observations by Mr. Smeathman will be serviceable in enabling us to obtain an idea of the treasures which, even yet, European entomologists may expect to receive from this but little investigated quarter of the globe. "The whole country of Africa, within the tropics, is one immense forest, except where the sandy plains are too unsettled to afford a proper footing for vegetation. Wherever any inhabitants settle, they make plantations by cutting down the woods and burning them to fertilize the ground, and never sow two years together on the same spot, but let the trees grow up again for two or three years, by way of fallow, before they attempt to get another crop from it. It is these spots, which Smeathman calls recent plantations, which afford the greatest variety of insects and the easiest obtained. In the second and third year they become impassable to human feet."

THECLA ACIS.

Plate I. fig. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidae, *Leach*.

GENUS. *THECLA*, *Fabr.* (Syst. Gloss. Synops. in Illig. Mag.) *Polyommatus*, *Latr. et Godart.* *Cupido* p. Schrank
Papilio (Pleb. rural.), *Drury*.

THECLA ACIS. Alis suprà fuscis subtùs pallidioribus, posticis bicaudatis maculà rufà ad angulum ani, subtùs punctis duobus fasciâque obliquà albis. (Expans. Alar. 1 unc. 3 lin.)

SYN. *Papilio Acis*, *Drury*, *App. v. 2.* (1773). *Cram. pl. 175. fig. C. D.*

Papilio Mars, *Fabr. Mant. Ins. 2. 66. No. 624.* (1787). *Herbst. Pap. tab. 288. f. 1. 2. Fabr. Ent. Syst.*

111. 1. 265. 24. (*Hesperia M.*) *Encycl. Meth. 9. 635.* (*Polyommatus M.*)

Papilio Ixion, *Fab. Mant. Ins. 2. 71. No. 671?*

HABITAT: New York (*Drury*), taken on 31st August. South America (*Fabr.*): Antilles (*Godart*). Cape of Good Hope (?? *Cramer*).

Upper Side. The anterior wings are entirely dark brown, without any spots or marks.—The posterior wings the same, with four tails, the inner ones much longer than the others; close above which latter are two red spots, edged at the bottom with black, and two more, placed at the anal angle. The cilia is white.

Under Side. All the wings are of a dark lead colour. A very narrow black and white line crosses the anterior wings, parallel to the external edges; another indented irregular line crosses the posterior wings, beginning near the middle of the anterior edge, and meeting just below the extremity of the body. Four long reddish spots are very visible on this side, below which are four black ones.

This species is nearly allied to *Papilio Echion*, Linn. Syst. Nat. p. 788. figured by Roesel, tom. i. tab. 7. f. 3. 4. which is also an American species, but differs, as *Drury* observes, in wanting the red spots on the upper surface of the lower wings, in having a red line crossing the wings on the under side, &c.

THECLA SIMAETHIS.

Plate I. fig. 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidae, *Leach*.

GENUS. *THECLA*, *Fabr., Horsfield.* *Polyommatus*, *Latr. et Godart.* *Hesperia*, *Fabr. olim.* *Papilio* (Pleb. rural.)
Drury.

THECLA SIMAETHIS. Alis supra fuscis, nitidis, subtus flavo-viridibus, vittâ transversâ argenteâ, posticis apice ferrugineis strigâ è punctis margaritaceis. (Expans. Alar. 1 unc. 3 lin.)

SYN. *Papilio* (Pleb. rural.) *Simaethis*, *Drury, App. v. 2.* *Herbst. Pap. tab. 289. f. 3. 4.* *Fabr. Ent. Syst.* 111.

1. p. 286. No. 97. (*Hesperia S.*) *Latr. et God. Enc. Meth. 9. 643. 97.* (*Polyommatus S.*)

HABITAT: Saint Christopher's (*Drury*). Surinam (*Fabr.*).

Upper Side. The wings are brown, tinged with blue. The cilia white, posterior wings with two tails like hairs, of a chocolate colour; the tips being white.

Under Side. The anterior wings are green next the anterior edge, but along the interior one are of a greyish flesh colour. A narrow silver line begins at the anterior edge, about a third from the tips, and crossing both superior and inferior wings, meets near the extremity of the abdomen, running across the inferior wings in a very irregular, indented manner, and having its upper side verged with chocolate. The

posterior wings, above this line, are of a deep pea-green; but below it soften into a flesh colour, which continues along the external edge, from the upper to the anal corner; whence rises a jagged, indented, chocolate line, that runs across the wing, parallel with the silver line, whereon are several dark blue spots, shining like polished steel.

Nearly allied to the common British species, *Thecla Rubi*.

POLYOMMATUS THERO.

Plate II. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidae, *Leach*.

GENUS. POLYOMMATUS, *Latreille et Godart*. *Lycæna*, *Fabr.* (Syst. Gloss. Synops. in Illig. Mag.) *Papilio* (Nymph. Phalerat.) *Drury*. (Pleb. rural.) *Linn*.

POLYOMMATUS THERO. *Alis dentatis, suprâ nigricanti-fuscis, fûlvo maculatis, posticis subtus nebuloso-cinereis maculis linearibus nitenti-albis, maculâ disci majori, apicibus uncinatâ.* (Expans. Alar. lin. 1 unc. 9 lin.)

SYN. *Papilio* (Pleb. rur.) *Thero*, *Linn. Syst. Nat.* 2. p. 787. No. 219. *Fabr. Ent. Syst.* 111. 1. p. 274. No. 57. (*Hesperia rural.*). *God. et Latr. Enc. Meth.* 9. 662. No. 154.

Hesperia Erosine, *Fabr. Ent. Syst.* 111. 1. p. 266. No. 28.

Papilio Salmonæus, *Cramer, Ins. t. 1. pl. 2. f. 1.*

Papilio Rumina, *Drury*, (exclus. syn. *Linn*.)

HABITAT: Cape of Good Hope.

Upper Side. The wings are dentated, and of a fine dark brown colour. The anterior having seven square discoidal red spots, of different sizes. The posterior ones are furnished with four short tails, two on each; above which are three small red spots.

Under Side. The anterior wings are red at the base; but along the external and interior edges are of a rusty grey brown, with several dark marks or clouds thereon. Near the anterior edge, towards the base, are three black spots, with three small white ones in their centres. The posterior wings are of a rusty grey brown, darkest in the middle, with a margin of a paler colour, running along the external and part of the upper edges. Several spots, of a silver white, are dispersed on different parts of the wings; some being round, long, triangular, &c. About the middle of each wing is a long silvery mark, running in a direction from the base to the external edge; being about half the length of the wing.

Drury confounded this species with the European *Papilio Rumina*, *Linn*. belonging to a distant genus (*Thais*), whilst *Fabricius* described it twice under the specific names cited above.

ERYCINA LYSIPPUS.

Plate II. fig. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidae?

GENUS. ERYCINA, *Latr.* *Hesperia* (rurales), *Fab.* *Papilio* (Pleb. rur.) *Linn. Drury*.

ERYCINA LYSIPPUS. *Alis fusco-nigris, singularum utrinque fasciâ tenui aurantiacâ; posticis angulatis, subtus ad basin griseo maculatis.* (Expans. Alar. 1 unc. 6 lin.)

SYN. *Papilio* (Pleb. rur.) *Lysippus*, *Linn. Syst. Nat.* 2. p. 793. No. 250. *Cramer, pl. 380. f. A. Fabricius Ent. Syst.* 111. 1. p. 321. No. 218. (*Hesperia rural. L.*). *Latr. et Godart, Encycl. Method.* ix. p. 566. No. 11. (*Erycina L.*)

HABITAT: Jamaica (*Drury*). Guiana and Brazil (*Latr. et God.*).

Upper Side. The wings are of a chocolate-black. On the anterior is an orange-coloured line, which, rising about the middle of the anterior edge, crosses the wing towards the anal angle, where it suddenly bends, and terminates at the posterior edge. The posterior wings, which are angulated, have a circular orange line, rising at the anterior edge, near the corner, crossing the wings, and meeting near the anal angle.

Under Side. The wings are of the same colour as on the upper side, with the same orange line, whereon, in the anterior pair, are some white spots. Between this and the base are several faint, dirty grey, oblong spots, namely, four on the anterior, and about twenty on the posterior wing. The base of the anterior margin of the fore wings, and the anal margin of the posterior wings, are of a red colour.

HIPPARCHIA EUMEA.

Plate II. fig. 3.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Swainson*.

GENUS. HIPPARCHIA, *Fabr.* Satyrus, *Latr. et God.* Papilio (Danai Festivi), *Drury*.

HIPPARCHIA EUMEA. Alis integris subfuscis, anticis utrinque strigâ latâ fulvâ, subtus serie communi punctorum alborum. (Expans. Alar. 3 unc.)

SYN. Papilio (Dan. Festiv.) Eumeus, *Drury, App. to v. 2.* (1773). *Cramer, pl. 183. fig. C. D.*

Pap. (Nymphal.) Gripus, *Fabr. Ent. Syst.* 111. 1. 149. *No. 457.* *Herbst. Pap. tab. 135. No. 3. 4.*

Satyrus Gripus, *Latr. et God. Enc. Méth. v. ix. p. 497. No. 70.*

HABITAT : China (*Drury*). India (*Fabricius*).

Upper Side. The wings are entire, and of a deep brown, with a broad luteous fascia, rising near the anterior edges of the fore wings, running along near the tips, and ending at the external margin.

Under Side. The wings are the same colours as on the upper side. The anterior, with five whitish spots on each, placed in a row, near the external margin. The posterior have on each sometimes five, and sometimes seven spots, of the same colour, placed in a circular row, meeting near the extremity of the body.

I have reverted to the name given by *Drury*, in preference to following *Fabricius*, and the authors of the *Encyclopédie Méthodique*.

NYMPHALIS (CHARAXES) ATHAMAS.

Plate II. fig. 4.

ORDER Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Sw.*

GENUS. NYMPHALIS, *Latr.* SUBGENUS. Charaxes, *Boisduval.* (See page 1.)

NYMPH (CH.) ATHAMAS. Alis supra nigris, utrinque fasciâ mediâ latâ glaucâ subhyalinâ, subtus lunulis ferrugineis marginatâ. (Expans. Alar. 3. unc.)

SYN. Papilio (Equit. Achiv.) Athamas, *Drury, App. v. 2.* *Cramer, Pap. pl. 89. f. C. D. Encycl. Méthod. 9. 353.* (Nymphalis A.)

Papilio Pyrrhus, *Donovan. Insects of India, pl. 4. f. 2.* (excl. syn. Linn.)

HABITAT : China (*Drury*). India (*Donovan*). Java (*Latr. et God.*).

Upper Side. The head is brown, with four minute yellow frontal spots. The wings are dentated, and of a fine red brown, each with a broad brimstone coloured bar, rising near the middle of the anterior wings; and, crossing them and the posterior ones transversely, meeting near the extremity of the body.

Above these, near the tips, are two small oval spots of the same colour. The posterior wings have four tails, of nearly equal length, above which are seven small brimstone spots, placed on each, along the external edge.

Under Side. The broad transverse bar is of a pearl colour, being surrounded next the body by a narrow red brown border, edged with black, between which and the base, are two small black spots. The two spots, near the tips, are also seen on this side, being of a pearl colour. The external edges of the anterior wings are of an olive colour; the remaining parts being of a very resplendent greyish purple. Several small kidney-shaped marks are placed along the outer side of the pearl bar. The posterior wings have a narrow orange-coloured border running along their external edges; and above it, are seven small black spots, edged at the top with white. Above these is a shade of brown olive, over which are some black angular marks, with red crescents above them.

Donovan has confounded this species with the Linnæan Pap. *Pyrrhus*, although Drury had previously pointed out the diversity of the two species.

EREBUS ODORA.

Plate III. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. EREBUS, *Latr.* *Thysania*, *Dalm.* *Noctua*, *Fabr.* *Phalæna* (*Attacus*), *Linn.* *Drury*.

EREBUS ODORA. *Alis dentatis fuscis, nigro undatis, anticis ocello atro auriformi fulvo marginato; posticis sesquialtero.* (Expans. Alar. $7\frac{1}{2}$ unc.)

SYN. *Phalæna* (*Attacus*) *Odora*, *Linn. Syst. Nat.* 2. p. 811. No. 11. *Sloan. Jam.* 2. t. 236. f. 13. 14.

Noctua Odora, *Fabr. Ent. Syst.* 111. 2. p. 10. No. 8. *Gmelin, Linn., S. N.* 2529. 11. *Cramer, Ins. tab.* 169. fig. A. B. *Oliv. Enc. Méth.* 8. 252. 7.

HABITAT: Jamaica, Antigua, and other West Indian Islands (*Drury*). Surinam (*Fabricius*).

Upper Side. The body and wings are of a dark brown. The latter are scalloped, the anterior having, near their anterior margin, towards the middle, a black eye on each, shaped like a human ear, whose iris is of a dark orange colour; and, near the anal angle, towards the external edge, is a black scalloped line, running half way up the wing, joining to which (under it) is a bar of a very soft and delicate brown colour, differing from the general tint of the wings. The posterior wings have, on each, near the external edge, a mark somewhat like a large eye; upon whose under edge are two semi-eyes, one black, the other the same colour as the wings. Many agreeable shades, of a lighter colour, and ingrailed lines, run across all the wings.

Under Side. The head, breast, and legs, are the same colour as the upper side; except the thighs of the fore legs, which are red. There is very little variety of colours on this side, except a purplish hue, visible when held in a declining direction.

Drury notices another insect, also received by him from Saint Christopher's, of smaller size, and differing only in having a narrow indented bar, of a flesh colour, crossing the upper and lower wings, and which, he thinks, may possibly be the other sex of the insect here figured; considering also, that the references to Linnæus and Sloane, apply rather to the smaller insect. Fabricius states, that the female of *Odora* is distinguished by having a fascia, composed of three waved white lines, in the middle of the wings.

SPILOSOMA ACREA.

Plate III. fig. 2. ♀. 3. ♂.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. SPILOSOMA, *Stephens.* Arctia p. *Schrank.* Eyprepia p. *Ochsenheim.* Bombyx p. *Fabr.*

SPILOSOMA ACREA. Alis niveis (posticis ♂ fulvis), punctis nigris, costalibus majoribus; abdominis dorso fulvo nigro maculato. (Expans. Alar. ♂ 2 unc.—♀ 2 $\frac{3}{4}$ unc.)

SYN. ♀ Phakena (Bombyx) Acrea, *Drury, App. v. 2.*

♂. Phal. (Bomb.) Caprotina, *Drury, App. v. 2.*

Bombyx Acria, *Fab. Ent. Syst.* 111. 1. p. 451. No. 137. *Abbot and Smith, Ins. Georg. tab. 67.* (exclus. *Syn. Fabr. B. lubricipidæ.*)

Arctia Pseuderminia (*Peck*), *Harris in Massachusetts. Agricult. Repos. vol. 7. p. 328. and tab. annex.*

HABITAT: New York, Maryland, Virginia (*Drury*).

MALE.—*Upper Side.* The antennæ and eyes are black; the thorax and extremity of the body cream colour; the abdomen yellow, spotted on the top and sides with black. The anterior wings are cream coloured, spotted with black. The number of spots very uncertain, except five which are placed on the anterior edge, and six on the external one. The cilia yellow, as are the posterior wings, on each of which are three black spots, two near the external edge, and one near the middle.

Under Side. The breast and thighs are yellow; the abdomen and legs the same, chequered and spotted with black. All the wings are yellow, spotted in the same manner with black, as on the upper side.

FEMALE.—*Upper Side.* The head and thorax white. The abdomen yellow, with black spots on the sides and top, the extremity being white. All the wings are white, with black spots, whose number is very variable; but, on the anterior edges of each anterior wing, are placed five, and on the external edges, six.

Under Side. The legs are black and white, the thighs yellow; the abdomen white, spotted with black. All the wings are white, with black spots, most of which, observed on the upper side, being seen on this.

This species is closely allied to the common British species, *Spilosoma lubricipida*, and *Menthastri*; but is of larger size, the spots being also larger. The two figures given by *Drury*, are now ascertained to be the sexes of the same species, as, indeed, our author had surmised might be the case. It appears to be a very common species, and is stated by *Drury* to breed twice a year, namely, in June and September. The caterpillar is very hairy, and when young is white; as it advances in age, it acquires a fox colour, and, in its last skin, becomes almost black. Dr. Thaddeus W. Harris, a distinguished American entomologist, to whom I am indebted for many valuable insects of that country, has published a very interesting notice, in the work above cited, upon this insect, under the title of “The Natural History of the Salt-marsh Caterpillar,” under which name the larva of this insect is commonly known, and which is exceedingly destructive to grasses of various kinds. He states, that when nearly full-fed, “they become very voracious, and continue eating all the day and night without intermission. Soon they leave the meadows, aggregated in great numbers, and commence the wandering state, or begin to run, as is the phrase, devouring everything in their progress; corn-fields, gardens, and even the coarse and rank

produce of road sides, afford them temporary nourishment, until they have found a place of security from the wind and weather." Dr. Harris, in a communication to me, has stated, that he had ascertained that this insect was the *Acria* of Fabricius, and that Professor Peck's name must, therefore, be rejected. Abbot observes, respecting this caterpillar, that it is "a general devourer of all field and garden-plants, and weeds. It spun up in a thin web, intermixed with its own hairs, on the 16th of May, and the moth came out on the 2d of June. Others of the autumnal brood, taken in September, spun up on the 18th of that month, and remained in the chrysalis until the 21st of April."

CETHOSIA CYANE.

Plate IV. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. *CETHOSIA*, *Fabr. Latr. et God.* *Papilio* (Nymphal. Phalerat.), *Drury*.

CETHOSIA CYANE. Alis dentatis nigris, lineâ communi tenuissimâ angulatâ marginali, anticis fasciâ posticis disco (nigro punctato) albis. (Expans. Alar. unc. 3½.)

SYN. *Papilio* (Nymph. Phal.) *Cyane*, *Drury*, *App.* v. 2. *Herbst. Pap. tab.* 248. *fig.* 3. 4. *Cramer, Pap.* 25. *pl.* 295. *fig.* C. D. *Fabr. Ent. Syst.* 111. 1. *p.* 115. No. 352. *Latr. et God. Encyl. Méthod.* ix. *p.* 247. (*Cethosia Cy.*)

HABITAT: Bengal (*Drury*). India (*Fabr.*).

Upper Side. The anterior wings are dentated and black: the anterior edge of a dirty olive brown; in the middle whereof a broad white bar arises, and runs transversely towards the middle of the external edge, where, stopping at the distance of a quarter of an inch, it forms, with some faint white spots, a black border along the external edge, whereon is a row of narrow white angulated marks. The posterior wings, which are deeply dentated, are white; with a deep black border running along the external edge, whereon is a row of white angulated marks, as on the superior wings, and above each of them is a series of short white streaks, running parallel with the edge of the wing. Above these are six round black spots, one situated between each nerve, and over them six more smaller, and fainter; several more spots being dispersed on the white parts of the wings, some very distinct, and others very faint.

Under Side. The anterior wings are red, which colour extends from the base nearly half along the wing, and which, towards the posterior edge, softens to a cream-colour. On this red ground are some short black lines, with blue ones between them, extending between the two principal nerves. The external edge has a black margin; whereon the white angular marks are seen more distinctly, being here shaped like beards of arrows. Above this border, near the external angle, are two oval black spots, or eyes, whose irides are white, having between them and the black border a row of small, round, black spots, placed close together. The white bar described on the upper side is also seen here. Several more black spots, of various forms, are dispersed on different parts, particularly a group in the centre of the wing. The inferior wings are white, with pale cream-coloured clouds; but next the base are white, blue, and red, with black streaks, from whence a shade of blue and brown runs along the anterior edge to the external angle, where a black border commences, whereon are angular white marks, like arrow beards or points. This border continues to the abdominal corners, where two small, curved, black lines meet together, and form an arch. Above the black border is a row of small black spots, and above them are six larger, with several others, of different shapes and sizes, dispersed on various parts of the wings.

The insect described in the *Encyclopédie Méthodique*, from Malabar, differs from that figured by Drury, in having the disc of the posterior wings of a fulvous buff colour, and the spots larger, with the markings at the base of this pair of wings, on the under side fulvous instead of blue. Is this to be regarded as a variety, the opposite sex, or a distinct species?

CETHOSIA BIBLIS.

Plate IV. fig. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, Sw.

GENUS. CETHOSIA, *Fab. Latr. God.* Papilio (Nymphal. Phal.), *Drury.*

CETHOSIA BIBLIS. Alis subrotundatis dentatis fulvis, extimo fusco, lunulis albis anticarum serie triplici digestis (intermediâ minori), posticis ante marginem maculis nigris, singulis subtus ad basin lineis maculisque flavis variis. (Expans. Alar. 3 unc. 9 lin.)

SYN. Papilio (Nymph. Phal.) Biblis, *Drury, App. v. 2. (1773).* *Cramer, Pap. 15. pl. 175. fig. A. B. Herbst.*
Pap. tab. 248. fig. 1. 2.

Papilio (Nymph.) Penthesilea, *Fabr. Ent. Syst. 111. 1. p. 114. No. 349.* (exclus. Syn. Cramer.)

Cethosia Biblina, *Latr. et God. Enc. Méth. ix. p. 248.*

HABITAT: China (*Drury*). From the collection of the late Mr. Lee of Deptford.

Upper Side. The anterior wings, next the shoulders, are a brown orange, occupying half the wings; the other half, next the tips, are of a rusty red brown, whereon is a row of white crescents running along the external edge. Above this are five white squarish spots, and over them a row of angulated marks, like points of arrows, with white spots in their centres, above which is a single white spot, between which and the shoulders are some short black waved lines, extending between the two principal nerves. The posterior wings are entirely of a brown orange, except a rusty red-brown border that runs along the external edge, whereon is a row of white crescents, and above it are six black spots running parallel with the border, beneath which is a denticulated line of dark brown.

Under Side. The anterior wings, next the shoulders, are of a brown orange, reaching half way along the wings, the remainder being rusty yellow. On the orange ground, next the shoulders, are several black, irregular, short lines, placed two and two, the middle, or spaces between them, being clay-coloured. Two small black spots are placed on the anterior edge, on each side near the base. Along the external edge is a row of white angulated lines, above which is a row of ash-coloured marks, with some dark spots thereon; and over this, is another row of ash-coloured marks, shaped like acute angles, with an oblong streak in the centre of each. The posterior wings at the base are dark orange, but toward the external edges are rusty yellow, on which is a row of crescents on a dark border. Above this is a circular bar or band of a flesh colour, having a row of dark spots on the lower edge, and the upper edge shaped like acute angles, with a black triangular mark in each, and a white spot in its centre. About a quarter of an inch above this bar is another of a clay colour, about one-eighth of an inch broad, with dark spots and marks on it, some of which resemble Greek characters. Over this bar is another near the base, of a clay colour, with a double row of black marks or streaks on it.

Fabricius has confounded this species and another, under the name of *Penthesilea*. Latreille and Godart have altered the specific name proposed by Drury to that of *Biblina*, “parce qu’il a été imposé ultérieurement à un genre de Lépidoptères diurnes.” I have, however, restored the specific name of *Biblis*, because the same name, was not

proposed for a genus by Fabricius, until many years after the publication of Drury's work, in the Synopsis of the Systema Glossatorum, published in Illiger's Magazine ; and because the employment of a proper name, like *Biblis*, for a species, even when previously used for a genus belonging to a perfectly distinct group, is not incorrect.

CYNTHIA HUNTERA.

Plate V. fig. 1.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Sucains*.

GENUS. CYNTHIA, *Fabr. Stephens*. *Vanessa* p. *Latr. et God.* Papilio (Nymph. Gemmat.), *Drury, Fabricius*.

CYNTHIA HUNTERA. Alis subangulatis dentatis fulvis, nigro variegatis ; anticis apice productis albo maculatis ; posticis infra ad basin griseo reticulatis, ad extimum ocellis duobus magnis notatis. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (Nymph.) *Huntera*, *Fab. Syst. Ent. p. 499. No. 240.* *Herbst. Pap. t. 178. f. 5. 6. t. 179. f. 1. 2.* *Abbot and Smith, Ins. Georgia, vol. 1. tab. 9.*

Papilio (Nymph. Gemm.) *Cardui Virginienensis, Drury, App. v. 2.*

Papilio *Iole, Cramer, Pap. 1. pl. 12. f. E. F.*

Papilio *Bella Donna Virginiana, Petiv. Gaz. Dec. 4. tab. 33. fig. 5.*

HABITAT : New York, Maryland, Virginia (*Drury*). Brazil to Georgia (*Enc. Méth.*).

Upper Side. The base of the wings tawny orange ; the anterior, dentated and angulated ; the tips and external edges are brownish black, on which are five white spots near the external angle, the largest being round. The remainder of the wings is of a fine orange brown, with several black marks thereon, near the anterior edges. The posterior wings are a little dentated, and of a brown orange colour like the anterior, having five black spots placed near the external edge of each, two of which being larger than the rest have blue centres, below these is a black border, with a row of brown-orange crescents running along the middle. The cilia is black and white.

Under Side. The anterior wings at the base are greyish, beyond which they are beautifully adorned with rose-coloured and black marks, having three white spots on each near the external edge, with several clouds and marks of different colours placed at the tips and anterior edges. The posterior wings are of a beautiful agate colour, with many lines and narrow bars branching from, and intersecting one another under different directions (like lines in a map), so as to form spots and clouds of different shapes. Each wing has two eyes placed near the external edge, one larger than the other, the pupils being of a blueish hue and the irides black, the small one having a yellow circle within it ; below these, a purple line runs parallel with, and near to the external edge.

The caterpillar of this insect is described by Drury as being green, with black rings round the body, and as feeding about New York upon the wild balsams, appearing about the latter end of July, or beginning of August. Once in about five or six years they are exceedingly plentiful, at other times very scarce ; a peculiarity also noticed in the very nearly allied European species, *Cynthia Cardui* (the Painted lady), of which species, indeed, Drury appears to have regarded it as a geographical variety.

The caterpillar, according to Abbot, is of a brown colour, with the incisions, and a

lateral line yellow; it has also two dorsal lines, formed of alternately white and red points; the head is black, and the spines, with which the body is armed, are of the prevalent colour of the surface. It feeds upon the *Gnaphalum obtusifolium*. The chrysalis is rather yellow, with black spots, and is assumed towards the end of April or beginning of May. The butterfly appears at the end of about ten days. It continues breeding during the summer, and is very commonly seen sucking up moisture from damp places near houses. The caterpillar folds and spins the leaves together, in the same manner as the English Painted lady, *Cynthia Cardui*.

PIERIS (THESTIAS) PYRENE?

Plate V. fig. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PIERIS, *Schrank, Latr. et God. Pontia*, p. *Ochsenh. Horsfield. Papilio* (*Danai Candidi*), *Linn. Drury. Thestias, Boisduv. Teracolus, Swains.*

PIERIS (THESTIAS) PYRENE. “*Alis flavis primoribus apice (medio fulvo) nigris, subtus nebuloso maculatis. Habitat in China.*” *Lin. loc. cit. infra.* (Expans. Alar. 2 unc. 9 lin.)

SYN. *Papilio* (*Dan. Candid.*) *Pyrene*, *Linn. Syst. Nat.* 2. 762. 86? *Latr. et God. Enc. Méth.* ix. 120.

P. Evippe, Lin. var. teste. Drury, App. vol. 2.

Pap. (Dan. Cand.) Sesia, Fab. Ent. Syst. 111. 1. 203. 636.

Thestias Pyrene, Boisduv. Hist. Nat. Lep. 1. p. 593. No. 3.

HABITAT: China (*Drury*). Asia (*Linn.*).

Upper Side. The anterior wings near the base are of a brimstone colour; the tips and external edges being of a dark brown, nearly black, surrounding a large patch of a fine orange. The posterior are of brimstone colour, with a border round their edges of dark brown. The male has not this border.

Under Side. Black; all the wings brimstone, without any marks, spots, or clouds whatever in the female, the male having its under side of a brighter yellow, with several reddish-brown spots on the inferior wings.

There is the greatest confusion respecting the specific names of this, and several nearly allied species, which would be very difficult to unravel. *Drury* considered this insect as a variety of *Evippe*, whilst *Fabricius*, *Latrielle*, and *Godart*, give it as identical with the Linnæan *Pyrene*, which opinion I have adopted, although I am by no means certain as to the identity of the species; the under side of the wings offering no trace of the central discoidal black spot existing in that species. *M. Boisduval* has not diminished the confusion, in his work just published, by giving a species from Guinea, under the name of *Evippe* (which Linnæus states is from China), with the erroneous observation, “*Il est probable que les anciens auteurs aurent confondu sous le nom d’Evippe trois ou quatre espèces Africaines.*”—*Hist. Nat. Lépid.* 1. p. 574.

CYNTHIA LAOMEDIA.

Plate V. fig. 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. CYNTHIA, *Fab.* Vanessa p. *Latr. et God.* Papilio (Nymph. Gemmat.), *Linn. Drury*.

CYNTHIA LAOMEDIA. Alis dentatis cinerascensibus lineis fuscis transversis undulatis ocellisque (quibusdam cæcis) serie posticâ digestis; anticarum sex, posticarum quinque. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (Nymph. Gemmat.) Laomedia, *Linn. Syst. Nat.* 2. 772. No. 145. *Fabricius, Ent. Syst.* 111. 1. p. 98. No. 302. *Cramer, pl.* 8. f. 10. *Herbst. Pap. tab.* 174. f. 1. 2.

HABITAT: China (*Drury*). East India (*Linn.*). Java (*Enc. Méth.*).

Upper Side. The wings are of a greyish purple and a little dentated. The anterior have on each four irregular black lines, running from the anterior edge near the body half way cross the wings, and six eyes on each, near the external edge, whose irides are white, some of which are oval, and one, being larger than the rest, is filled up with black and red; some are very faint. The posterior wings have six oval eyes on each, with white irides; three of which are more distinct than the rest, two of them being filled up with red and black. Two dark irregular lines run along and near to their external edges.

Under Side. The wings are rather paler than on the upper side. A small irregular line begins about the middle of the anterior edge of the superior wings, and running cross them and the inferior ones, meets below the body. The anterior wings have a distinct dark spot, and also a faint one. The posterior ones have two distinct red and black spots, and another very faint.

ARGYNNIS NIPHE.

Plate VI. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. ARGYNNIS, *Fabr. Latr. God.* Argyreus, p. *Scopoli.* Papilio (Nymphal. Phalerati), *Linn. Drury*.

ARGYNNIS NIPHE. Alis supra luteis nigro maculatis, anticis ad apicem cœrulescenti-nigris fasciâ albâ transversâ; posticis subtus viridi, argenteo, nigroque variis, strigâ quinque ocellorum notatis. (Expans. Alar. 3 unc. 9 lin.)

SYN. Papilio (Nymph. Phal.) Niphe, *Linn. Syst. Nat.* 2. 785. No. 208. *Fabr. Ent. Syst.* 111. 1. p. 142. No. 436.

HABITAT: China.

Upper Side. The anterior wings near the base are of a brown olive. About half the wings (from the lower angle upwards) are of a dark blue, with many different shaped spots on them, and a white bar running from the anterior edge towards the external one, which, being intersected by the black tendons of the wing, appears like three steps. All the wings are dentated or scolloped. The posterior ones are of a clay colour, with many black spots on them, of various forms. A black border runs along the external edges, narrowed as it approaches the external angle, on which appear two rows of blue spots like crescents, whose convex sides are placed opposite each other.

Under Side. The white bar on the anterior wings appears as on the upper side, from whence to the tips is an olive colour, whereon are some silver spots; the remainder as on the upper side. The posterior wings are of an olive hue, finely variegated with some white silvery spots and marks. A line of this colour runs along the external edges almost close to the scollops, and above that are five round spots of a darker olive, with small white dots in their centres.

ARGYNNIS TEPHNA.

Plate VI. fig. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. ARGYNNIS, *Fab. Latr. God. Papilio* (Nymph. Phalerat.), *Linn. Drury.*

ARGYNNIS TEPHNA. Alis subrotundatis dentatis, supra luteis nigro maculatis, posticis subtus viridi argenteo nigroque variegatis serie quinque ocellorum. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Argynnis, *Drury, App. v. 2. Herbst. Pap. t. 254. f. 5. 6.*

Papilio Niphe, var. *Fabr. Ent. Syst. 111. 1. p. 142.*

P. Niphe mas. *Cramer, Pap. 2. pl. 14. f. D. E.*

Argynnis Tephnia, *Latr. et God. Enc. Méth. ix. p. 262. No. 18.*

HABITAT: China.

Upper Side. The wings are of a brown orange, having many black spots, of different sizes and shapes on them. A black scalloped border runs along the external edges of the posterior wings, whereon are two rows of tawny red spots, appearing like crescents, with their convex sides placed against each other. All the wings are scalloped or dentated.

Under Side. The anterior wings, toward the body, are brown orange. The tips are of a yellowish flesh colour, with some olive spots on them, with black spots, as on the upper side. The posterior wings are of a yellow flesh colour, marked with some olive spots, and white marks, which seem of a silver hue. A margin of olive colour runs along the external edges, whereon is a row of flesh-coloured crescents (as on the upper side), with an intersected narrow line above them. Over these, are five round olive spots, of equal sizes, with a dot of silver in their centres.

The specific name given to this species by Drury, having the priority in point of date, would have been retained, had it not been identical with that of the genus to which it belongs. Engramelle and several other authors have, inadvertently, given it as an inhabitant of the south of Europe.

NYCTALEMON PATROCLUS.

Plate VII. fig. 1. (Upper Side). Plate VIII. fig. 1. (Under Side).

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Uraniidæ, *Westw.*

GENUS. NYCTALEMON, *Dalman.* (Prod. Monogr. Castn.) *Urania. Divis. C. Latr. et God. Papilio* (Equit. Achiv. *Linn.*), *Noctua, Fabr.*

(SUBGENUS. Orontes, *Swainson, Zool. Illustr. 2d. series, 125.*)

NYCTALEMON PATROCLUS. Alis supra fuscis, subtus griseis fusco undatis, utrinque fasciâ communi mediâ rectâ albâ, posticis caudatis. (Expans. Alar. fere 6 unc.)

SYN. Papilio (Eq. Achiv.) Patroclus, *Linn. Syst. Nat. 2. 749. No. 24. Cramer, Pap. pl. 198. fig. A. pl. 109. fig. A. B. Herbst. Pap. tab. 54. fig. 2. 3. tab. 55. f. 1.*

Noctua Patroclus, *Fab. Ent. Syst. 3. 2. p. 8. No. 2.*

Urania Patroclus, *Latr. et God. Enc. Méth. ix. 710.*

HABITAT: China (*Drury*). Java, Amboyna (*Enc. Méth.*).

Upper Side. The antennæ are about an inch long, slender, setaceous, and gradually diminishing from the base to the extremities. The head is small. The thorax is clothed with long soft hair, and,

with the abdomen, is of a darkish brown. A remarkable straight narrow line, or bar, of a cream colour, arises from the middle of the anterior edge of each of the fore wings, and, crossing both anterior and posterior wings, ends at the abdominal edges, about half an inch below the abdomen; so that, when the wings are extended, as in the figure, these lines, with the anterior edges, form an equilateral triangle. The space within the triangle is dark brown; but the parts, near the shoulders, are lighter, having a greyish cast or hue, and contain many small transverse curved streaks, extending to the anterior edges, where they are large, black, and very conspicuous, like stripes. Some transverse markings of this kind, are dispersed on the posterior edges of the superior wings, and also on the abdominal edges of the posterior. On the outside the triangle, both on the anterior and posterior wings, is a fascia, of light brown, about half an inch broad, which deepens into a dark brown. On the posterior wings, after becoming dark, it softens again into the same light colour, continuing to the external edges. Each of these wings is ornamented with two tails, the inner ones the longest and near an inch in length, the tips of which incline towards each other; the lesser or outer tails, are about half an inch long, strengthened by the tendons of the wings passing through the middle of them; all of them being bordered with a soft ray of dark brown.

Under Side. The bars or lines, which form the triangle on the upper side, are not visible on this; but the inclosed triangular field appears of a light greyish brown, darker at the borders, and thickly beset with small brown streaks, parallel to each other, and surrounding the body. The costal nerve of the anterior wings composes an edging in each, about an eighth of an inch broad, which diminishes as it approaches the external angle, white, and beautifully marked with black streaks, but smaller than those seen on the upper side. Outside the triangle, both in the anterior and posterior wings, is a broad border of white, which softens into a brown, but lighter than that on the upper side. Both in the white, and in the brown, are some small dashes of black, very thinly dispersed. The internal margin of the posterior wings is furnished with a deep fringe, and the black marks situated below the abdomen, are larger and broader than those on the upper side. The tails are whitish, bordered with brown, and appear as on the upper side.

This is one of those anomalous forms, whereof examples occur in every tribe of animals, baffling the skill of the most profound systematists. By Linnæus, and many other authors, it was considered as a butterfly, and certainly the genus *Urania* (in which it is placed by Latreille), as we learn from Mr. W. S. MacLeay's valuable memoir upon that genus, published in the first volume of the Transactions of the Zoological Society of London, is composed of day-flying species. Fabricius, however, regarded it as a moth, belonging to the genus *Noctua*, and nearly related to the genus *Erebus*, of which the *Erebus Odora*, figured in the third plate of the present volume, is a conspicuous species; and when we examine the structure of the palpi, and the spurs upon the posterior tibiæ, we find good reason for adopting this relation, admitting, at the same time, that the group in question is one which, from its various affinities and analogies, it is very difficult to assign to any single section.

CALLIMORPHA PHYLLIRA.

Plate VII. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA, *Latr. Leach.* Hypercompa, *Steph.* Heraclia, *Hubner.* Phalænæ Bombyx, *Drury.*

CALLIMORPHA PHYLLIRA. Alis anticis nigris lineis albidis apicalibus, literam B referentibus; posticis sanguineis maculis nigris. (Expans. Alar. 1 unc. 6 lin.)

SYN. Phalæna (Bombyx) Phyllira, *Drury, Append. v. 2.* Olivier, *Enc. Méth.* 5. 94. 236. Abbot and Smith, *Ins. Georg. tab.* 64.

HABITAT: New York; taken on the 12th day of July.

Upper Side. The antennæ are black, small, and thread-like, near half an inch long; the head and thorax cream-coloured. Behind the head are two black spots, and on the thorax are three others, longer, and running parallel with it. The abdomen is scarlet, and on each segment is a black mark, forming a row, united together in the middle. All the wings are entire. The anterior ones black, with cream-coloured cilia; the interior edge, and part of the anterior, next the body, are margined with cream colour. A line of the same colour, runs from the body, parallel with, and near to the posterior edge, quite to the external one, where, suddenly returning, in a zigzag manner, it ends at the anterior edge, near the tips, and forms two angles, like a B, with a line placed across its top, or upper part. The posterior wings are scarlet, having a thin border of black, running along their external edges, with four black spots above it, those nearest the abdomen, being in shape like hearts.

Under Side. Like the upper: but the colours are more faint and less distinct.

The caterpillar of this species is brown, with small dorsal and lateral diamond-shaped yellow spots, emitting fascicles of hairs. It feeds, according to Abbot, on the cross-wort, corn, peas, wheat, &c. One of the caterpillars spun up on the 4th of April, and the moth appeared on the 29th. Another spun up on the 27th of May, and came out on the 16th of June. It continues breeding during most part of the summer.

SPILOSOMA NAIS.

Plate VII. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. SPILOSOMA, *Steph.* Arctia, p. *Schrank.* Eyrepia, p. *Ochs.* Phalæna (Noctua), *Drury.*

SPILOSOMA NAIS. Alis anticis nigris lineis tribus longitudinalibus fusco-fulvescentibus, duabus superioribus externe connexis, posticis pallidioribus margine irregulari nigro. (Expans. Alar. 1 unc. 9 lin.)

SYN. Phalæna (Noctua) Nais, *Drury, Append. v. 2.*

HABITAT: New York; taken on the 24th day of June.

Upper Side. The antennæ are black, and pectinated; the head and body are of a light yellowish brown. On the thorax are three black marks, running parallel with it, with several black spots on the abdomen. The anterior wings are black; the cilia of a light yellowish brown, which colour is continued along the interior edges, up to the body; some broad lines, of the same colour, occupy about two-thirds of the wing, running parallel with the anterior and interior edges. The posterior wings are of the same light yellowish brown, with a faint black spot on each, having a broad irregular border, of a faint black.

running along the external edges, being very narrow in the middle. All the wings are plain and entire.

Under Side. Exactly like the upper, but the colours are less brilliant.

This species is nearly related to our common British species, *Spilosoma lubricipida*.

GEOMETRA TRANSVERSATA.

Plate VIII. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Geometridæ, *Stephens*.

GENUS. GEOMETRA, *Linn. Stephens*. *Ennomos*, *Treitschke*, *Duponchel*.

GEOMETRA TRANSVERSATA. Alis angulatis fusco-fulvescentibus undique strigis minutis transversis fasciæque tenui communi obscurâ notatis. (Expans. Alar. 2 unc.)

SYN. *Phalæna* (Geometra) *transversata*, *Drury, Append. v. 2.*

HABITAT: New York.

Upper Side. The antennæ are filiform, half an inch in length. The head, thorax, abdomen, and wings, of a brown orange. All the wings are angulated and besprinkled with small short transverse streaks parallel to each other. A narrow brown line, beginning at the external angle of the anterior wings, and running in a transverse direction, crosses them and the posterior wings near the middle, meeting above the extremity of the abdomen.

Under Side. Exactly like the upper in every circumstance, except that the brown line is not to be seen.

This species seems nearly allied to the moths, which English collectors call the Thorns, and to which Stephens restricts the name of *Geometra*, but which M. Duponchel terms *Ennomos*.

BUPALUS CATENARIUS.

Plate VIII. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Geometridæ, *Steph.*

GENUS. BUPALUS, *Leach*. *Fidonia*, p. *Treitschke*. *Phalæna* (Geometra), *Drury*.

BUPALUS CATENARIUS. Fronte fulvâ; alis albis lunulâ mediâ; anticis strigis duabus undatis (scil. ante et pone medium), posticis strigâ unicâ, nigris. (Expans. Alar. 1 unc. 9 lin.)

SYN. *Phalæna* (Geometra) *catenaria*, *Drury, App. v. 2.* *Fabr. Ent. Syst.* 111. 2. p. 140. No. 41. *Gmel. Linn. S. N.* 2461; 660.

HABITAT: New York (*Drury*). "In Indiis" (*Fabr.*).

Upper Side. The head is orange-coloured; the eyes black; the antennæ are broad, and pectinated; the thorax white, with three spots of orange colour, one at each shoulder, the other at the base of the abdomen, where are two small black specks. The abdomen is white, and on each ring is a small black speck. The wings are white; and, on each anterior one, are two denticulated lines, running cross the wing, from the anterior to the interior edge, in a circular manner; the one near the base, the other

near the external edge, which last forms, on each nerve, a small black speck like an arrow head. Between the two lines is a black spot near the anterior edge. The posterior wings have a similar line running cross them, from the anterior to the interior edges, in a circular manner, and, meeting a little above the extremity of the abdomen, with a black spot in each near the middle.

Under Side. Is similar to the upper, only the black spots are more conspicuous.

CERATOCAMPA IMPERIALIS.

Plate IX. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, *Steph.*

GENUS. CERATOCAMPA, *Harris, Append. to Hitchcock's Geology of Massachusetts.* Cerocampa, *Kirby & Spence, Ind. Introd. to Ent.* Odonestis, *Germar. Stephens.* Lasiocampa, *Latr. Schrank.* Bombyx, *Fabr.*

CERATOCAMPA IMPERIALIS. Alis flavis, fusco irroratis et variegatis, omnibus infra maculâ discoidali subocellari fuscâ. (Expans. Alar. 4 unc. 9 lin. ♂.—6 unc. ♀.)

SYN. Phalæna (Attacus) Imperialis, *Drury, App. v. 2.*

Bombyx Imperialis, *Fabr. Ent. Syst.* 111. 1. p. 435. No. 89. *Gmel. Lin. S. N.* 2417. 510.

Phalæna Imperatoria, *Abbot and Smith, Ins. Georgia, tab.* 55. *Oliv. Enc. Méth.* 5. 56. 116.

Bombyx Didyma, *Pal. Bauv. Ins. Lep. pl.* 20

HABITAT: New York (*Drury*). India (*Fabricius*).

Upper Side. The antennæ are of a reddish colour, broad and pectinated, and, near the extremities, appear as if they were stripped of their comb-like appendages. The thorax and abdomen yellow, clouded with a light reddish-brown colour, inclining to crimson. The anterior wings are of a fine bright yellow, with several clouds on them of the same brown colour, whereof one takes its rise at the tips, and runs along the external edge to the lower corners, being narrower at the extremities than the middle, where it branches off, and unites to a large cloud near the shoulders. The yellow parts of all the wings appear as if sprinkled with dark irregular specks. The posterior wings are of the same bright yellow as the anterior, and have, in the middle of each, a small brown eye, with a lighter spot in its centre. An irregular bar of the same reddish brown colour crosses these wings, which, beginning at the outer angle, meets at the anal angle. The edges of all the wings are plain.

Under Side. The thorax and abdomen are yellow. All the wings are of the same yellow colour, and sprinkled with brown as on the upper side. The superior wings have on each a light reddish brown eye near the middle, with a light spot in the centre, and a round brown spot above it. The anterior margins next the body are of a reddish brown; and the same cloud that appears along the external edge of each wing on the upper side, appears also on this, but fainter. The inferior wings have a reddish brown eye in each near the middle, with a lighter spot in the centre, and of the same size as on the upper side.

The figure here given, is taken from the male; the female being much larger, expanding full six inches; the antennæ being thread-like, and not combed or pectinated as the male.

This species breeds twice in the year, namely in June and September. The caterpillar, according to Abbot, feeds on the plane-tree (*Platanus occidentalis* Linn.), oak, liquidambar, and pine trees. Some of them are of a tawny colour, others tawny and orange, others green. They are furnished with long rigid hairs, and the second and third segments of the body are also armed with two pair of short, erect, rugose horns.

This insect is placed by Mr. Kirby in his new genus *Cerocampa*, together with *Phalæna regalis*, Fabr. Mr. Kirby had, however, evidently in view the caterpillars of the latter insect, when he proposed this generic name, and which are armed with numerous, long, erect, rigid spines, those near the head being curved, and giving the insect somewhat the appearance of a cockatoo. This larva is figured by Abbot and Smith, pl. 61, and specimens, admirably preserved by Abbot, are contained in the collection of the Entomological Society of London, presented by Mr. Kirby. There is also considerable difference between the chrysalides of these two insects, that of *imperialis* being more elongate, with a bifid tail, and with transverse rows of short abdominal spines, of which the chrysalis of *regalis* is destitute. One of the caterpillars observed by Abbot, went into the ground on the 16th of September, and the moth came out on the 4th of July. They are extremely difficult to rear in confinement.

NOCTUA SQUAMULARIS.

Plate IX. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. NOCTUA, *Auct.*

NOCTUA SQUAMULARIS. Alis cinereis, anticis fasciâ irregulari centrali ferrugineâ, lineis duabus externè cinctâ, posticis fasciis duabus obscuris. (Expans. Alar. 1 unc. 9 lin.)

SYN. *Phalæna* (Noctua) *Squamularis*, *Drury, Append. v. 2.*

HABITAT: New York; taken on the 11th day of May.

Upper Side. The antennæ are brown, like fine threads. The tegulæ of a pearl colour, standing up as if projecting from the back. The colours on the anterior wings are divided by a strong bar of a deep chocolate, running cross the wings near the middle, from the anterior to the posterior edges. This softens into a deep slate colour, covering that part of the wings down to the external edges. The part next the shoulders is of a light ash or pearl colour, whereon are two small black spots or stripes, situated near the anterior edge. On the dark part near the lower corner, run two small black irregular lines, from the posterior edge; one running cross the wing, the other only half across. The posterior wings are of a lightish brown, having two bars of a deep brown (almost black) rising from the abdominal edge, and crossing the wing upward, grow broader and fainter as they approach the middle and anterior edge.

Under Side. Is of a faint russet colour, having little or no marking thereon. All the wings are slightly dentated.

I am unable to ascertain to which of the modern genera of Noctuidæ, this and the following species are referrible.

NOCTUA UNDULARIS.

Plate IX. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. NOCTUA, *Auct.*

NOCTUA UNDULARIS. Alis subdentatis nigricantibus, strigis transversis undulatis circiter 8. (Expans. Alar. 2 unc.)

SYN. Phalæna (Noctua) undularis, *Drury, App. vol. 2.*

HABITAT: New York.

Upper Side. The antennæ are brown and thread-like. The head, body, abdomen, and wings are of a very dark brown, bordering on black, and appear somewhat glossy. All the wings are a little dentated, and on the anterior ones, from the base to the extremity, is a series of black indented lines or bars, whereof the last or outer one is strong and conspicuous, crossing the wing from the anterior to the posterior edges, about a quarter of an inch from the external margin. The posterior wings are marked exactly like the superior.

Under Side. Is of a lighter colour, with the same kind of markings, but fainter.

NYMPHALIS FERONIA.

Plate X. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymphales Gemmati), *Linn.* Papilio Satyrus, *Fabr. (Ent. Syst.).*

NYMPHALIS FERONIA. Alis subdentatis, supra cœruleo, fusco et albo marmoratis, omnibus ocellis sex iride simplici.
(Expans. Alar. 3 unc. 6 lin.)

SYN. Papilio (Nymph. Gemm.) Feronia, *Linn. Syst. Nat. 2. 770. No. 140.* *Fabr. Ent. Syst. 111. 1. p. 226.*
No. 710. Cramer, pl. 192. fig. E. F. Herbst. Pap. tab. 225. fig. 1. 2. Latr. et God. Encycl. Méth.
p. 428. (Nymphalis F.).

HABITAT: Surinam (*Drury*). India (*Linn. Fabr. incorrectly*).

Upper Side. Antennæ black, with two small white spots at their bases, on the front of the head, and two more close to the eyes, on the top of the head; likewise two on the neck, and two longer ones on the thorax. The thorax and abdomen of a very dark blueish hazel. Anterior wings, next the shoulders, of a dark blueish hazel, black at the tips and outer margin, where are many different shaped flesh-coloured spots: the parts nearest the shoulders having many denticulated marks and dashes of a blue colour; some being also scattered all over the wings. About a third from the shoulder, near the anterior margin, on each wing, is a short, red, crooked line, which is seen on the under side. Near the outer margin are five ash-coloured spots, all of them being encircled with black, and some being edged with blue. Posterior wings of the same dark hazel as the anterior; the external edges being black between the scollops. Each wing is divided into a number of small different shaped spots margined with blue; and near the external margin are six black spots, whose irides are blue, having white ones in their centres. Below these is a double row of blue marks, like beards of arrows, placed on the black marks between the scollops. All the wings are dentated.

Under Side. Anterior wings whitish, about a third part at the base; the remainder being a dark chocolate, with many different shaped ash-coloured spots. Near the external edges are five round ash-coloured spots on a row, one being placed above the rest. Posterior wings chiefly whitish, except at the

outer angle and external edges; the latter being alternately marked with dark chocolate and ash colour, near which is a row of four round ash-coloured spots, encircled with chocolate, and a small faint one near the anal angle.

PIERIS (IPHIAS) GLAUCIPPE.

Plate X. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PIERIS, *Schrank. Latr. et God. Colias, Horsf. Papilio* (Danai Cand.), *Linn. Drury. Iphias, Boisduv.*

PIERIS (IPHIAS) GLAUCIPPE. Alis supra albis, anticis maculâ magnâ apicali (medio fulvo) nigrâ, subtus (nisi dimidio basali anticarum) cinereis strigis minutis fuscis irroratis. (Expans. Alar. 4 unc.)

SYN. Papilio (Dan. Cand.) Glaucippe, *Linn. Syst. Nat.* 2. 762. No. 89. *Fabr. Ent. Syst.* 111. 1. p. 198. No. 618. *Cramer, Pap. pl.* 164. A. B. ♂. C. ♀. *Herbst. Pap. tab.* 96. f. 1—3. *Encycl. Méth.* ix. p. 119. (Pieris G.), *Boisduval, Hist. Nat. Lep.* 1. p. 596. (Iphias G.)
Fem. Pap. Callirhoe, *Fab. Mant. Ins.* 2. 20. 215.

HABITAT: China (*Drury*). Java (*Dr. Horsfield*). Bengal (*Boisduval*).

Upper Side. Head and neck light brown; thorax, dark blue, clothed with white hairs; abdomen white, with a blueish tinge. Anterior wings next the body white, occupying more than one half. The tips are black, which colour runs along the anterior and external margins, encircling a large spot of a deep orange, whereon are four small triangular black spots. Posterior wings wholly white, and very slightly dentated.

Under Side. The mouth, breast, and feet are ash-coloured. Anterior wings next the body white; the extremities of a deep flesh colour, sprinkled over with a great number of small dark brown streaks. Posterior wings of a yellowish flesh colour, and covered with small dark brown streaks.

M. Boisduval has formed the present species, and another large Pieridean, into the genus Iphias, which differs from Thestias, and Mancipium (*Anthocharis* Bdv.), in the structure of the antennæ. The larva and pupa of this species are described and figured by Dr. Horsfield, in his *Lepidoptera Javanica*, pl. 3, fig. 7, and 7 a, (copied by Boisduval, pl. 2 A. fig. 3.). The former is long subcylindrical, with the dorsal segments somewhat rugose, being transversely shagreened; it feeds upon the Capparis. The pupa is navicular, the head being produced into a point. The female imago differs from the figure here given (which represents the male), in having the black markings more diffused.

PAPILIO PHILENOR.

Plate XI. fig. 1. and 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PAPILIO, *Auct.*

PAP. PHILENOR. Alis dentatis nigris, posticis caudatis virescenti-nitidis maculis albis, subtus maculis fulvis albo notatis serieque digestis. (Expans. Alar. unc. 3 $\frac{3}{4}$).

SYN. PAP. PHILENOR, *Linn. Mant.* (1771): 6. 535. *Fabr. Syst. Ent.* p. 445. No. 12. *Smith and Abbot, Ins. Georgia, Vol. 1. tab.* 3. *Encycl. Méth.* 9. 40. *Boisduval, Hist. Nat. Lepid.* 1. p. 324. No. 167. *Boisd. et Leconte, Icon. Lep. Amer. Sept. pl.* 11. f. 1—4. *Say, American Ent.* Vol. 1. pl. 1.

Pap. Astinuous. *Drury, App. Vol. 2.* (1773). *Cramer*, 208. A. B.

HABITAT: North America, from New York to Georgia.

Upper Side. Head and neck black, with two small white spots between the antennæ at their base, and eight more on the head and neck. Thorax black. Abdomen of a glossy hue. Anterior wings black, with a very glossy greenish tinge at the anterior angle, with eight small, white, narrow crescents on the external margin of each, which make them appear as if dentated. Posterior wings of a dark glossy green, with two tails issuing from them. The concave part of each scollop is edged with white; and six whitish spots run along their edges, meeting below the extremity of the body.

Under Side. Breast, legs, and abdomen black; the sides spotted with cream-coloured spots, one of which appears on the inferior wings, on each side the breast. Anterior wings, next the tips, are of the colour of soot; but next the body, black, with five whitish spots on the external margin, near the interior angle. The upper part of the posterior wings, next the body, are soot-coloured; the remaining parts of them being of a glossy blue, with seven dark orange spots, placed in a circular manner, a little distance from the edge, and meeting at the extremity of the body: each spot is encircled with black, except in that part where a small silver mark appears on its edge, being represented in the plate by white. The scollops are deeper edged on this side with white than on the upper.

This butterfly is one of the most beautiful, and, at the same time, most common of the North American species; abounding wherever the *Aristolochia serpentaria* grows, the larva feeding upon that plant. It is described by Boisduval and Abbot, and is brown, with four rows of small fulvous tubercles, and a row of brown spines near the legs; moreover, it has two long spines directed forwards upon the first segment, three upon the penultimate, and two upon the tenth segment. The neck is also furnished with a furcate retractile reddish tentacle; the chrysalis is of a violet grey, or reddish colour, with two yellow spots, the head being truncate. The female is larger, with brown-coloured wings, with cupreous reflections. The insect assumes the chrysalis state on the 26th of April, and the fly appears on the 4th of May. Another, observed by Abbot, went into chrysalis on the 21st of June, and the butterfly came out on the 5th July. The latter delights to frequent the blossoms of the peach and other trees in the spring.

PAPILIO ASTERIAS.

Plate XI. fig. 2. 3. and 5.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. *PAPILIO*, *Auct.*

PAPILIO ASTERIAS. Alis dentatis nigris, fasciâ maculari maculisque marginalibus flavis; posticis caudatis, angulo ani fulvo, puncto atro, abdominis dorso duplici serie punctorum flavorum. (Expans. Alar. 3 unc. 6 lin.—4 unc.)

SYN. *PAPILIO ASTERIAS*, *Fabr. Mant. Ins. tom. 2. p. 2. No. 13.* *Ent. Syst. 111. 1. p. 6. No. 16.* *Cramer, tab. 385. f. C. D.* *God. Enc. Méth. ix. p. 58. No. 91.* *Boisduv. et Lec. Icon. Lep. Amer. Sept. pl. 4.* *Boisd. Hist. nat. Lep. 1. 332. No. 175.*

Papilio Troilus, *Drury, App. Vol. 2.* *Abbot and Smith, Ins. Georg. 1. t. 1. (exclus. Syn. Linn. et Fabr.)*

HABITAT: New York, Maryland, Carolina, Virginia (*Drury*).

Upper Side. Antennæ, head, and body black, with two yellow spots at the bases of the antennæ, and two more on the neck; the sides of the abdomen being spotted with two rows of the same. Ante-

rior wings black. A row of eight or nine yellow spots runs along each wing, near the external edge. Within these appears another row, smaller in figure 3, but larger in figure 2, and shaped like triangles, above which are two spots, one nearly round, the other very oblong, which last is not seen in figure 3. Posterior wings black and dentated, with one tail issuing from each. Six yellow spots appear near the external edge; and at the anal angle is an orange-coloured one, with a black dot in its centre. Some specimens have a yellow bar running transversely from the row of triangles on the superior wings, and meeting below the extremity of the body, just above the orange spot, as in fig. 2. In some, instead of a bar, is seen a row of spots (as in fig. 3), which are sometimes very faint. Where this happens, the space between this row and the six spots mentioned before, consists of a shining blue colour; but in proportion as the yellow bar is more or less distinct, the wings have more or less blue on them.

Under Side. The under side in all the different varieties differs but very little. The breast, sides, abdomen and feet are black. The anterior wings of a dirty black colour, with nine yellow spots near the external edge; above these, nearer the body, are eight others, varying in size, and two small clouds or patches close to the anterior edge. Posterior wings, next the shoulders, dirty black, with the inner scollops edged with yellow crescents (appearing also on the upper side), within which are six spots near the edge—four orange and two yellow. Seven or eight orange spots, tipped with yellow, run circularly across the middle of the wing. Below each spot in this row is a ray of shining blue, separated by a strong black mark, and scattered with powder-like spots. An orange spot, with a black centre, is placed at the anal angle.

This species is subject to considerable variation in the size of the internal series of yellow spots, which is sometimes even entirely obliterated in the females, in which the yellow is much less brilliant, and the spots smaller than in the males. These varieties somewhat resemble *Papilio Troilus* of Linnæus, with which, indeed, Drury and Smith* confounded the insect here described. Godart and Boisduval have added to the confusion by their incorrect references to our author, the first of these writers giving figure 2 of this plate as alone representing *P. Asterias*, and figs. 3, 4, and 5, (which represent two distinct species) as *P. Troilus*, Linn. which species Drury has not figured; and both of these authors quoting figure 2, both under *Troilus* and *Asterias*, although Drury expressly states, that the specimens figured at 2 and 3, were reared by him, with many other individuals, from chrysalides, sent from America by his correspondent, who assured him that they proceeded from the same brood. The preparatory states of *P. Asterias* are figured by Abbot and Smith, and Boisduval. The larva feeds upon *Umbelliferæ*, especially the fennel (*Anethum fæniculum*, Linn.), and *Daucus Carota*, and is very similar to that of *Pap. Machaon*, which species appears to be replaced in America by *P. Asterias*, and which makes its appearance in the perfect state three times in the year. Abbot states, that one of the caterpillars assumed the chrysalis state on the 12th of July, and the imago appeared on the 20th.

* Sir J. E. Smith states that the Linnæan cabinet does not contain a specimen of this insect, nor of the *Ilioneus* of "the Insects of Georgia," pl. 2, one of the figures of which was considered by Mr. Jones, the celebrated lepidopterist, to be the Linnæan *Troilus*. Nevertheless, on the authority of the Banksian cabinet labelled (from recollection alone) by Fabricius, Sir J. E. Smith gave the *Asterias* under the name of *Troilus*, and the true *Troilus* as a new species.

PAPILIO PARIS.

Plate XII. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PAPILIO, *Auct.*

PAPILIO PARIS. Alis nigris, aureo-viridi pulverulentis, posticis caudatis supra maculâ magnâ discoidali cyaneâ ocelloque purpureo; subtus lunulis septem rufis. (Expans. Alar. 4 unc.—4 unc. 9 lin.)

SYN. Papilio (Equit. Troes.) Paris, *Linn. Syst. Nat.* 2. p. 745. No. 3. *Fab. Ent. Syst.* 111. 1. p. 1. No. 1. *Cramer, pl.* 103. A. B. *Esper. Aus. Schmett. tab.* 2. fig. 1. *Boisduval, Hist. Nat. Lep.* 1. p. 208.

HABITAT: China.

Upper Side. Head, thorax, and abdomen black, and beautifully powdered with fine green specks. All the wings are black, but have a greenish hue, occasioned by a multitude of powder-like specks of a fine green. On the posterior margin of the anterior wings, near the lower corner, arises a series of green spots, becoming weaker, disappearing near the middle of the wing, and composed of powder-like specks. Posterior wings scalloped or dentated, each furnished with one tail, each scallop being edged with white. At the anal angle, near the corner, is a deep red spot, shaped like a semi-eye, whose pupil is black; and towards the upper corner of the wing, is a large and very splendid blue spot, appearing in some directions of a saxon green colour, and diminishing to a line as it approaches the semi-eye, over which it extends in an arch-like form, being there of a fine green colour.

Under Side. It has apparently no palpi. Breast and abdomen of a very dark brown. The superior wings dark brown at the base; from the middle of the anterior edge of a dark ash colour, running towards the upper corner, the tendons between being dark brown, which unite together at the external edge. Posterior wings almost black, sprinkled, or finely powdered, with small grey specks near the abdomen: round the external edge is a series of eye-like rings of an orange colour, edged above with purple.

This very handsome species is often received from China, but in an imperfect condition. The female, according to Godart (*Enc. Méth.* ix. p. 67.) is the Papilio Bianor, Fabr. which has no trace of the shining green spot on the posterior wings. M. Boisduval, however, asserts, that this is not correct, and that the female differs only from the male in having the ground of the wings rather darker, and possessing a transverse interrupted fascia of green dots near the external margin of the upper wing; these being represented in Drury's figure, therefore indicate that his specimen was of the female sex.

Dr. Horsfield has figured another species from Java (*Lepid. Javan.* pl. 1. fig. 14.), differing very slightly from the preceding, under the name of Papilio Arjuna, of which he has also figured the larva and pupa (pl. 4. fig. 11.). The former has the three first segments of the body covered, as it were, with a leathery shield, elevated behind, and ornamented with several ocelli; the other segments are simple; the chrysalis is considerably curved, with the head bifid.

COLIAS (CALLIDRYAS) PYRANTHE, *var.*?

Plate XII. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. COLIAS, *Latr. et God.* Papilio (Danai Candidi), *Drury.* Callidryas, *Boisduval.*

COLIAS (CALLIDRYAS) PYRANTHE. Alis albis, anticis supra puncto minuto discoidali apiceque nigris, margine interno penicillatis, subtus (nisi basi anticearum) flavescens strigis numerosissimis fuscis. (Expans. Alar. 3 unc.)

SYN. Papilio (Dan. Cand.) Pyranthe, *Linn. Syst. Nat.* 2. p. 763. No. 98? *Latr. et God. Enc. Méth.* ix. p. 97. (Colias P.), *Boisduval, Hist. Nat. Lepid.* 1. p. 611. (Callidryas P.)

Papilio (Dan. Cand.) Chryseis, *Drury, Append.* vol. 2.

Papil. Gnoma, *Fabr. Ent. Syst.* 111. 1. p. 210. No. 658?

Pap. Nepthe, *Fabr. loc. cit.* p. 120?

HABITAT: China.

Upper Side. Thorax of a blueish black, with white hairs. Abdomen white. Anterior wings white, with a small oblong black spot near the middle of each; black at the tips, which colour extends down the external edge to the interior angle, and also runs a little way along the anterior margin towards the body. Posterior wings white, without any marks or shades. The edges of all the wings are entire.

Under Side. Breast, feet, abdomen, and anterior superior wings white, being covered about a third part from the tips with small, longish, light-brown streaks, making that part appear of a pale yellow. Posterior wings of the same pale yellow with the small streaks. One sex is very remarkable for having a number of hairs growing on the posterior edges of the anterior wings, next the body; some of which are erect, some bending downwards, and some lying flat on the wing.

There is much confusion respecting the specific names of this and several other Asiatic species, as may be seen from the citations in the synonyms. I have followed the French authors in assigning Drury's insect to the Pyranthe of Linnæus, although that author describes his insect as having a discoidal red spot on each of the wings beneath. The species of this group are variable in the intensity of their markings, and the males are less strongly marked than the females; and as Drury's figure represents a male (distinguished by the bundle of hairs on the interior margin of the anterior wings) it may possibly be an extreme variety of the male of Pyranthe. Boisduval has indeed described another species of considerably smaller size, which is destitute of the discoidal spot (*Call. minna*), which also, he considers, may possibly be a variety of *C. Pyranthe*.

ARGYNNIS IDALIA.

Plate XIII. fig. 1. 3. ♀.—2. ♂.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. ARGYNNIS, *Fabr. Latr. et God.* Argyreus, *Scop.* Dryades, *Hüb.* Papilio (Nymphales Phalerati) *Linn. Drury.*

ARGYNNIS IDALIA. Alis dentatis, anticis utrinque fulvis nigro-maculatis; posticis supra nigro-cæruleis, punctorum serie duplici, subtus fuscis costâ baseos maculisque 26 argenteis. (Expans. Alar. ♂. 3 unc. 6 lin.—♀. 4 unc.)

SYN. Papilio (Nymph. Phal.) Idalia, *Drury. Herbst. Pap. tab.* 252. 253. *Cramer, pl.* 44. fig. D. E. F. G. *Fabr. Ent. Syst.* 111. 1. 145. No. 446. *Latr. et God. Enc. Méth.* ix. 263. (Argynnis Id.)

HABITAT: New York (*Drury*); taken on the 28th June. Jamaica (*Enc. Méth.*).

Upper Side. Head and thorax of a deep brown orange. Anterior wings of a dark orange, the anterior and external margins bordered with black; near the latter are eight white spots on the wings of the female. Above these, in the female, are five, and in the male six, round black spots; those of the latter being smallest. Several black waves and streaks are dispersed on other parts of the wings. Posterior wings of a fine dark blue, almost black, and slightly dentated; the anterior ones being entire. Near the external margin is a row of seven cream-coloured spots, which in the male are red. Above these, is another row of the same number of cream-coloured spots, situated near the middle of the wings. The base of these wings is covered with brown orange-coloured hairs.

Under Side. Head, breast, and feet dark blue, nearly black. Anterior wings dark orange, with some triangular silver spots placed along the external edges, whose upper points are edged with black, and are generally more distinct in the female than in the male. The several black waves and streaks seen on the upper side, are here more faint, some being scarcely visible. Posterior wings of a dark olive brown, with twenty-six different shaped silver spots on each; one of which, in the centre of the wing, is divided by a short black line.

PAMPHILA PHYLÆUS.

Plate XIII. fig. 4. 5.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Hesperiidæ, *Stephens*.

GENUS. PAMPHILA, *Fabr.* Hesperia (urbicolæ), *Fabr. Latr. et God.* Papilio (Pleb. urb.) *Drury, Linn.*

PAMPHILA PHYLÆUS. Alis rufo-fulvis, anticis supra fasciâ obliquâ interruptâ (mas.) maculâve arcuatâ (fœmina) limboque postico fuscis, posticis ibidem extus fusco marginatis. (Expans. Alar. $1\frac{1}{2}$ unc.).

SYN. Papilio (Hesp. urb.) Phylæus, *Drury, Latr. et God. Enc. Méth.* ix. p. 767. No. 112. (Hesperia Ph.)

Hesperia (urb.) Vitellius, *Fabr. Ent. Syst.* 111. 1. p. 327. No. 240.

Pamphila Vitellius, *Steph. Illust. Brit. Ent. H.* 1. p. 103. *Haworth, in Trans. Ent. Soc. Vol.* 1. p. 334.

Abbot and Smith, Ins. Georgia, tab. 17.

HABITAT: Antigua, St. Christopher's, Nevis, &c. (*Drury*). Antilles and Brazil (*Enc. Méth.*).

Upper Side. Thorax and abdomen of a yellowish olive. Superior wings of a tawny yellow, having a dark brown (almost a black) indented margin, running along the external margin, from the tips to the lower corners. Near the middle of each wing are two dark-brown spots, one oblong, the other of a longish square form, the former being the largest. Inferior wings tawny yellow, and angulated, having a dark brown indented margin.

Under Side. Wings tawny yellow, but rather paler than on the upper side. The anterior with several dark brown angular spots, placed along the external edges, and in the middle of the wings, with a large one near the shoulders. Posterior wings also spotted with many small dark brown spots, some being scarcely visible.

A specimen of this species is stated to have been captured by the late Dr. Abbot in Bedfordshire. It is most probable, however, now that the *Pamphila Bucephalus* has been proved to be an indigenous species, that the specimen the capture of which is recorded by Mr. Haworth, belonged to that species. The caterpillar of this skipper-butterfly feeds upon a species of panic grass (*Panicum Crus-Galli*) and on the buffalo grass.

NYMPHALIS BOLINA.

Plate XIV. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ.

GENUS. NYMPHALIS. *Latr. God. Papilio* (Nymphal. Phal.), *Linn. Drury.*

NYMPHALIS BOLINA. Alis dentatis, supra nigris, anticis maculis duabus, posticis solitariâ magnâ, cœruleo-albis, subtus corticinis fasciâ albâ. (Expans. Alar. 3 unc. 6 lin.)

SYN. *Papilio* (Nymph. Ph.) *Bolina*, *Linn. Syst. Nat.* 2. p. 781. No. 188. *Cramer, pl.* 65. fig. E. F. *Herbst. Pap. tab.* 244. fig. 3. 4. *Fabr. Ent. Syst.* 111. 1. p. 126. No. 384. *Latr. et God. (Enc. Méth.)* ix. 396. No. 157. (*Nymphalis* Bol.)

HABITAT: Bombay, Surinam, all the West Indian Islands, New York, Carolina, Brazil, Cape of Good Hope, Malabar, Coromandel, China, Ceylon (*Drury*). "In Indiæ orientalis Portulaca" (*Fabr.*). Cayenne (*Enc. Méth.*).

Upper Side. Three white spots, one before, and two behind, on the head, which, with the thorax and abdomen, is of a blackish brown. Wings dentated, and of a dark chocolate colour, almost black; but when held against the light, in a certain direction, display a blueish purple. Anterior wings, in the middle, having a large oval, and another smaller oblong white spot at the tips. Posterior wings with a large white spot, larger than that in the superior ones. On the edges of all these spots, the purple colour before-mentioned, is very conspicuous.

Under Side. Palpi white. The sides of the thorax spotted with white. Anterior wings, next the body, of a reddish chocolate; but near the tips, of a dirty olive. The large and small white spots appear here as on the upper side; with three small angular white spots, close to the anterior margin, near the middle. Along the external edge, is a row of white crescents on a black border; over which are six small, round, faint, white spots. Posterior wings, next the body, of a dirty olive; but toward their external edges, more of a chocolate, with a broad central white bar running entirely across the wing, with a small angular black mark, near the anterior margin. Along the external edges, is a row of white crescents; above which is a row of small white triangular spots, placed two and two, between the crescents. Above this, six small round white spots are placed in a row.

The flight of this species is said by *Drury* to be exceedingly quick and rapid, so that it is very difficult to catch them, and hence they are seldom obtained in fine condition, being generally secured in a faded state when they are taken with more ease. The purple tint upon the upper side of the wings is most intense, and when the insect flies in the sun, glancing before the eye of the observer at a little distance (for it is by no means a timid creature), the vivid purple, observes *Drury*, is not much less than the electrical spark, and its changes depending on the degree of obliquity which it presents to the sun, are scarcely less rapid.

NYMPHALIS IPHICLA.

Plate XIV. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr. God. Papilio* (Nymph. Phal.), *Linn. Fabr. God.*

NYMPHALIS IPHICLA. Alis denticulatis, supra fuscis, fasciâ communi albâ antrorsum rotundatâ, retrorsum acuminatâ; anticis suprâ maculâ apicis, et anguli analis, ferrugineis. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (Nymph. Phal.) Iphicla, *Linn. Syst. Nat.* 2. 380.

Papilio (N. P.) Iphicla, *Drury, App. v. 2. Fabr. Ent. Syst.* 111. 1. p. 135. 417. *Cramer, pl.* 188. fig.

E. F. (var. ?)

Papilio Basilea, *Cram. pl.* 188. fig. D. (♂).

Papilio Cytherea, *Cram. pl.* 376. C. D. (♀).

P. Cythereus, *Herbst. Pap. tab.* 284. f. 1. 2.

P. Iphicla, *Herbst. Pap.* 148. fig. 3. 4.

Nymphalis Iphicla, *Enc. Méth.* ix. 374.

HABITAT: Surinam (*Drury*). Guiana and Brazil (*Enc. Méth.*).

Upper Side. Thorax and abdomen nearly black. Anterior wings of a light liver colour, having some faint lines a little waved, of a darker colour, running along the external edges. Each has an orange spot, situated at a small distance from the tip, and joining to the anterior margin. Posterior wings dentated, and angular at the anal angle, of the same colour as the anterior; with the same faint waved subapical lines. In the middle of the anterior wings arises a bar of a very pale brimstone colour, near a quarter of an inch broad, and which extends to the anal angle of the posterior wings, below which is an orange spot.

Under Side. All the wings, next the body, are marked and clouded with lines and marks of ash colour and olive brown. The pale brimstone bar is seen very distinctly on this side; and the two orange spots on the upper side of the anterior wings, here assume a tinge of flesh colour, separated in the middle by the tendon, which is of an orange cast. The faint waved lines also are very conspicuous, of a very dark flesh colour, shaded with brown.

VANESSA CHARONIA.

Plate XV. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. VANESSA, *Fabr. Latr. God. Curtis.* Hamadryades, *Hubn. Papilio* (Nymphalis Phal.), *Fabr. Drury.*

VANESSA CHARONIA. Alis dentatis, supra nigris, fasciâ communi submarginali cœruleâ, in posticis serie punctorum nigrorum divisâ; anticis apice productis, posticis subcaudatis. (Expans. Alar. 3 unc.)

SYN. Papilio (Nymph. Phal.) Charonia, *Drury, App. v. 2. Cramer, Pap. tab.* 4. pl. 47. fig. A. B. C. *Fabr. Ent. Syst.* 111. 1. p. 119. No. 364. *Enc. Méth.* ix. p. 308. 27 (Vanessa Ch.).

HABITAT: China (*Drury*). India (*Fabr.*).

Upper Side. The thorax and abdomen black, and furnished with grayish hair. The ground of all the wings is black; but towards the body inclines to copper. On the anterior wings, near the tips, is a white spot placed close to the anterior edge. This edge is narrowly bordered with blue, and dappled with little wave-like stripes of black; from whose middle an oblique blue spot, almost half an inch long, extends down the wings. A little below this, arises a light blue bar of lunules, which runs even with the external edge, and is continued transversely across the posterior wing, excluding the anal angle. On this blue bar, in the posterior wings, are placed six small black angular spots. Beneath these is a

narrow double border of blue, running along their external margin. All the wings are deeply dentated and angulated.

Under Side. The ground of the wings is of a dark orange, with various broad transverse purplish shades, and with a variety of irregular small wave-like markings, and different tints of brown, intermingled with orange shades.

The under side of the male is of a very dark brown, almost black, with some faint wavings, which are not so strong and beautiful as in the female.

ARGYNNIS ERYMANTHIS.

Plate XV. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ.

GENUS. ARGYNNIS, *Fab. Latr. God.* *Argyreus, Scop.* *Papilio* (Danai Festiv.), *Drury.*

ARGYNNIS ERYMANTHIS. Alis subrotundatis, subdentatis, fulvis, anticis fasciâ flavescenti transversâ mediâ nigro mukulatâ, apice nigris; posticis serie punctorum, duabusque lunularum nigrorum. (Expans. Alar. fere 3 unc. [*Drury*], 2 unc. [*Enc. Méth.*]).

SYN. *Papilio* (Dan. Fest.) *Erymanthis, Drury, App. v. 2. Cramer, pl. 238. fig. 9. Fab. Ent. Syst. 111. 1. p. 130. 427. Enc. Méth. ix. 257.*

Papilio Lampetia, Cram. Pap. pl. 148 fig. E.

HABITAT: China (*Drury*). Coromandel, Java (*Enc. Méth.*).

Upper Side. Head, thorax, and abdomen dark brown. Anterior wings, next the body, of a dark tawny orange, which colour occupies about half the wings, and is bounded by a very irregular line. A broad black patch occupies the tips of the wings, beginning about the middle of the anterior edge, and extends along the external one to the interior angle; on which, near the tips, are two clay-coloured round spots; and below them, in some specimens, are two more spots near the external edge. The space between the black patch and the tawny orange is of a clay colour, with three round black spots on it, the lower one the largest. Posterior wings tawny orange, the posterior edges being of a dirty brown; and above them are seen two rows of black crescents irregularly placed, over these are five round black spots. The wings are slightly dentated, the inferior ones most.

Under Side. All the wings clay colour. A dark, faint, engrailed line, composed of a number of crescents, joined together, runs transversely across the superior and inferior wings, extending to the anal angle.

HIPPARCHIA LEDA.

Plate XV. fig. 5. 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. HIPPARCHIA, *Fabr. Stephens.* *Satyrus, Latr. et God.* *Argus p. Scop.* *Orcades, Hubn.* *Papilio* (Nymphales Gemmati), *Drury.*

HIPPARCHIA LEDA. Alis angulatis supra corticino-fuscis; anticis ocello apicis sesquialtero in plagâ magnâ luteâ, posticis ocellis duobus; omnibus subtus griseo-reticulatis strigâ ocellorum. (Expans. Alar. 3 unc.)

SYN. *Papilio* (Nymph. Gemm.) *Leda, Linn. Syst. Nat. 2. 773. No. 151. Drury, App. v. 2. Fabricius, Ent. Syst. 3. 1. p. 108. 333. Cramer, Pap. pl. 196. C. D. and pl. 292. fig. A. Encycl. Méth. ix. 478. No. 4. (Satyrus L.)*

Papilio Solandra (var.?) *Fabr. Ent. Syst. 111. 1. 106. 328. Donovan Ins. New Holl. pl. 23. f. 1.*

HABITAT: China (*Drury*). Ind. orient. (*Weber MSS.*). Sierra Leone (*Fabr. ??*). Mauritius (*Encycl. Méth.*). Otaheite and New Holland (*Fabr. and Donovan, P. Solandra*).

Upper Side. Antennæ, thorax, and abdomen of a dark brown colour. All the wings dark olive brown. On the anterior wings, near the tips, are two black circular spots united together: the lower one being the largest, each having a small white one in its centre. On the posterior wings are two black circular eyes, towards the anal angle; their irides being of a gold colour, and the pupils white. The superior wings are a little dentated, the inferior ones being angulated.

Under Side. All the wings, on this side, are of a very pale brown, marked all over with short, crooked, wave-like stripes, of a dark brown colour, almost black. On the anterior wings are four eyes, the largest, situated near the middle of the wing, is encircled with yellow, its centre being white; below this is a small one, and two other small ones are placed near the tips. Posterior wings, with a row of six black eyes near the external edge, whereof two are much larger than the rest; the irides of all being yellow, and the pupils white. That next the anal angle is sesquialterate. In some specimens these eyes are less distinct than in others; in some there are not more than five to be discerned, and only one on each superior wing; in others not more than three can be distinguished, the small ones being entirely wanting.

Drury observes (Introd. to vol. iii. p. 16.) that this insect very much resembles a species sent by Mr. Smeathman from Africa, which comes out only about sunset, and is then to be found in dark shades, wavering about amongst the early flying noctuæ, and other nocturnal species. In some manuscripts of the late Professor Weber of Kiel, in my possession, the East Indies are given as the habitat of this species.

CASTNIA LICUS.

Plate XVI. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Hesperii Sphinges (*Latr.*). FAMILY: Castniidæ. *Westw.*

GENUS. CASTNIA, *Fabricius, Latr. God. Dalman.* Papilio (Dan. Festiv.), *Drury.*

CASTNIA LICUS. Alis integris, supra atris nitidis; anticis sesquifasciâ albâ, posticis serie marginali punctorum rubrorum fasciâque obliquâ albâ. (Expans. Alar. fere 4 unc.)

SYN. Papilio (Dan. Festiv.) Licus, *Drury, App. v. 2. Cramer, pl. 223. fig. A. B. Fabr. Ent. Syst. 111. 1. p. 45. No. 137. (Licas.)*

Papilio Lycus, *Herbst. Pap. tab. 134. f. 1. 2. Merian Surinam, tab. 36.*

Castnia Licus, *Latr. et God. Enc. Méth. ix. p. 797.*

HABITAT: Surinam.

Upper Side. The antennæ are dark brown, at the tips paler; and terminating in a point. The head, thorax, and base of the abdomen dark chocolate brown; the extremity and sides of the latter dark. Anterior wings of a fine deep chocolate brown. A narrow, irregular, and oblique cream-coloured bar runs across the wing; between this and the tip, from the anterior edge, runs another crooked irregular bar, of a much darker colour, reaching almost half across the wing towards the interior angle, the external margin being of a lighter shade. Posterior wings, having a white bar running transversely across the wing, widening by degrees, and ending at the anal angle. Six square orange spots also of different sizes, are placed within the external margin of these wings.

Under Side. Anterior wings, in the middle, dark chocolate; the tips dark fawn colour, lighter next the shoulders. The two irregular bars, on the upper side, are here a little broader. Within the external edge are three rather pearly white spots. Posterior wings greyish fawn colour, with the

external edges darker. A pale pearl-coloured bar runs across the wing beyond the middle, widening gradually; below this are some very faint brown spots, and near the external edge some faint orange ones, scarcely visible. The edges of all the wings are entire.

The genus *Castnia* is another of those curious anomalous forms, which exhibit the characters of several groups. The general form of the wings is that of a moth, whilst the variegated colours, indicating diurnal flight, and the structure of the antennæ are those of a butterfly. It is much to be regretted, that travellers in South America have not ascertained the preparatory states of this extraordinary group, which alone will enable us satisfactorily to ascertain its real relations.

GASTROPACHA? OTUS.

Plate XVI. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, *Steph.*

GENUS. GASTROPACHA? *Ochsenh.* Sphinx, *Drury.*

GASTROPACHA? OTUS. *Alis elongatis integris luteo-fuscis, anticis fasciis duabus denticulatis nigris.* (Expans. Alar. 4 unc. 6 lin.)

SYN. Sphinx Otus. *Drury, Append. v. 2.*

Bombyx Agrius, Oliv. Enc. Méth. 5. 39. 56.

HABITAT: Smyrna (*Drury*).

Upper Side. The antennæ and head are of a reddish brown; the former are strongly pectinated, and very broad in the middle, but at the extremities very narrow and curled. Thorax dark brown. Abdomen reaching half an inch below the wings of a reddish dun colour. Anterior wings dun colour; with a large spot or patch, of a darker colour, situated on the posterior margin, near the base. Two indented black lines run obliquely from the anterior edge, near the tip, to the posterior near the middle; the space between them being rather lighter than the rest. Posterior wings dun colour, immaculate. All the wings, both on the under and upper sides, appear very shining and glossy; the scales or feathers appearing, when viewed through a microscope, very coarse and long. There is no tongue discoverable in this moth.

Under Side. Breast and sides bright dun. The abdomen reddish dun. All the wings dun-coloured. The lower indented line appears faintly through the wing, of a dark brown colour, also a faint reddish brown indented line runs across the posterior wings. The edges of all the wings are entire.

This insect, which appears to have been overlooked by modern authors, seems to form a connecting link between *Zeuzera* and *Gastropacha*, agreeing with the former in the general form, and with the latter in the transverse denticulated fasciæ on the anterior wings, and the curved antennæ feathered to the tips.

PAPILIO POLYDAMAS.

Plate XVII. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PAPILIO (Equit. Troj.) *Linn.*

PAP. POLYDAMAS. Alis dentatis, nigro-virescentibus, fasciâ communi interruptâ flavâ, posticis subtus maculis linearibus flexuosis rubris, tribus argenteis adjectis. (Expans. Alar. unc. 4.)

SYN. Pap. Polydamas. *Linn. Syst. Nat.* 2. 747. No. 12. *Merian. Surinam. pl.* 31. *Cramer Pap.* 18. p. 33. *pl.* 211. f. D. E. *Herbst. Pap.* t. 10. f. G. 7. *Boisd. et Leconte Icon. des Chen. de l'Amer. Sept. pl.* 1. *Boisd. Hist. Nat. Lep.* 1. 321. No. 162.

HABITAT: America, from Georgia to Brazil, Antigua (*Drury*).

Upper Side. The head and thorax are black; with two red spots on the neck, and two small white spots at the base of the antennæ. All the wings are scoloped, and of a dark green colour. The anterior wings have a row of yellow spots rising near the tips, which, running across the middle of the inferior ones, in a circular manner, meet at the extremity of the body; some of them being shaped like the bearded points of arrows. The hollow or concave part of each scollop, in the inferior wings, is edged with yellow.

Under Side. The head, breast, feet, and abdomen are black; with several red spots on the sides, abdomen, and shoulders. All the wings are black; the anterior having some of the yellow spots that are seen on the upper side; with seven irregular red spots, placed along the edge of each posterior wing, and three silver spots or marks joining to the second, third, and fourth.

Linnæus states, that this insect inhabits the *Hibiscus mutabilis*. By other authors it is stated to feed upon the *Aristolochia Serpentaria*, or Virginian snake-root. The caterpillar is brown, with fleshy spines of the same colour, and red stripes, each segment also being ornamented with four eye-like spots, half yellow and half red.

NYMPHALIS ASSIMILIS.

Plate XVII. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sicains*.

GENUS. NYMPHALIS, *Latr. et God.* Papilio (Nymphalis Phal.), *Linn. Drury*.

NYMPHALIS ASSIMILIS. Alis subrepandis nigris concoloribus, lineis maculisque albo-virescentibus, posticis strigâ apicali punctorum coccineorum. (Expans. Alar. fere 5 unc. [*Drury*] 3½ unc. [*Enc. Méth.*]).

SYN. Papilio (Nymphal. Phal) assimilis, *Linn. Syst. Nat.* 2. p. 782. No. 194. *Cramer, pl.* 154. A. *Esper. Pap. Exot. t.* 57. f. 1. *Fabr. Ent. Syst.* 111. 1. p. 39. No. 114. (Papilio Eq. Ach.)

HABITAT: China.

Upper Side. Head black, with two white frontal spots. Thorax black, with three white stripes. Abdomen black, marked on the sides with white. Anterior wings sooty black, having a number of large spots and stripes on them of different forms and dimensions, of a greenish-grey colour. Near the external edge is a double row of sixteen small spots of the same greenish grey, and above them are five larger of a more circular shape. Posterior wings resemble the superior, but have a broad border of clearer black running along the external edge, whereon are five spots of a scarlet colour, inclining to pink, one having a small black spot in the middle. The wings are slightly dentated.

Under Side. Body black, and ornamented with round spots of clear white. At the base of the wings, is a remarkable round spot of a clear white, about the size of a pin's head. The wings are spotted as on the upper side, the greenish spots being rather larger, and in the inferior wings inclining to a yellow, the general ground of all the wings appearing more sooty on this side.

LIMACODES? ARENACEA.

Plate XVIII. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidæ.

GENUS. LIMACODES? *Latr.* Apoda, *Haworth.* Heterogenea, *Knoch.* Phalæna Bombyx, *Linn.*

LIMACODES? ARENACEA. Lutea, alis superioribus supra atomis nigris adpersis. (Expans. Alar. 1 unc. 3 lin.)

SYN. Phalæna (Bombyx) arenacea, *Linn. Syst. Nat.* 2. p. 828. No. 65.

HABITAT: Cape of Good Hope.

Upper Side. Antennæ pectinated, and of a yellow clay colour. The head and thorax yellow, but covered over with hairs in such manner that the former cannot be distinguished. The abdomen, superior and inferior wings yellow. On the anterior wings appear some very minute black spots scattered thereon in a very irregular manner. The wings are entire

Under Side. The thighs, breast, and abdomen are very hairy. The superior and inferior wings of the same yellow colour as on the upper side, without a mark of any kind.

This insect appears most nearly to approach the genus *Limacodes*, *Latr.*

SATURNIA CECROPIA.

Plate XVIII. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidæ.

GENUS. SATURNIA, *Schränk. Latr.* Attacus, *Germer.* Phalæna (Bombyx), *Linn. &c.*

SATURNIA CECROPIA. Alis anticis subfalcatis, posticis rotundatis; omnibus griseis fasciâ communi fulvâ maculâque reniformi ocelloque apicali (in anticis) ornatis. (Expans. Alar. 6 unc. 6 lin.)

SYN. *Linn. Syst. Nat.* v. 2. p. 809. No. 3. *Cramer, Ins.* 4. tab. 42. f. A. B. *Catesby Carol.* 86. t. 86. *Abbot and Smith, Ins. Georgia,* tab. 45. *Fabr. Ent. Syst.* 111. 1. p. 408. No. 4. *Gmel. Linn. S. N.* 2401. 3. *Oliv. Enc. Méth.* 5. p. 25. 5.

HABITAT: New York (*Drury*). North America (*Linn. &c.*).

Upper Side. Antennæ very broad, pectinated and black. The head is small and red. Neck white. Thorax covered with long orange-brown hairs. Abdomen alternately with broad stripes of white and orange brown, the latter being edged behind with black. Anterior wings, with two bars crossing from the anterior to the posterior edges, one at about three-fourths of an inch from the shoulders, whitish, edged on the outside with black; the other is orange, at about an inch distance from the external margin. The base of the wing is a fine orange brown. The middle is deep rusty brown, which, towards the upper part, is powdered with buff-coloured hairs. In the middle of this is a large white spot verged with black, somewhat resembling a kidney bean, and is broadly tinged behind with red brown. The extremity of this wing, next the bar, is the same dark brown, and powdered, having a black spot about

half an inch from the tip, having within it a semicircular mark of a pearl colour. From this spot to the anterior edge runs a serpentine line of white, bordered on the outer side with red. Between this and the orange bar is a broad tinge of light purple. The other side, next the tip, is light brown, stained with blood colour. From the black spot to the interior angle runs a black serpentine line, inclosing a space of dark buff, between which and the dark buff margin is a light buff irregular streak. Posterior wings similar to the superior, but the orange bar is redder and broader, running parallel with the external edge, and is bordered on the inner side with white; the part of the wing within this is deep rusty brown, with a larger white spot in the middle, verged with black, and tinged behind with red brown. The colour below the red bar is deep rusty brown, the border along the external edge being of a dark dirty buff, whereon are two small dark lines, having an irregular indented line of the same dirty buff above them. The wings are entire.

Under Side. The markings on all the wings are more distinct, and brighter than on the upper. The posterior wings, and the major part of the anterior, being covered with dust-like buff hairs, except the spots and buff margins round the edges. The posterior wings along the anterior edges being verged with white, which becomes broader as it approaches the shoulders.

The caterpillar of this fine moth feeds upon the wild American plum (*Prunus Pensylvanica*), garden plum, &c. It is thick and fleshy, of a pale green colour, with a pair of small blue spots on each segment, and with two rows of short and setose yellow dorsal tubercles. One observed by Abbot, spun up on the 17th of June, and the moth came out on the 30th of March following. The cocoon is attached to a twig. The outside web is coarse, and the inner covered with silk, like a silk-worm's cocoon. Abbot states that this silk has been carded, spun, and made into stockings, and that it will wash like linen. The species is, however, too rare to be of any utility in Georgia. It is, however, much more abundant in the neighbourhood of New York, and has been bred in England from some brought over in the chrysalis state. It is difficult to rear it in confinement.

SPILOSOMA ARGE.

Plate XVIII. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. *SPILOSOMA*, *Steph.* *Arctia*, *Latr.* *Eyprepia*, p. *Ochs.* *Phalæna* (*Noctua*), *Drury.*

SPILOSOMA ARGE. *Alis albidis, nigro-maculatis et lineatis, posticis incarnatis lineâ marginali fulvâ; abdomine concolori maculis nigris.* (Expans. Alar. 1 unc. 9 lin.)

SYN. *Phalæna* (*Noctua*) *Arge*, *Drury, App. v. 2. Oliv. Enc. Méth. 5. 92. 232.*

Bombyx Dione, Fabr. Ent. Syst. 111. 1. p. 442. No. 106. Abbot and Smith, Ins. Georg. t. 63.

HABITAT: New York; taken on the 20th day of May.

Upper Side. Antennæ filiform, and cream-coloured at the base, but black at their extremities. The tongue is small, and curled up. The neck red, having two small black streaks above it. The thorax and abdomen cream-coloured. On the former are three black streaks. On each annulus of the abdomen is a black spot, and another on each side. Anterior wings cream-coloured, with many black spots and marks thereon, of different forms and sizes, and varying very greatly in different specimens. The

anterior margin red. Posterior wings almost transparent, dirty cream-coloured, tinged with red, whereon are many oblong sooty spots. Ciliæ cream-coloured, within which is a narrow red line.

Under Side. The colours are more faint and dirty than those on the upper. Anterior femora red, with two black spots thereon, close to the head. Tarsi black and cream-coloured.

The caterpillar of this insect is brown, with five pale longitudinal lines, and with long hairs arising from fulvous tubercles. It feeds, according to Abbot, upon plantain, corn, peas, and many other plants. A specimen observed by this author was hatched on the 23d of July, spun up on the 28th of August, and the moth appeared on the 9th of September. It is said occasionally to make great devastation among Indian corn. Sir J. E. Smith ascertained the specific identity of this insect from Dr. Hunter's Museum, examined by Fabricius, who has neglected to cite Drury's figure.

SPILOSOMA CUNEA.

Plate XVIII. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae.

GENUS. SPILOSOMA, *Steph.* Arctia, *Latr.* Eyprepia, *Ochs.* Phalæna (Noctua), *Drury.*

SPILOSOMA CUNEA. Alis albis, anticis maculis permultis, posticis duabus nigris, abdomine concolori nigro-maculato.

(Expans. Alar. 1 unc. 5 lin.)

SYN. Phalæna (Bombyx) Cunea, *Drury, App. v. 2.*

Phalæna punctatissima, *Abbot and Smith, Ins. Georg. t. 70 ?*

HABITAT: New York (*Drury*). Georgia and Virginia (*Abbot and Smith*).

Upper Side. Antennæ pectinated and black. There is no appearance of any tongue. Head white. Back and abdomen ash colour. Anterior wings white, with a great number of spots differently shaped of a sooty black colour. On the external margin are five spots, those nearest the tips being shaped like triangles. Posterior wings white, with a sooty spot on each near the external edge, and a very faint small mark near the exterior angle,

Under Side. Legs black. Breast and abdomen ash colour. The wings marked as on the upper side.

There seems little reason for doubting that this is identical with the *Phalæna punctatissima* of Abbot and Smith, of which the female is entirely white. The last named species feeds upon the mulberry, persimmon, willow, and wild cherry of America. One observed by Abbot spun up on the 16th of May, and came out on the 1st of June. The whole brood of caterpillars feed together in a web, and will often entirely destroy the leaves of a small tree. The name proposed by Drury evidently alludes to the triangular spots on the margin of the anterior wings, and seems quite as expressive as that employed by Sir J. E. Smith, who seems to have treated Drury's work on several occasions as scarcely deserving of notice.

NOCTUA (ACONTIA?) NUNDINA.

Plate XVIII. fig. 5.

ORDER : Lepidoptera. SECTION : Nocturna. FAMILY : Noctuidæ, *Steph.*

GENUS. NOCTUA, *Auct.* (SUBGENUS, *Acontia?* *Ochsenh. Treit.*) *Phalæna* (Noctua), *Drury.*

NOCTUA (ACONTIA?) NUNDINA. Alis anticis pallide cinereis albido variegatis, literâ nigrâ ante apicem notatis.
(Expans. Alar. 1 unc. 3 lin)

SYN. *Phalæna* (Noctua) *Nundina*, *Drury, App. v. 2.*

HABITAT : New York.

Upper Side. Antennæ thread-like, of a reddish brown. The tongue curled spirally. Head and thorax ash colour. Anterior wings the same, whereon are several faint marks of a light sand colour. Close to the anterior margin, about a third from the tips, is a black mark, resembling an **3** of the German text characters. Posterior wings silvery white, with a small, faint, light, sandy border, and a small oblong brown discoidal spot.

Under Side. Anterior wings silvery white, with a faint indistinct dark brown border running along the external margin, and two dark marks opposite the German text character. Posterior wings silvery white; the oblong brown spots are here plainly seen as on the upper side.

PAPILIO PALAMEDES.

Plate XIX. fig. 1. 2.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Papilionidæ, *Leach.*

GENUS. PAPILIO, *Auct.*

PAPILIO PALAMEDES. Alis dentatis nigris, fasciâ maculari maculisque marginalibus flavis; posticis caudatis, his subtus ad basin vittâ albâ transversâ rectâ lunulisque rufis. (Expans. Alar. 5 unc.)

SYN. *Papilio* (Eq. Achiv.) *Palamedes*, *Drury, App. v. 2. (1773).* *Cramer, pl. 93. fig. A. B.*

Pap. (Eq. Ach.) *Calchas*, *Fabr. Syst. Ent. p. 453, No. 44. (1775).* *Ent. Syst. 3. 1. p. 30. No. 90. Herbst.*

Pap. tab. 42. Boisduval, Hist. Nat. Lep. 1. 337. No. 178. Bdc. et Leconte, Icon. Lep. Amer.

Sept. pl. 5.

HABITAT : Carolina (*Drury*). Georgia, Virginia (*Bdc.*).

Upper Side. Head, back, and abdomen dark brown; the latter striped on the sides with yellow. Two yellow lines, beginning at the palpi, encircle the eyes, and, running along the shoulders, end at the base of the inferior wings. Anterior wings brownish black; the external margin with small yellow crescents, above which are nine yellow round spots. Above this is another irregular row of yellow angular spots. Posterior wings brownish black, each with a tail. Above it are six yellow spots, reaching from the anal to the upper corner, with five small blue spots above them, above which a yellow irregular bar runs across the middle of the wing, having a black spot, whose upper edge is verged with blue, placed at the anal angle, with a small tinge of orange above and below it.

Under Side. Breast and thighs yellow. Abdomen striped with yellow and dark brown. Anterior wings brownish black, with the same yellow spots and marks as on the upper side. Posterior wings brownish black, with six yellow spots near the external edge, having a mark of orange in the middle of each, above which is a row of orange crescents joined together, whose upper edges are silver, and below each of them is a black circular spot, whose inner part is a fine shining blue, from whence appears a great number of powder-like gray spots. The anterior edge next the shoulders, has a small orange streak, near which an orange-coloured line begins, running parallel with the abdomen.

The caterpillar is described by Boisduval as living upon several species of *Laurus*, and of a green colour, with pale blue spots, and scarlet belly and legs, with a scarlet eye-shaped spot on each side of the third segment. The chrysalis is gibbous, ferruginous on the back, with the belly rose-coloured, and four rows of pale blue dots. I have reverted to Drury's specific name, which has certainly the priority, as appears from the dates which I have introduced amongst the synonyms. Dr. Boisduval has given another species of this genus under the name of *Palamedes*, described by Fabricius under that name, but considered by him to be a *Nymphalis*. This latter species must consequently receive a new denomination.

MILITÆA PELOPS.

Plate XIX. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. *MELITÆA*, *Fabr.* *Argynnis*, *Latr. God.* *Papilio* (Pleb. rur.), *Drury*.

MELITÆA PELOPS. Alis subrotundatis, integerrimis, suprâ fulvis nigro reticulatis; posticis subtus carnis fusco undatis. (Expans. Alar. 1 unc.)

SYN. *Papilio* (Pleb. rur.) *Pelops*, *Drury, App. v. 2.*

Argynnis Pelops, *Latr. et God. Enc. Méth. ix. p. 290. No. 62.*

HABITAT: St. Christopher's (*Drury*).

Upper Side. Thorax and abdomen brown, the latter spotted with faint brown orange. Wings black, with several rows of large brown orange spots, crossing the wings, of different shapes and sizes.

Under Side. Anterior wings orange brown, spotted with black, having the appearance of indented lines running across them. Posterior wings dark flesh-coloured, marked and spotted with brown, and having five minute silver spots at equal distances, parallel with the external edge. The wings are entire.

HESPERIA ARCAS.

Plate XIX. fig. 5. 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Hesperiidæ, *Steph.*

GENUS. *HESPERIA*, *Latr. Godart.* *Battus*, p. *Scop.* *Papilio* (Pl. ruric), *Linn.*

HESPERIA ARCAS. Alis nigricantibus immaculatis, margine integro, anticis subtus margine interno dilutiore maculâ parvâ unicâ albâ. (Expans. Alar. 1 unc. 9 lin.)

SYN. *Papilio* (Pleb. ruric.) *Arcas*, *Drury. App. v. 2.*

Papilio (Pl. urb.) *Philemon*, *Fabr. Syst. Ent. p. 534. No. 392. Ent. Syst. 111. 1. p. 346. No. 314.*

Hesperia Ph. *Latr. God. Enc. Méth. ix. p. 788.*

Papilio Flyas, *Cram. pl. 328. E.*

HABITAT: St. Christopher's.

Upper Side. Thorax and abdomen black. Wings very dark brownish black, immaculate. Margins entire.

Under Side. Legs, breast, and abdomen dark brown, but rather lighter than on the upper side, immaculate, except a small white spot on the anterior, placed near the anterior edge towards the tip.

EREBUS CREPUSCULARIS?

Plate XX. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. EREBUS, *Latrielle*. Thysania, *Dalman*. Noctua, *Fabr.* Phalæna (*Attacus*), *Linn.*

EREBUS CREPUSCULARIS? Alis griseis, fasciâ maculisque albis, anticis ocello fusco, posticis fasciis duabus dentatis fuscis fulvo marginatis. (Expans. Alar. 4 unc. 3 lin.)

SYN. Phalæna (*Attacus*) *Crepuscularis*? *Linn. S. N.* 2. 811. *No.* 13. *Drury, App. v.* 2. *Oliv. Enc. Méth.* 8. 255. 19.

HABITAT: China (*Drury*). America (*Linn.*).

Upper Side. Antennæ setaceous. Palpi standing erect above the head. Tongue spiral. Neck with a narrow ring of white. Thorax dark brown. Abdomen dirty buff colour. Anterior wings dark nut brown at the base; paler at the external margin. On the anterior margin, next the tip, is a white subtriangular spot; and from the middle arises a white bar, which runs obliquely to the middle of the wing, but suddenly turns and runs to the base of the posterior margin; from the inner angle of this bar, near the middle of the wing, a black line runs towards the front of the wing, forming a large eye. Within the external margin are many dark and white marks. All the wings are scalloped. Posterior wings, next the shoulders, are of a dirty buff colour; remainder nut brown, separated by a narrow line of darker brown, beneath which runs a small narrow line of buff, and a quarter of an inch below this is another line, crossing the wing. From thence, to the external edge, are several darker coloured clouds, and white marks of different shapes and forms; particularly a white angular spot on the anterior edge, near the corner.

Under Side. All the wings of a pale clay colour, inclining to buff. On the anterior, the two white spots at the tips, visible on the upper side, appear here also; and several smaller ones on other parts of the wings. The white bar being less distinct than the other white marks; but on the posterior wings the white angular spot, near the upper corner, is very plain and strong.

The diversity of the habitats, given by *Drury* and *Linnæus*, render it doubtful whether that figured by the former be identical with that described by the latter.

NOCTUA LUNATA.

Plate XX. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. NOCTUA, *Auct.* SUBGENUS. —?

NOCTUA LUNATA. Alis fuscis, strigis multis transversis; anticis maculâ centrali, alterâ angulatâ apicali, fasciâque obliquâ posticâ nigris. (Expans. Alar. 2 unc. 3 lin.)

SYN. Phalæna (*Noctua*) *Lunata*, *Drury, App. v.* 2.

HABITAT: Carolina, Virginia.

Upper Side. The antennæ light brown and setaceous. The tongue spiral. Palpi not very hairy. The head, thorax, abdomen, and wings hazel-coloured. Anterior wings with a wavy line, of a dark brown colour, placed near the anterior angle, beginning at the posterior and ending at the external edge. At the shoulders, and along the anterior margin, are several small dark brown clouds and marks, that

produce a darker shade. Posterior wings with a series of narrow transverse waved lines, extending from the middle to the external edges. All the wings are dentated.

Under Side. The breast, abdomen, and wings are all of a paler hazel colour. Anterior wings dappled with dark brown on the middle of the anterior edge, and spotted with minute short brown streaks, as well as the posterior.

GEOMETRA (ANGERONA) SERRATA.

Plate XX. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Geometridæ, *Steph.*

GENUS. GEOMETRA. Subg. Angerona, *Duponch, Steph.* Hipparchus p. *Leach. Curt.*

GEOM. (ANGERONA) SERRATA. Alis luteo-fulvis dentatis, fasciâ latâ apicali maculâ basali anticarum fasciâque basali posticarum ferrugineis. (Expans. Alar. 2 unc. 3 lin.)

SYN. Phal. (Noctua) Serrata, *Drury, App. v. 2.*

HABITAT: New York; taken on the 26th of June.

Upper Side. Antennæ and head of a reddish buff colour, the former setaceous. Tongue very small and spiral. Thorax and abdomen yellow buff colour; as are all the wings in general. The anterior having a bar of brown red colour, which begins at the tips, and runs across the wings, almost to the middle of the posterior edge; occupying all that space along the external margin. At the base is a small cloud of the same colour, but much fainter. Posterior wings with a broad marginal bar of the same brown red. A small faint line likewise crosses these wings. The buff ground is sprinkled all over with faint, irregular, dark brown spots, that in some specimens are scarcely visible. All the wings are dentated; the lower ones most deeply.

Under Side. Wings yellow buff, with brown red markings, as on the upper side, but less distinct. The irroration stronger and plainer, being also sprinkled over the brown bars.

ARGYNNIS PHALANTA.

Plate XXI. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. ARGYNNIS, *Fabr. Latr. et Godart.* Argyreus, *Scop.* Dryades, *Hüb.*

ARGYNNIS PHALANTA. Alis subdentatis, fulvis nigro maculatis, posticis subtus ad extimum argenteo-purpureis, ocellis aliquot fulvis. (Expans. Alar. 3 unc.)

SYN. Papilio (Nymph. Phal.) Phalanta, *Drury, App. v. 2.* *Fabr. Ent. Syst.* 111. 1. p. 149. *Latr. et God. Enc. Méth.* ix. p. 259. Papilio Culembina, *Cram. pl.* 337. D. E. (♂) pl. 238. A. B. (♀).

HABITAT: China (*Drury*). East Indies (*Fabricius, &c.*). Isle Mauritius (*I. O. W.*).

Upper Side. Thorax and abdomen of a dirty clay colour. Anterior wings of a fine deep clay colour, the tips being of a dirty black; which colour is continued, by irregular and indented marks, along the external edges, almost to the interior angle, where are several clay-coloured spots and marks. Above these are four round spots, running obliquely toward the shoulders. Several other black marks are dispersed on different parts of the wings, particularly near the anterior edges. Posterior wings deep clay-coloured, with two black waved or indented lines, running along the external margin. Over these

are four small, round, black spots, placed two and two. Above these, nearer the shoulders, are several small, black, oblong spots, placed irregularly. The wings, particularly the posterior pair, are a little dentated.

Under Side. Anterior wings, at the base and along the posterior edges, clay-coloured. Near the interior angle of each wing is a round black spot; several others which are very small, oblong, and fainter, being scattered about on different parts. Posterior wings, at the base, fainter clay-coloured. About half the wings, from the external edges, are of a blueish clay colour, which is separated from the other part by a faint waved line of a reddish hue. Two other faint waved lines also run along the external edges, answering to the black ones on the upper side; and the four black spots seen there are very small on this side, being but just perceptible.

MELITÆA PHAETON.

Plate XXI. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sic.*

GENUS. MELITÆA, *Fabr.* Argynnis, *Latr. et God.* Papilio (Dan. Festiv.), *Drury.*

MELITÆA PHAETON. Alis subrotundatis integerrimis, nigris, singularum extimo suprâ, paginâ omni subtùs fulvo flavoque maculatis. (Expans. Alar. 3 unc. 9 lin. fere.)

SYN. Papilio (Dan. Festiv.) Phaeton, *Drury, App. v. 2.* *Fabr. Ent. Syst.* 111. 1. p. 46. No. 140. *Cramer, pl.* 193. f. C. D. Argynnis Phaetontea, *Latr. et God. Enc. Méth.* ix. p. 288. *Boisdur. Hist. nat. Lep. pl.* 7. B. f. 3.

HABITAT: New York; taken in June and September, whence there are probably two broods in the year.

Upper Side. Body and wings black. The anterior pair of the latter with nine red spots placed near the external edges; above which are two rows of spots, of a lemon colour, with some other small ones placed near the upper edges. Posterior wings with eight red triangular spots, placed close to the external edges. Above these is a row of lemon-coloured crescents; and above that is another row of lemon-coloured round spots. The wings are entire.

Under Side. Anterior wings black, with a red indented margin; within the external edge is a row of lemon-coloured crescents. Near the costa, about the middle of each wing, are two larger red spots, and a smaller one at the corner, next the shoulders. The remainder of the wings is sprinkled with lemon-coloured spots, of different shapes and sizes, in all about twenty-six on each. Posterior wings black, having their external edges margined with triangular red spots; above which is a row of lemon-coloured crescents; and over these is a row of round lemon-coloured spots. The remaining part of the wings is covered with lemon-coloured and red spots; the former very small, and the latter rather large, and angularly shaped.

MELITÆA THAROS.

Plate XXI. fig. 5. 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sic.*

GENUS. MELITÆA, *Fabr.* Argynnis, *Latr. et God.* Papilio (Dan. Festiv.) *Drury.*

MELITÆA THAROS. Alis subrotundatis integerrimis, supra fulvis, lineis plurimis transversis limboque communi nigris, posticis utrinque ad extimum strigâ punctorum nigrorum. (Expans. Alar. 1 unc. 6 lin. fere.)

SYN. Papilio (Dan. Festiv.) Tharos, *Drury, App. v. 2.* *Cramer, pl.* 169. fig. E. F. Argynnis Tharossa, *Latr. et God. Encycl. Méth.* ix. p. 289. No. 61.

HABITAT: New York.

Upper Side. Head, body, and abdomen dark brown. Anterior wings varied with dark brown and orange; in some the dark brown occupying the greater part of the wings, in others the orange colour is predominant; but the tips and external edges in all are dark brown; in some two ocelli are seen close to the anterior edge, and near the lower corner; but in others these ocelli are not to be discovered. Posterior wings dark brown and orange. Round the edge is a waved dark border, through which a small waved white line, runs from the anal angle about half way; above this are placed, in a row, five round ocelli, and one oblong, next the anal angle; the pupils being black, and the irides orange colour. Above these is a broad orange-coloured band, and next the body the wings are dark brown. All the wings are entire.

Under Side. Anterior wings, at the base, deep clay-coloured, with some dark brown clouds on the anterior edges and interior angles; but in some these clouds are hardly perceptible. In some a small scalloped line runs along the external edges, from the tips to the lower corners, of a reddish hue; in others this is not to be seen, having a dark brown border in that part. Posterior wings very pale clay-coloured, with a cloud on the middle of the external edges, of a reddish brown; where (in some) is a silver spot like a half moon. The black pupils of the six ocelli, seen on the upper side, are, in some specimens, very small here, and just perceptible; in others they are not to be seen. "In short, nature forms such a variety of this species, that it is difficult to set bounds, or to know all that belongs to it."—*Drury*.

PAPILIO THOAS.

Plate XXII. fig. 1. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PAPILIO, *Auct.*

PAPILIO THOAS. Alis suprà nigris, fasciâ communi lunulisque submarginalibus flavis, posticis caudatis, his subtus maculâ discoidali ferrugineâ lunulisque cœruleis. (Expans. Alar. 4 unc. 9 lin.)

SYN. Papilio (Equ. Ach.) Thoas, *Linn. Mant. p. 536. Fabr. Ent. Syst. 111. 1. p. 32. No. 94. Cramer, pl. 167. fig. A. B. Latr. et God. Enc. Méth. ix. p. 62. 103. Boisdual et Leconte Icon. Lep. Amer. Sept. pl. 12. et 13. Boisd. H. n. Lep. 1. p. 355.*

Var. Pap. Cresphontes, *Cramer*, 165, 166, A.

HABITAT: Surinam (*Drury*). Paraguay to Georgia (*Boisd.*).

Upper Side. Thorax black. Two small yellow streaks extend from the eyes to the shoulders. Abdomen yellow, with a black dorsal line; apex red brown. Wings black, with deep yellow spots on them. A yellow bar, near half an inch broad, begins at the middle of the superior wings, and running parallel with the anterior edges, crosses the inferior ones just below the shoulders. Several oval and oblong yellow spots are placed between the tips and this bar. One also is situated close above it, near the middle of the wing; being separated from it by the tendon, which is black. Below the bar are four small spots, beginning at the interior angle (the first being double). Posterior wings furnished with two black tails, having a long yellow stripe in the middle. About a quarter of an inch above the external edge is a row of six yellow spots, whereof one is obscured by the anterior wing; there being but five shewn in the plate.

Under Side. The breast is ash colour. Anterior wings partly soot colour, but principally yellow. A row of eight yellow spots is situated within the external margin, and the yellow bar, observable on the upper side, is not to be distinguished on this. Several small yellow lines rise at the shoulders, and expanding like the sticks of a fan, occupy almost the chief membrane of the wing.

Between these, and the row of eight spots, are two large yellow patches, which nearly take up that middle space, with black tendons crossing them like fine threads. Posterior wings, next the shoulders, yellow, continuing to about the middle of the wings. External margin soot-coloured; having a broad bar of yellow above it, whose upper side resembles a row of arches. Above this is an irregular black bar, running from the anterior edges, across the wings, with two small scarlet streaks at the anal angles. On this bar is a row of blue crescents, answering to and placed just above the arch-like bar before-mentioned; and in the centre is a faint mark of scarlet.

The caterpillar of this butterfly feeds upon the orange-trees, from Paraguay to Georgia. Its back is covered with large irregular white spots, with brown marks, which extend along the middle and posterior parts of the body. The chrysalis is of a bright brown, with several black dots.

PAPILIO SINON.

Plate XXII. fig. 3. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. *PAPILIO*, *Auct.*

PAPILIO SINON. Alis nigris, fasciis communibus virescenti-albis, posticis lunulis sex submarginalibus virescenti-albis anguloque ani rubro. (Expans. Alar. 3 unc. fere.)

SYN. *Papilio Sinon*, *Fabr. Syst. Ent.* p. 452. *Ent. Syst.* 111. 1. p. 26. 75. *Cramer, tab.* 317. *fig.* C. D. E. F.

Ency. Méth. ix. p. 53. *Boisduv. Hist. Nat. Lep.* 1. p. 260.

Papilio (Eq. Achiv.) *Protesilaus*, *Drury, App.* vol. 2.

HABITAT: Jamaica (*Drury*). Florida, Cuba (*Boisduv.*). North America (*Enc. Méth.*).

Upper Side. The thorax black; the hair thereof greenish. Abdomen black. All the wings black; posterior ones being furnished with two tails, edged with white. Close to the shoulders, in the anterior wings, rises a stripe of sea-green, which crosses the inferior ones; and, running parallel with the abdominal margin, ends near the extremity of the body. A little below this is a small scarlet spot, placed near the anal angle; with two smaller spots, of a green colour, below it. At a little distance from the shoulders, a second green stripe, rather broader than the first, begins at the posterior edge of the anterior wings, and crosses the inferior ones, parallel with the first, being continued a little lower. On the anterior wings, about the middle of the anterior edge, rises a bar, of a fine sea-green colour, which crossing both wings, terminates at the middle of the posterior, being narrowest at each end. A row of eight white spots runs parallel with the external edge, ending at the lower corner. Near the external edges of the posterior wings is placed a row of five crescents, of a green colour.

Under Side. Breast and abdomen grey-coloured. Anterior wings light chesnut, having a darker cloud near the anterior angle. All the green spots and marks, seen on the upper side, are also visible here. The ground of the posterior wings is rather paler than the anterior; and the green marks and stripes are rather larger here, than on the upper side. The scarlet spot, on the abdominal edge, is considerably larger on this side. A scarlet stripe also begins on the anterior edge, and fills completely the space between the broad green bar and the second stripe, mentioned above, extending as low as the extremity of the body. The two scollops, next the abdominal corner, are black; whereon appear a few blue powder-like specks.

M. Boisduval states that Drury's figure is "peu exacte." It is true, indeed, that the figure does not agree with the description given by that author, who describes the fourth pale fascia as "bifide dans la cellule discoidale des premières ailes." The exact uniformity in the shape of this fascia, in both of Drury's figures, renders its correctness evident, and consequently the insect figured by Drury must be regarded as a variety of the species described by Boisduval.

NOCTUA MELICERTA.

Plate XXIII. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. NOCTUA, *Auct.*

NOCTUA MELICERTA. Alis anticis variegatis, posticis nigris, fasciâ maculisque tribus marginalibus albis. (Expans. Alar. 2 unc. 6 lin.)

SYN. *Phalæna* (Noctua) *Melicerta*, *Drury, Append. v. 2. Cramer, tab. 62. fig. C. D. ?*

Noctua mercatoria, *Fab. Ent. Syst. 111. 2. p. 62. No. 175. ? Gmelin, Linn., S. N. 2544. 1039.*

Noctua tigrina, *Fabr. Ent. Syst. 111. 2. p. 40. No. 105. Oliv. Enc. Méth. 8. 277. 131.*

Noctua vulpina, *Fabr. Ent. Syst. 111. 2. p. 39. No. 102.*

Phalæna Melicene, *Cram. tab. 323. fig. C. D.*

HABITAT: India, Bombay (*Drury*).

Upper Side. Antennæ filiform. Tongue small and spiral. Thorax and abdomen light brown. Anterior wings light greyish brown, and, when held in some particular directions, having a hue like mother-of-pearl. Several irregular bars, of a deeper brown, cross the wings, and the external margin is bordered with pale purple or pearl colour. Posterior wings dark liver-coloured, grey-brown at the base, and hairy. In the middle is a broad bar, of purplish white, running across the wing. On the external edge are three white square spots. The anterior wings are a little dentated; the inferior ones entire.

Under Side. Palpi remarkably long and pointed. Anterior wings dark brown; the external edge being purplish grey, with a whitish separated bar, running from the middle of the anterior edge to the interior angle. Posterior wings light greyish brown, palest at the base, and grey at the external edge, having a dark spot at the anal angle, and a smaller faint one near the shoulders; with several indented lines crossing the wings in different places.

Fabricius appears to have described this insect in his *Entomologia Systematica*, under three different names. It probably forms the type of a distinct subgenus in the family Noctuidæ.

CATOCALA EPIONE.

Plate XXIII. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. CATOCALA, *Schrank.* Blephara, *Hübner.* Phalæna (Noctua), *Linn.*

CATOCALA EPIONE. Alis anticis fuscis, strigis transversis dentatis ferrugineis et atris, posticis nigris, ciliâ albâ.
(Expans. Alar. 2 unc. 6 lin.)

SYN. Phalæna (Noctua) Epione, *Drury, App. vol. 2. Oliv. Encycl. Méthod.* 8. 288. No. 190.

HABITAT: New York (*Drury*). Philadelphia (*I. O. W.*).

Upper Side. Thorax and abdomen of a sooty ash colour. Anterior wings dark chocolate, with an undulated ferruginous line, running from the anterior edge to the posterior, and near the middle of the wings; with several other lighter not very distinct marks thereon. Posterior wings black; cilia white.

Under Side. Anterior wings, at the base, dark ash colour, which as it extends further on the wings, becomes black; and next the tips is soot-coloured. Seven white spots run along the external margin. Above them is a white line, running from the anterior edge, narrowing as it goes, and ending near the posterior; between which and the shoulders is a rather large oblong white spot. Posterior wings, next the shoulders and abdominal edges, very dark ash colour, which deepens along the wings to black; cilia white. A faint white streak runs also a little way down the wing from the anterior margin. All the wings are a little dentated.

NOCTUA PALES.

Plate XXIII. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. NOCTUA, *Auct.*

NOCTUA PALES. Alis luteis, anticis strigâ transversâ punctoque apicali fuscis. (Expans. Alar. 1 unc. 9 lin.)

SYN. Phalæna (Noctua) Pales, *Drury, App. vol. 2.*

HABITAT: St. Christopher's.

Upper Side. Antennæ filiform. Tongue spiral. Head small. Thorax, abdomen, and wings light orange clay-coloured, without any markings, except on the anterior wings, where a faintish bar crosses the middle; and, near the tips of the wings, is a small dark spot. The wings are entire.

Under Side. The same colour as the upper, immaculate.

CALLIMORPHA? VINOSA.

Plate XXIII. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidæ.

GENUS. CALLIMORPHA? *Latr.* Sphinx p. *Drury.*

CALLIMORPHA? VINOSA. Alis nigris subdiaphanis, anticarum marginibus anticis et posticis rufo fulvis maculâ magnâ externâ (in medio albâ margine nigro); posticis fasciâ submarginali rufo-fulvâ. (Expans. Alar. 2 unc. fere.)

SYN. Sphinx Vinosa, *Drury, App. vol. 2.*

HABITAT: Antigua.

Upper Side. The antennæ are black, small, and pectinated. The tongue not discoverable. Thorax and base of abdomen yellow orange; the remainder of the abdomen rusty grey, with a black stripe down the top of it. Anterior wings black and transparent, like gauze; the anterior and posterior margins bordered with orange. The tips of the wings are likewise broadly orange, through the middle of which runs a broad bar of white, from the anterior to the middle of the external edge, where it is narrowest, being edged with black. Posterior wings black, and like gauze; the external edge having a narrow orange stripe running from the anal margin, half way to the exterior angle. The wings are entire.

Under Side. The abdomen is grey, with a black line running from the thorax to the tail. Anterior wings not edged with orange; the tips are black, where the white bar is plainly seen, having an orange spot on the edge, near the external and lower corners. Posterior wings as on the upper side.

This insect seems to form the type of a distinct subgenus between *Nudaria* and *Callimorpha*.

NOCTUA NUMERIA.

Plate XXIII. fig. 5.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Noctuidæ.

GENUS. NOCTUA, *Auct.*

NOCTUA NUMERIA. Alis fuscis, anticis vittâ longitudinali albâ, anticè strigis undulatis transversis; posticis maculâ externâ albâ. (Expans. Alar. 2 unc. 3 lin.)

SYN. *Phalæna* (Noctua) *Numeria*, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ filiform. Tongue spiral. Head, thorax, and abdomen fine brown. Anterior wings fine brown, through the middle of which runs a small longitudinal bar of white or pearl, beginning just below the shoulders, and losing itself just below the tips. Above this bar the wings are watered with various marks of dark and light brown. Behind it they are of a darker shade, except a spot near the middle of a yellowish brown. Posterior wings dark brown, with two white marks on the edges, about a third of an inch long; beginning on the anterior edge, and crossing the corner to the external edge.

Under Side. Breast, legs, abdomen, and wings greyish brown or russet, with some faint, dark indented lines running across all the wings in different parts. The white marks on the edges of the posterior wings are very visible on this side. The wings are entire.

CATOCALA AFFINIS.

Plate XXIII. fig. 6.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. CATOCALA, *Schr.* *Blephara*, *Hüb.* *Phalæna* (Noctua), *Linn.*

CATOCALA AFFINIS. Alis anticis fuscis maculis ordinariis discoidalibus strigisque dentatis obscurioribus; posticis fulvis fasciâ centrali margineque postico latè nigris. (Expans. Alar. 2 unc.)

SYN. *Phalæna* (Noctua) *Paranympa*, *Drury, App. vol. 2.* (excl. syn. Linnæan.)

HABITAT: New York; taken on the 27th day of July.

Upper Side. The thorax and anterior wings dark chocolate, with a small, narrow, irregular black line crossing the wings, near the external edge; having near it, just above the fringe, a row of seven small grey spots. Posterior wings pale orange; having a deep black border. A rather broad black line runs in a circular direction from the anterior edge, through the middle of the wings, to the lower part of the interior margin. At the outer angle is a small spot of a pale orange.

Under Side. Anterior wings at the base of a dark clay colour, with a large yellowish cloud occupying all the middle part; in which is a large black streak running across the wing. Posterior wings marked as on the upper side, but all the colours fainter.

ACTIAS LUNA.

Plate XXIV. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae.

GENUS. ACTIAS *Leach*. Saturnia, *Schrank*. Attacus, *Germer*. Phalæna (Attacus), *Linn*.

ACTIAS LUNA. Alis caudatis flavo-virentibus concoloribus, ocello disci lunato, margine antico anticarum purpureo. (Expans. Alar. 5 unc. 6 lin.)

SYN. Phalæna (Attacus) Luna, *Linn. Syst. Nat.* 2. 810. No. 5. *Catesby Carolina*, 2nd vol. p. 85. *Fabr. Ent. Syst.* 111. 1. p. 414. No. 22. *Gmel. Linn. S. N.* 2404. 5. *Abbot & Smith Ins. Georgia*, pl. 48. *Oliv. Enc. Méth.* 5. 29. 20. *Pal. Beauv. Ins. Afr. & Am. Lep.* pl. 22. f. 3. *Leach Zool. Misc.* v. 2. (Actias L.)

HABITAT: New York, Carolina, Virginia, Maryland.

Upper Side. Antennæ brown, and strongly pectinated. The head white, small, and almost hid under the shoulders and neck, having a small brown ring encircling it. Thorax pale yellow, having a chocolate or dark brown line crossing it, parallel with the margins of the anterior wings. All the wings are of a beautiful pea-green colour; the nerves being of a pale red brown. Along the anterior margin of the anterior wings runs a chocolate line, which is narrowed towards the tips. About an inch from the shoulders springs from this line a small curved one, which, bending towards the middle of the wing, terminates in a small eye, pointed in the lower part, whose pupil is transparent like glass; the iris being partly red and partly black, within which are semicircles of white; external margin of the wings, red brown; the posterior being white. Posterior wings furnished with two broad tails, which, at their extremities, appear as if they were crimped; their external edges being red brown. In the middle of each of these wings is likewise an eye, similar to, but rather larger than those in the anterior ones. Abdomen white.

Under Side. Abdomen white, the sides being of a dark clay colour. All the wings are of the same colour as on the upper side; the nerves being browner and more conspicuous, without the brown edge on the anterior pair; the eyes themselves are the same as on that side. The anterior margin of the inferior wings is white, and the eyes strongly resemble those of an animal having them half shut.

Drury's correspondent informed him that the caterpillar of this handsome moth is red, and feeds on the leaves of the sassafras tree. When they are full-fed they inclose themselves in a strong case composed of the substance of the tree, and a glutinous matter which they secrete. They appear in June and August. The caterpillar, however, figured by Abbot is green, with short hairs scattered over the body, and with about eight small red

spots on each segment, placed transversely. This author also states that it feeds upon the sweet gum (*Liquidambar styraciflua*, Linn.), different kinds of walnut, and the Persimon (*Diospyros Virginiana*). One of them spun up on the 31st of May, and came out on the 8th of June; another on the 23rd of June, and came out on the 10th of July; and a third, which did not spin up until the 6th of September, remained in the chrysalis till the 3rd of March. It continues breeding throughout the summer, but is not very plentiful.

DEIOPEIA ORNATRIX.

Plate XXIV. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Lithosiidæ.

GENUS. DEIOPEIA, *Stephens*. *Euchelia*, *Boisduval*. *Eyprepia* p. *Ochs*.

DEIOPEIA ORNATRIX. Alis convolutis albidis, anticarum margine rubro atropunctato, posticis albo nigroque variis. (Expans. Alar. 1 unc. 9 lin.)

SYN. *Phalæna* (*Noctua*) *ornatrix*, *Linn. S. N.* 2. 839. *No.* 110.

Bombyx ornatrix, *Fab. Ent. Syst.* 111. 1. p. 480. *No.* 225. *Gmel. Linn. S. N.* 2444. 110. *Oliv. Enc. Méth.* 5. 100. *No.* 258.

HABITAT: Antigua (*Drury*). America (*Linn. Fabr.*).

Upper Side. Antennæ black, filiform. Head with a black frontal spot; tongue spiral. Thorax flesh-coloured, with small black spots. Anterior wings fine flesh-coloured; the anterior edges being bordered with scarlet, except four small white places, in each of which is a small black spot; near the base is a red cordate spot, with a small black one above it; near the external margin is a row of small black spots; above this is a row of red ones, nearly joining together, and nearly united to the red border at the anterior edge, and above this is another row of black ones. Posterior wings clear white, their external edges with large angular spots of black, one of them running to the anterior edge.

Under Side. Anterior wings fine deep scarlet, but next the shoulders white, as is the cilia, where, joining to it, is a row of very small black spots; a little above this is a black irregular line, running from the anterior edge to the lower angle; above this line is another, shorter, reaching half way across the wings. Posterior wings clear white, spotted with the same black angular spots, as on the upper side; the anterior edges being of the same scarlet colour as the superior wings.

DEIOPEIA BELLA.

Plate XXIV. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Lithosiidæ.

GENUS. DEIOPEIA, *Stephens*. *Euchelia*, *Boisduval*. *Eyprepia* p. *Ochs*.

DEIOPEIA BELLA. Alis anticis albidis, fasciis sex punctorum nigrorum fasciis fulvis divis; posticis rubris apice nigris. (Expans. Alar. 1 unc. 9 lin.)

SYN. *Phalæna* (*Tinea*) *bella*, *Linn. S. N.* 2. 884. *No.* 348. *Fabr. Ent. Syst.* 111. 1. 479. *No.* 223. *Gmel. Linn. S. N.* 2447. 348. *Oliv. Enc. Méth.* 5. 99. 256.

HABITAT: New York.

Upper Side. Antennæ black and filiform. Head with a small black spot between the antennæ. Thorax and abdomen white; on the former are several small black spots. Anterior wings of a fine yellow, with several white, narrow, irregular bars crossing them; having on each several small black spots; cilia white, and above it is a row of small black spots that almost joins it. Posterior wings faint scarlet, externally edged with a narrow black border; cilia white.

Under Side. The anterior wings fine scarlet, inclining along the anterior edge to yellow; where are several angular black spots, each lengthening as it approaches the tips; along the external margin is a row of small black spots. Posterior wings scarlet, edged with the same black border as on the upper side; on the anterior edge are two white spots, with black ones in their centres.

In the 'Systema Naturæ' this and the preceding most nearly allied species were placed far apart in the genera *Noctua* and *Tinea*. This species appears in May and August. The caterpillar is of the same colours as the anterior wing of the moth, and feeds on the blue lupine.

SPHINX CAROLINA.

Plate XXV. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. SPHINX, *Auct.*

SPHINX CAROLINA. Alis anticis fusco cinereoque variis, posticis fasciis 3-4 fuscis exterioribus dentatis; ciliâ albo nigroque variâ, abdomine maculis 10-12 lateralibus luteis. (Expans. Alar. 5 unc.)

SYN. Sphinx Carolina, *Linn. S. N.* 2. 798. No. 7. *Brown. Jan.* 438. t. 43. f. 17. *Fabr. Ent. Syst.* 111. 1. p. 363. No. 25. *Gmel. Linn. S. N.* 2377. No. 7. *Stephens Ill. Brit. Ent. H.* 1. 118. *Abbot & Smith, Ins. Georg. tab.* 33. *Curtis Brit. Ent. v. pl.* 1. 197.

HABITAT: New York, Maryland, Virginia.

Upper Side. Antennæ internally white, but externally brown. The head, thorax, and abdomen of a rusty grey brown; the sides of the latter having five oblong yellow spots, intersected by black lines, on each of which is a small white spot placed between the yellow ones. Anterior wings rusty grey brown, with a white spot at the base, and another small discoidal white one; a narrow irregular indented line of white begins near the interior angle, and runs nearly to the tip; several indented lines, nearly black, cross the wings, more or less distinct. Cilia brown, spotted with white. Posterior wings brown, darkest in the middle, the shoulders being nearly black, with an indented narrow bar of ash colour running across them, from the middle of the anterior edges to the anal angle; below this is a narrow black one, answering and joining to it.

Under Side. Breast and abdomen ash-coloured. Anterior wings brown, without any marks or shades, except two very faint undulated dark lines crossing them. Posterior wings, next the body, ash-coloured; the remainder being like the anterior, with some faint dark lines crossing them.

According to Abbot the caterpillar is pale green, with white lateral oblique stripes, and a pink tail. It is said to feed on the potato, tobacco, red pepper (*Capsicum?*), &c. One of these caterpillars, observed by Abbot, went into the ground on the 19th of June, and came out on the 15th of July; whilst another went in on the 8th of July, and came out

on the 1st of August. The caterpillar is stated by the same author to be very destructive in plantations of tobacco, the cultivators being obliged to pick them carefully off the young plants. The chrysalis is of a chesnut colour, with a long nearly straight tongue case, extending to the middle of the breast, and clubbed at the end. The moth is generally seen in an evening, sucking the James-town weed and gourd blossoms, and continues breeding all the summer; the moth is common in the West Indies, as well as in Georgia and Carolina. Dr. Brown says it is called the musquito hawk, from its appearing at that time of the evening when those insects abound, and being vulgarly but erroneously supposed to prey upon them. *Abbot and Smith, loc. cit.*

Specimens of this American insect have from time to time been captured in this country. "It unquestionably cannot," however observes Mr. Stephens, "be considered as indigenous, and ought to be rigidly excluded from our cabinets; otherwise the most perplexing consequences must inevitably arise, to the total confusion of our inquiries into the geographical distribution of insects. If this be admitted, as well might 'the noble monarch of the forest,' because a captive lioness which had escaped from her prison was retaken on Salisbury Plain."

SYNTOMIS PHEGEA.

Plate XXV. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia.? FAMILY: Zygænidæ, *Leach.*

GENUS. SYNTOMIS, *Illiger.* ZYGÆNA, *Rossi.* Fabr. Sphinx, *Linn.*

SYNTOMIS PHEGEA. Viridi-atra alarum punctis fenestratis, anticarum sex, posticarum duobus; abdomine cingulo luteo. (Expans. Alar. 1 unc. 9 lin.)

SYN. Sphinx Phegea, *Linn. Syst. Nat.* 2. 805. 35. *God. Lepid. du Franc. pl.* 22. f. 14.

Zygæna Quercûs, *Fabr. Ent. Syst.* 111. 1. 388. No. 6.

Syntomis Quercûs, *Latr. Genera Crust. et Ins.* 4. p. 213.

Sphinx du Pissenlit, *Ingram Pap. d'Eur.*

HABITAT: Germany.

Upper Side. Antennæ black, filiform, with the tips white. Head and thorax black. Abdomen dark green, almost black; on the top, next the thorax, is a deep yellow spot like gold, and near the extremity a ring of the same golden yellow extends just below the sides. Anterior wings dark green; having six transparent spots, one next the shoulders, two in the middle, and three next the tips. Posterior wings of the same colour as the superior, with two transparent spots on them.

Under Side. Breast and abdomen dark green; on each side the breast are two golden yellow spots. All the wings are coloured and marked as on the upper side.

GLAUCOPIS FENESTRATA.

Plate XXV. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Zygænidæ, *Leach*.

GENUS. GLAUCOPIS, *Fabr.* Charidea, *Dalm.* Sphinx, *Linn.*

GLAUCOPIS FENESTRATA. Alis anticis nigris, maculâ magnâ discoidali fere ocellatâ fenestratâ, posticis fenestratis margine nigro, pedibus palisque coccineis. (Expans. Alar. 2 unc. 6 lin.)

SYN. Sphinx Fenestrata, *Drury, App. v. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ nearly black, and pectinated. Head and eyes black. Palpi small and long, and of a fine scarlet. Tongue spiral. Thorax blueish green, almost black. Abdomen dark brown. Anterior wings the same, the middle part being perfectly transparent like glass, wherein is a dark cloud which is joined to the anterior margin. Posterior wings small, transparent, with a dark brown narrow border running round their edges, which at the upper corners is broad where it becomes cloud-like.

Under Side. Breast dark brown. Legs and thighs scarlet, which colour extends along the middle of the abdomen, almost to the tail, where it becomes a little fainter, being crossed by the rings of the abdomen, which are black and very narrow. All the wings of the same colour as on the upper side.

SPHINX CINGULATA.

Plate XXV. fig. 4.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. SPHINX, *Auct.*

SPHINX CINGULATA. Alis anticis cinereo atroque undatis, puneto parvo discoidali; posticis nigro fasciatis, basi sanguineis, abdominis fasciis alternis interruptis sanguineis et atris. (Expans. Alar. 4 unc. 6 lin.)

SYN. Sphinx Cingulata, *Fabr. Ent. Syst. 111. 1. 395. No. 56.*

Sphinx Convolvuli var. *Drury, Append. vol. 2. (Exclus. Syn. Gmel. Linn. S. N. 2376. No. 6.) Abbot and Smith Ins. Georg. 1. tab. 32.*

HABITAT: St. Christopher's.

Upper Side. Antennæ white on one side, and brown on the other. Thorax dark brown, with several curved lines running across it from one shoulder to the other. The abdomen, on the upper part is beautifully encircled with five rings of rose colour, and six of black, extending to its sides, having on the top of it a line of a rusty brown, which runs from the base to the extremity. Anterior wings brown chesnut, marked with lighter and darker clouds, some of which are almost black; having a lighter spot near the middle, and not far from the anterior margin. Posterior wings at the base black, but along the external edges of a grey brown, the middle being occupied by three bars of red, ash, and faint rose colours, separated by three black waved lines crossing them from the anterior to the interior. Cilia brown spotted with white.

Under Side. Breast and abdomen ash-coloured; along the latter are five dark spots (the middle ones the largest) placed at the bottom of the five segments near the breast. Anterior wings dark hazel, immaculate. Posterior wings of the same colour along the anterior and external margins; but next the shoulders and inner edges are of a grey ash colour; a dark coloured line begins near the anal angle,

where it is almost black, and runs across the wing, ending at the middle of the anterior edge; from whence to the middle it resembles a row of arches joined together.

The caterpillar of this insect, according to Abbot and Smith, is brown, with four dorsal dark flesh-coloured lines, and a series of short lateral oblique cream-coloured marks united together over the legs. It feeds upon the sweet potatoe plant (*Convolvulus Batatas*, Linn.), and is sometimes frequent though the moth is rare. The chrysalis is chesnut, with a long curved tongue case, the extremity of which is recurved. It is often dug up with the potatoes. In Virginia one of these insects buried itself October 3rd, and came forth in the perfect state on the 30th of May; whilst one observed in Georgia went into the ground on the 20th of August, and came out the 11th of September.

This species was considered by Drury and Smith as a climatal variety of the European *Sphinx Convolvuli*. Fabricius, however, considered it distinct, and designated it by the specific name adopted above.

GLAUCOPIS POLYMENA.

Plate XXI. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Zygænidæ, *Leach*.

GENUS. GLAUCOPIS, *Fabr.* *Sphinx*, *Linn. Drury*.

GLAUCOPIS POLYMENA. Nigra, alis maculis luteis, anticis tribus, posticis duabus; abdomine cingulis coccineis. (Expans. Alar. fere 2 unc.)

SYN. *Sphinx Polymena*, *Linn. Syst. Nat.* 2. 806. No. 40. *Cram. Ins. t.* 13. f. D.

Zygæna Polymena, *Fabr. Ent. Syst.* 111. 1. p. 396. No. 34. *Gmel. Linn. S. N.* 2394. 40. (*Sphinx*.)

HABITAT: China.

Upper Side. Antennæ black and pectinated, being smallest at their extremities; between them is a white round spot placed on the front of the head; above them, on the neck, is a round spot of bright scarlet. Thorax black. The first segment of the abdomen scarlet; the two next are black, verged on their lower edges with a beautiful sky blue colour; behind this the abdomen is of a fine vermilion, separated by two small black lines, the extremity being black. Anterior wings dark brown, having next the shoulders a small spot of shining blue, and three spots of a deep yellow; the two largest of which appear as if divided by the tendons, which are black and run across them. Posterior wings dark brown, with two deep yellow spots; the smaller one near the shoulders, the other near the middle.

Under Side. Breast black, spotted with white at the base. The abdomen dark brown at the base, behind which is pale red tinged with white; the extremity dark brown. Anus pale red. The wings are the same colour as on the upper side.

SYNTOMIS CERBERA.

Plate XXVI. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Zygænidæ, *Leach*.

GENUS. SYNTOMIS, *Fabr.* Sphinx, *Linn. Drury*.

SYNTOMIS CERBERA Viridi-atra, alis anticis punctis sex fenestratis, posticis duobus, abdomine cingulis duobus sanguineis (postico latissimo).

SYN. Sphinx Cerbera, *Linn. Syst. Nat.* 2. 806. 38. *Cramer, tab.* 83. fig. F.

Zygæna Cerbera, *Fabr. Ent. Syst.* 111. 1. p. 391. No. 16.

Sphinx Cerbera, *Gmel. Linn. S. N.* 2393. 38.

Syntomis Cerbera, *Boisduv. Monogr. Zygæn. pl.* 7. f. 6.

HABITAT: Cape of Good Hope.

Upper Side. Antennæ and head black. Thorax and abdomen shining blueish green; the latter having on the middle three rings of scarlet extending from side to side, but not meeting underneath. Anterior wings dark green, with six transparent spots like glass on them; the smallest, near the base, is round; three others, placed next the external margin, are oblong; the other two, which are in the middle, are oval and triangular. Posterior wings dark green, with two transparent spots; the largest next the shoulders; the other, which is round and small, beyond the middle.

Under Side. Breast, abdomen, and legs shining mazarine blue, inclining to green; on the former is a small red spot, close to the shoulders of the superior wings. The hinder legs have one joint white. Wings of the same colour as on the upper side.

DEILEPHILA CHIRON.

Plate XXVI. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. DEILEPHILA, *Ochsenheimer*. Spectrum p. *Scop.* Sphinx p. *Linn.*

DEILEPHILA CHIRON. Alis anticis castaneis, fasciâ obliquâ pallidâ utrinque fusco marginatâ, posticis nigris maculis quinque albidis. (Expans. Alar. 3 unc. 6 lin.)

SYN. Sphinx Chiron, *Drury, App. vol.* 2.

HABITAT: Jamaica.

Upper Side. Antennæ and head chesnut; a flesh-coloured line encircles the eyes, running to the shoulders, where it becomes white. Thorax chesnut. Abdomen rather paler on the top; underneath very light clay colour. Anterior wings sorrel chesnut, having two faint oblique waved lines crossing them from the tips to the middle of the posterior edges, where is a small cloud the colour of blue clay, and next the shoulders is a small narrow cream-coloured mark. Posterior wings dark brown, with a row of yellow cream-coloured spots running from the anal angle towards the middle of the anterior margin.

Under Side. Breast and abdomen very pale clay colour. Anterior wings at the base pale clay-coloured, towards the middle darker; from thence to the tips prettily clouded with orange and clay-coloured marks, divided by dark lines, and many small dark brown spots. Posterior wings along the interior margin clay-coloured, and along the extreme part of the anterior edges the same; the remainder of the wings dull orange, faintly shaded and spotted with brown marks and dots.

ZYGÆNA? THETIS.

Plate XXVI. fig. 4.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Zygænidae, *Leach*.

GENUS. ZYGÆNA? *Fabr.* Anthrocera, *Scop.* Sphinx, *Drury*.

ZYGÆNA? THETIS. Cœrulea, thorace anticè rubro punctato, alis nigris, anticis apice, posticis disco, hyalinis.
(Expans. Alar. 1 unc. 6 lin.)

SYN. Sphinx Thetis, *Linn. Mantiss.* 1. 539.

Zygæna Thetis, *Fabr. Ent. Syst.* 111. 1. 391. No. 17. *Gmel. Linn. S. N.* 2393. 115. (Sphinx T.)

HABITAT: Jamaica.

Upper Side. Antennæ black. Head and thorax black. On the neck are two small scarlet spots just above the eyes, and one on each side below them. Abdomen silvery shining blue, having a triangular black mark at the base. Anterior wings dirty black, immaculate; tips whitish. Posterior wings dirty black, with a white discoidal transparent cloud.

Under Side. Breast and sides dirty black. Abdomen white; its sides and tip dirty black. Wings of the same colour as on the upper side.

MACROGLOSSA ZONATA.

Plate XXVI. fig. 5.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sesiidae, *Steph.*

GENUS. MACROGLOSSA, *Ochs.* Macroglossum, *Scop.* Sphinx, *Fabr. Drury*.

MACROGLOSSA ZONATA. Alis nigricantibus, anticis punctis tribus subapicalibus, abdominisque fasciâ albis.
(Expans. Alar. 2 unc. 3 lin.)

SYN. Sphinx Zonata, *Drury, App. vol. 2.*

HABITAT: St. Christopher's.

Upper Side. Antennæ dark brown, hooked at the extremities; the under sides being paler. Thorax and abdomen dark greyish brown; the extremity of the latter broad and hairy, with a white transverse central fascia; between which and the extremity are three small lateral white spots. Anterior wings very dark brown, with three transparent minute spots beyond the middle; above which, near the anterior margin, is a single black one. Posterior wings dark brown, immaculate.

Under Side. The middle of the abdomen at the base ash-coloured, extending about half way, narrowing gradually; the middle of each of the segments being the same. Posterior wings coloured as on the upper side; the posterior, along the interior margin to the shoulders, being ash-coloured.

SPHINX ALOPE.

Plate XXVII. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidae, *Leach*.

GENUS. SPHINX, *Auct.*

SPHINX ALOPE. Alis dentatis fuscis, strigis dentatis nigris, posticis fulvis apice latè nigris; abdomine nigro cingulis interruptis pallidis. (Expans. Alar. 4 unc. 3 lin.)

SYN. Sphinx Alope, *Drury, App. vol. 2. Cramer, 26. tab. 301. fig. G. Fabr. Ent. Syst.* 111. 1. 362. No. 20. *Gmel. Linn. S. N.* 2375. 62.

HABITAT: Jamaica.

Upper Side. Antennæ red brown above, white underneath. Head and thorax dark brown; head and thorax with a black dorsal line. Abdomen encircled with rings of brown and dark ash colour, divided on the top by a dark ash-coloured line running from the thorax to the extremity. Posterior wings dark brown coloured, having some dark irregular lines, almost black, crossing them from the anterior to the posterior margin, and a row of small black angular marks running along their external margin; these wings are a little dentated. Posterior wings yellow, with a deep black border.

Under Side. Abdomen dark ash-coloured. Anterior wings brown, spotted along their external edges with long yellowish spots. Posterior wings brown, with a deep border; the middle of the wings and abdominal edges being yellow; a narrow black indented line begins at the abdominal corners, and crossing the wings ends at the anterior margin below the middle.

Fabricius, on the authority of Dr. Pflug, states that this insect frequents the *Carica Papaya*. The larva is tailed, without hairs, the back cinereous anteriorly, with a broad fascia of a brown colour, ocellated in the middle and ending in a black spot. The chrysalis is brown, with red annuli and striæ.

SPHINX PINASTRI.

Plate XXVII fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. *SPHINX*, *Auct.*

SPHINX PINASTRI. Alis cinereis, anticis lineolis tribus confertis nigris; abdomine fusco, cingulis atris suprâ albo marginatis et dorso interruptis. (Expans. Alar. 3 unc. 9 lin.)

SYN. *Sphinx Pinastri*, *Linn. Syst. Nat.* 2. 892. No. 22. *Sepp. Ins.* 3. 23. t. 5. *Roesel. Ins. Belust.* 1. *Phal.* 1. t. 6. *Donov. Engl. Ins.* ix. 10. pl. 296. *Fabr. Ent. Syst.* 111. 1. 367. No. 35. *Gmel. Linn. S. N.* 2385. 22. *Stephens Illust. Brit. Ent. Haust.* 1. 121.

HABITAT: Germany (*Drury*). England, and other parts of Europe.

Upper Side. Antennæ white on one side, and brown on the other. Head and thorax brown grey; the latter at the base being ash-coloured, having a black line running on each side. Abdomen brown grey, encircled with rings of a dirty black, divided on the top by a broad line of brown grey, through which runs a black line from the base to the extremity. Anterior wings brown grey, with three short black lines in the middle of each wing; at the tips rises another irregular narrow black line, running towards the middle of the wing, and chequered with white and black. Posterior wings brown grey, immaculate, being a little paler towards the shoulders; the wings are entire. Cilia alternately black and white.

Under Side. The breast and abdomen are ash-coloured. All the wings brown grey, immaculate. Cilia spotted as above.

This insect is attached to the pine, and is consequently found in the great forests in Germany, and other parts of Continental Europe. This accounts for its scarcity in England, and for its having been occasionally found in the pine forests of Scotland by Dr. Leach and Mr. Wilson. The larva is described by Mr. Stephens as being entirely yellow in its first skin, in the second green with yellow stripes, in the third deeper green, with three longitudinal lemon-yellow lines on each side, and finally of a rich green with a

brown dorsal line; the sides with two deep yellow ones; the anterior and first segment of the body yellow, the latter spotted with black; the horn, which was previously straight, becomes curved and black. It feeds on various species of pine, as *Pinus abies*, *sylvestris*, *Strobus*, &c. The chrysalis is dark brown, changing to maroon; the tongue-sheath is short.

SPHINX ELLO.

Plate XXVII. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. SPHINX, *Auct.*

SPHINX ELLO. Alis subdentatis cinereis; posticis rufis margine nigro; abdomine pallido cingulis (dorso interruptis) nigris. (Expans. Alar. 3 unc. 6 lin.)

SYN. Sphinx Ello, *Linn. Syst. Nat.* 2. p. 800. No. 13. *Cramer, tab.* 301. fig. D. *Merian Surin. t.* 61. f. 2. *Fabr. Ent. Syst.* 111. 1. 362. No. 21. *Gmel. Linn. S. N.* 2375. 13.

HABITAT: St. Christopher's (*Drury*). Surinam (*Mad. Merian*).

Upper Side. Antennæ white on one side, and brown on the other. Head and thorax ash-coloured; the latter having some faint narrow dorsal and lateral black lines. Abdomen ash-coloured, encircled with black rings extending to its sides, divided on the top by an ash-coloured line. Anterior wings dentated and ash-coloured, having an irregular shade of black and dark brown running from the tips to the shoulders, and a few small black spots dispersed on different parts of the wings. Posterior wings red, with a black border. Cilia reddish white.

Under Side. Breast, thighs, legs, and abdomen ash-coloured. Anterior wings, in the middle, ferruginous; but toward the external edges and the tips dirty red brown. Posterior wings next the shoulders and interior margin ash-coloured, but in the middle of a reddish colour; along the anterior margin they are of a brown grey, and along the external margin they are of a dirty red brown. These wings are a little dentated.

SPHINX VITIS.

Plate XXVIII. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. SPHINX, *Auct.*

SPHINX VITIS. Alis anticis olivaceo-fuscis, fasciâ, vittâ lineisque pallidis; posticis cinereis fasciâ nigrâ margineque roseo. (Expans. Alar. 4 unc.)

SYN. Sphinx Vitis, *Linn. Syst. Nat.* 2. 801. No. 16. *Merian Surin. tab.* 47. f. 1. *Cram. Ins. tab.* 267. fig. C. *Fabr. Ent. Syst.* 111. 1. 369. No. 41. *Gmel. Linn. S. N.* 2380. 16. *Abbot and Smith, Ins. Georgia*, 1. t. 40.

HABITAT: Antigua, Jamaica, St. Christopher's (*Drury*). "In vitæ Americæ" (*Linn.*). "Magnolia glauca" (*Fabr.*). "Jussiaea erecta" (*Abbot and Smith*).

Upper Side. Head and thorax dark flesh-coloured; on the latter, near the neck, is a long spot of olive brown, with another on each side. Abdomen dark flesh-coloured, having two olive brown streaks above, extending from the base to the extremity, being intersected by narrow flesh-coloured annuli or

rings. The ground of the anterior wings is a fine olive brown; a flesh-coloured bar begins at the tips, and running parallel with the anterior margin at the middle of the wing, divides into two branches, one continues to the shoulder margin, the other terminates at the middle of the posterior margin; on the upper part of the bar is placed a small flesh-coloured mark, discoidal, the middle being black; near the tips arises also from the upper side a second smaller branch, which runs to the anterior edge, which, with the external margin, has a narrow border of a rusty clay colour. Posterior wings with their external edges bordered with red; above which is a black bar, extending from the anterior edge to the anal angle, where it is much fainter; the inner margin also red, with a large black patch thereon. The upper parts of the wings are of a blueish ash colour. Nerves pale.

Under Side. Breast, thighs, and abdomen dark flesh-coloured. The colours of all the wings on this side are faint, being principally of a clay colour; the inferior ones, next the abdominal edges, being tinged with red.

The caterpillar of this beautiful Sphinx is remarkable for having only a slight protuberance at the extremity of the body in place of the erect spine or tail, which is possessed by the majority of the caterpillars of the Sphingidæ. It is of a pale yellowish colour, with numerous slender transverse black lines, and white oblique lateral marks *directed towards the head*. Its food is very various. One, observed by Abbot, went into the ground on the 14th of August, and came out on the 7th of September; whilst another which went in on the 29th of September, did not come out until the 18th of July following. The moth is rare; but may occasionally be seen sucking the gourd blossoms in the evening. The chrysalis has a pointed tail, but is destitute of a porrected tongue-case.

THYREUS LUGUBRIS.

Plate XXVIII. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. *THYREUS*, *Swains. Zool. Illustr. vol. 1.*

THYREUS LUGUBRIS. *Alis brunneis, anticis strigis undatis parallelis punctoque subocellari atris.* (Expans. Alar. 2 unc. 9 lin.)

SYN. *Sphinx lugubris*, *Linn. Mant. 2. 537. Fabr. Ent. Syst. 111. 1. 356. No. 5. Gmel. Linn. S. N. 2372. 50. Abbot and Smith Ins. Georg. 1. t. 30. Swainson Zool. Illustr. 1st Series, vol. 1.*

HABITAT: *Antigua (Drury). Georgia (Abbot).*

Upper Side. Antennæ, head, thorax, and abdomen dark brown. The tail very broad and hairy. All the wings dark brown chesnut; having very few distinct marks or lines, except the anterior pair, which have a small black discoidal spot, and a very narrow line next the shoulders of a lighter brown, crossing them from the anterior to the posterior edges. The posterior wings are slightly, the anterior deeply, dentated.

Under Side. Thorax, legs, abdomen, upper and lower wings rather paler than on the upper side. On the anterior wings are two very faint brown lines, crossing them from the anterior to the posterior edges, situated between the middle and the external margin. On the posterior wings also are two small faint waved lines of a darker colour, beginning at the anterior edges and ending a little above the abdominal corners.

The caterpillar of this hawk-moth was found by Abbot on the Virginian Creeper. It went into the ground on the 18th of August, and the fly came out on the 11th of September. The tail of the male spreads like a fan. This is a very rare species; one was caught in the evening on a gourd blossom. It flew exceedingly swift, making a noise like a humble bee. The caterpillar is of a very pale greenish colour, with two dark dorsal lines, terminating at the base of the straight tail; the sides of the body are also ornamented with pale yellow oblique stripes, margined with brown. The chrysalis is chesnut, with a short point at the extremity of the body, and without any tongue-case.

DEILEPHILA TERSA.

Plate XXVIII. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. DEILEPHILA, *Ochs*. Eumorphæ p. *Hüb.* Sphinx p. *Fabr.*

DEILEPHILA TERSA. Alis anticis griseis, lineis nonnullis obliquis parallelis nigris; posticis nigris fasciâ maculari luteo-albâ. (Expans. Alar. 3 unc.)

SYN. Sphinx Tersa, *Linn. Mant. p.* 538. *Drury, App. vol.* 2. *Cramer, tab.* 397. *fig. C. Fabr. Ent. Syst.* 111. 1. *p.* 378. *No.* 69. *Gmel. Linn. S. N.* 2379. *No.* 71. *Abbot and Smith Ins. Georg.* 1 *tab.* 38.

HABITAT: Maryland, Jamaica, St. Christopher, Antigua (*Drury*). South America (*Fabricius*). Georgia (*Abbot*).

Upper Side. Head flesh-coloured; which colour, separating at the neck, runs on each side of the thorax to the abdomen. Thorax and abdomen dark clay colour. Abdomen pointed; the sides being of a yellower colour than the top. Anterior wings greyish olive brown; from the tips to the middle of the posterior margin run several narrow lines of lighter and darker colours, parallel with each other. Posterior wings, at the base, black; but along the external margin brown; having a row of narrow angular marks of a cream colour running from the anal angle to the anterior edges. Cilia white.

Under Side. Thorax and abdomen clay-coloured; paler on the middle than the sides. Wings red clay-coloured; the anterior brown in the middle, and the posterior having some faint waved lines crossing them; each wing having a row of faint small spots along their external margin.

The caterpillar of this insect, figured by Abbot and Smith, is of a pale green colour, with the three anterior segments elongated and attenuated in front, having seven beautiful white eye-like spots on each side, with a red pupil, and margined with black; the anterior ocellus being the largest. These ocelli are united by a lateral white line, terminating at the base of the straight red tail. It feeds upon the wild thyme (*Spermacoce Hyssopifolia*, Sm.) Some of them are stated by Abbot to be brown. One was observed by the same author to spin itself up on the 31st of July, from which the moth appeared on the 15th of August; whilst another which spun up on the 11th of September, remained in the chrysalis state until the 9th of May. When disturbed, the caterpillar contracts the anterior segments of the body.* The chrysalis is of a pale brown colour, freckled with darker marks. It is not provided with a porrected tongue-case.

* From the peculiar power of contraction and elongation possessed by these segments, and which is found in the caterpillars of other species of *Deilephila*, these insects have obtained the name of Elephant-hawk Moths.

SPHINX STRIGILES.

Plate XXVIII. fig. 4.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. SPHINX, *Auct.*

SPHINX STRIGILES. Alis integerrimis griseis, margine externo anticarum obscuro; posticis fulvis strigis tribus transversis fuscis. (Expans. Alar. 5 unc. 3 lin.)

SYN. Sphinx Strigiles, *Linn. Mant. p.* 538. *Cramer, tab.* 106. f. B. *Fabr. Ent. Syst.* 111. 1. 364. No. 26. *Gmel. Linn. S. N.* 2377. No. 66.

HABITAT: Jamaica.

Upper Side. Head, thorax, and abdomen fawn-coloured; having on each abdominal segment a semi-circle of a paler colour. A brown red spot is placed on each side the thorax, near the base of the upper wings, which are fawn-coloured; having a round spot of olive brown on each near the shoulders, and another on the middle of the posterior margin, between which and the anterior angle is a patch of a blueish brown; from this angle to the tip runs a small narrow border of yellow brown, with several short, faint, brown circular marks placed on different parts of the wing. Posterior wings pale orange; having three brown, narrow, waved lines crossing them in the middle, and with a narrow brown border.

Under Side. The mouth, thorax, thighs, abdomen, superior and inferior wings are all of a red clay colour. The border, along the external margin of the anterior wing, is of a much paler colour. Several reddish brown lines and marks are also placed on different parts of the wings.

SPHINX SATELLITA.

Plate XXIX. fig. 1. ♀.—fig. 2. ♂.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ. *Leach*.

GENUS. SPHINX, *Auctorum*.

SPHINX SATELLITA. Alis integris, fuscis badio griseoque variis, anticis puncto nigro ocellari sesquialtero maculâque triangulari ad angulum analem nigrâ; posticis basi griseis. (Expans. Alar. $4\frac{1}{4}$ unc. ♂.— $5\frac{1}{2}$ unc. ♀.)

SYN. Sphinx Satellita, *Linn. Mant. p.* 539. *Fab. Ent. Syst.* 111. 1. 370. No. 42. *Gmel. Linn. S. N.* 2301. 74. Sphinx Licaon, *Cramer.*?

HABITAT: Jamaica.

FEMALE.—*Upper Side.* Head and thorax pale olive brown, with dark brown dorsal and lateral lines; the latter edged with white, extending to the abdomen, where two small white streaks run obliquely across it. Abdomen light olive brown, paler on its sides; with two rows of dark brown dorsal spots, reaching almost to the extremity. Anterior wings olive grey; but from the middle of the anterior margin runs a shade of olive brown, ending at the external margin, and continuing towards the tips. Two small black discoidal spots, and a large squarish spot on the middle of the posterior margin of a very dark red brown; from whence to the shoulders extends a shade of paler brown. Posterior wings, next the shoulders, grey, but at the anal angle reddish ash colour; from whence runs a row of small black spots, which lose themselves in a very dark, brown, olive colour, occupying a large part of the wings near the exterior angle. Cilia pale brown.

Under Side. Thorax, thighs, and abdomen dark brown. Wings reddish brown, the posterior palest; and along the abdominal edges ash-coloured. There are very few marks of any sort observable on

this side, except a faint waved line which, crossing the superior and inferior wings, ends near the anal angle.

MALE.—*Upper Side.* Head, thorax, abdomen, and anterior wings sandy yellow. The shades and clouds, which in the female are of olive brown, in this are of fine red brown; the two discoidal black spots being distinct. Posterior wings, next the shoulders, grey, as in the female; but along the external margin sandy yellow.

Under Side. The breast, abdomen, thighs, superior and inferior wings are, as on the upper side, the same sandy yellow; the faint waved lines, crossing both superior and inferior wings, being rather more conspicuous than in the female.

DEILEPHILA EUPHORBIAE.

Plate XXIX. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidae, *Leach*.

GENUS. DEILEPHILA, *Ochs. Steph. &c.* Eumorphæ, *Hübner*. Sphinx, *Linn.*

DEILEPHILA EUPHORBIAE. Alis anticis virescentibus vittâ latâ luridâ maculâque disci virescente, posticis nigris fasciâ margineque exteriori roseis, abdomine cingulis (interruptis) albis. (Expans. Alar. 2 unc. 10 lin. ♂. 3 unc. 1 lin. ♀.)

SYN. Sphinx Euphorbiæ, *Linn. Syst. Nat.* 2. 802. *Donov. Brit. Ins.* 3. pl. 91. 92. *Fabr. Ent. Syst.* 111. 1. 367. No. 37. *Gmel. Linn. S. N.* 2383. 19. *Haworth Lep. Brit.* 61.

The Spotted Hawk Moth, *Harris Aurelian*, pl. 44. f. a. c.

Deilephila Euphorbiæ, *Ochs. Schmett.* iv. p. 43. *Curtis Brit. Ent.* 1. pl. 4.

HABITAT: Holland, Germany (*Drury*). England, and other parts of Europe.

Upper Side. Head and thorax olive, having a white stripe on each side, which, beginning at the palpi and running across the shoulders, ends at the base of the abdomen; the olive colour extending along that part to its extremity. The first segment of the abdomen is black, the second cream colour, the remainder alternately cream colour and olive. The superior wings are of a flesh colour, having a narrow olive bar beginning at the tips, which, crossing them, ends at the posterior margin, widening gradually; an olive patch, the size of a small pea, is also placed on each next the shoulders, and another on the middle near the anterior edge. Cilia cream colour. The posterior wings black at the base; below which is a rose-coloured bar crossing them, next that is a narrow black indented bar, and beneath these the wing is flesh-coloured, with white cilia.

Under Side. The breast rose-coloured. The abdomen flesh-coloured, with cream-coloured rings. Wings faint rose and flesh-coloured; the anterior having a black spot in each, near the middle, and not far from the anterior edge.

Since the days of *Drury* this handsome insect has been ascertained to be a native of our island. It has, however, until lately been deemed one of the rarest as well as most beautiful species in the rare family to which it belongs. Entomologists are indebted not only for a considerable number of specimens, but, what is more interesting, for a knowledge of the habits of the insect to *William Raddon, Esq.* the celebrated engraver, by whom an interesting notice has been published in the *Entomological Magazine*. It feeds upon the sea

spurge (*Euphorbia paralias*), which grows in plenty on the sand hills in the neighbourhood of Barnstaple and Braunton Burrows, in Devonshire. These sand hills are of great extent, and, as suggested by Mr. Curtis, must have been collected by the winds and storms to which they are constantly exposed. During the winter the whole soil is frequently removed, so as completely to alter the surface of the country; a great number of the pupæ must consequently be destroyed or buried at a considerable distance below the surface, where probably they lie hid until they are brought to light and life by the influence of the elements. These circumstances account for the great irregularity in the appearance of the insects. In 1814, for instance, they were so plentiful that Mr. Raddon found not less than one hundred minute larvæ upon an armful of spurge, which he had cut at dusk the preceding evening. The rarity of the insect is also increased by the difficulty of rearing it. The late Mr. Fuseli, the royal academician, who was a zealous entomologist, was enabled only to obtain one moth from twenty chrysalides. The larvæ are full grown in September, and the moth appears in the following June.

DYNASTES HERCULES.

Plate XXX. fig. 1. ♂.—2. ♀.

ORDER: Coleoptera. SECTION. Lamellicornes. FAMILY: Dynastidæ, *Mac Leay*.

GENUS. DYNASTES, *Mac Leay*. *Geotrupes*, *Fabricius*. *Scarabæus*, *Latreille*, *Linnaeus*, &c.

DYNASTES HERCULES. Thoracis ♂ cornu incurvo longissimo subtus barbato utrinque unidentato, capitis recurvato dentato. (Long. Corp. 5 unc. 9 lin. ♂.)

SYN. *Scarabæus Hercules*, *Linn. Syst. Nat.* 2. 541. 1. *Oliv. Ins.* 1. 3. b. 1. tab. 1. f. 1. tab. 23. fig. 1. *Fabr. Ent. Syst.* 1. p. 2. No. 1. *Naturalists' Library, Beetles*, pl. 11. *Edwards, Birds*, t. 334. *Gronov. Zooph.* 412. *Johnst. Ins.* t. 16. f. 1. *Petiv. Gaz.* t. 70. f. 1. *Roesel. Scar.* tom. iv. t. 5. f. 3. *Pal. Bauv. Ins. d'Afr. & d'Amer. Col. Pl.* 1. c. f. 1. *Marcgr. Braz.* 247. fig. 3.

HABITAT: Gaudaloupe (*Drury*). South America.

Male. Black, except the elytra, which are of an olive colour; having a number of black spots on them of different shapes and sizes, varying considerably in different individuals. Thorax, above, smooth, and shining, the sides covered with a multitude of small punctures. Its front is produced into a long shining horn, near three inches in length, which gradually bends downwards from the base to the extremity, where it is slightly forked; the under side being covered with short fine hairs of a yellowish colour, resembling the pile of velvet, and having about two inches from its extremity a strong short spine placed on each side. The head is furnished with another horn, about two-thirds the length of the first, sharp and thin on its upper side, and towards the end bending upwards; having on the upper edge, near the middle, three or four teeth or strong spines, and another near the extremity. Eyes shining, red brown. Tibiæ armed with spines, particularly the anterior pair, which have four; three near the tips, and one near the middle. The middle and hinder tibiæ have each two strong spurs, and several smaller spines, surrounded with hair on the other parts. The edge of the abdomen is covered with a row of dark orange-coloured hairs. Several other parts of the body, joints, &c. are also clothed with the same

coloured hairs. Each of the unguis has a little tuft of strong hairs issuing from the extremity of the terminal joint of the tarsi.

Female. This sex is unfurnished with horns. The elytra are the same colour as in the male, not spotted so much, if at all, and more rugose. Thorax black, with a few yellowish spots, formed like stars or rays on it. In other respects it resembles the male.

Drury adds to this insect the following remark—"I have observed many species of beetles whose males have been furnished with horns, either on the head or thorax, but in which the females have none, but have those parts quite smooth and plain; and my observations incline me strongly to think that this rule subsists in every one of them, through the whole class. The instances I could bring in support of this opinion are too many to be admitted in this place."

The circumstance observed upon in the preceding note is certainly very interesting in a physiological point of view. In quadrupeds we find both sexes of cornuted species armed with horns; but in insects almost universally the males alone are provided with these appendages. It is also worthy of remark, that although in the majority of insects the females considerably surpass the males in size, yet in those species in which the males are cornuted, the females are almost invariably smaller than their partners.

Burmeister lays it down as a rule, that with regard to the differences of the sexes, their whole character may be thus distinguished; viz. that the male displays a preponderance of evolution, and the female a preponderance of involution; and observes, "that some beetles have processes upon the head and thorax, which, like the mandibles, can meet, like tongs, and thus serve as a weapon. This is asserted of *Hercules* and its large comrades." This opinion as to the uses of these horns can, however, scarcely be maintained, since the number of species in which the horns really meet is very few. Kirby and Spence observe, "What may be the use of these extraordinary appendages to the males, has not yet been ascertained. Whether the individuals of this sex are more exposed to the attack of birds and other enemies, in consequence of being more on the wing than the females, and are therefore thus provided with numerous projecting points of defence, is a question worth considering." It is also to be observed that these appendages, instead of being deciduous, as in many of the higher animals, are in insects component parts of the external skeleton.

There are a few exceptions to the observation of Drury; thus in the Lamellicorn genus *Hoplites* Dej. Catal. (*Scarabæus* Pan,) the females are cornuted as well as the males; and in the genus *Osmia*, belonging to the section of wild bees, *Dasygastres*, Latr., the females alone have the head furnished with two porrected horns.

BUPRESTIS (CHALCOPHORA) VIRGINIENSIS.

Plate XXX. fig. 3.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Buprestidæ.

GENUS. BUPRESTIS, *Linn.* SUBGENUS. Chalcophora, *Solier.*

BUPRESTIS (CHALCOPHORA) VIRGINIENSIS. Thorace lato fusco, punctis cupreis; elytris serratis atris, maculis cupreis, saturâque metallicâ. (Long. Corp. 1 unc. $1\frac{1}{2}$ lin.)

SYN. Buprestis Virginiensis, *Drury, App. vol. 2. Herbst. Col. ix. p. 114. 63. t. 148. f. 1.*

Buprestis Virginica, *Linn. (Gmel.) 1. iv. p. 1940. No. 110. Rossi (Hellw.) Fn. Etr. 1. p. 211. not.*

HABITAT: Virginia.

Head small and broad. Antennæ about the length of the thorax, and small. Thorax broad and rugged, having the elevated parts of a dark coppery colour; but the depressed ones lighter, covered with very small punctures, and joining close to the wing-cases. Scutellum very small and triangular. Elytra of the same colour with the thorax; the dark parts in the figure being those that lie highest. They are margined on the sides and suture, extending even with the anus; which near their edges are slightly serrated. Under side shining and coppery, but on the sides with a tincture of flesh colour. Legs the same; with two tibial spurs.

GOLIATHUS GIGANTEUS.

Plate XXXI. fig. 1.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. GOLIATHUS, *De Lamarck.* Cetonia, *Oliv.* Scarabæus, *Linn, &c.*

GOLIATHUS GIGANTEUS. Thorace piceo, nudo, holosericeo-albo lineato; elytris glaucis, clypeo porrecto bifido. (Long. Corp. 4 unc. 3 lin.)

SYN. Goliathus Giganteus, *Kirby in Introd. to Ent. vol. 3. p. 33. v. 4. p. 493.*

Scarabæus Goliathus, *Linn. Mant. 5. 30.*

Cetonia Goliata, *Fabr. Ent. Syst. 1. 2. p. 124. 1.*

Cetonia Goliathus, *Olivier, 1. No. 6. pl. 5. f. 33.*

Goliathus Magnus, *Naturalist's Library, Beetles, pl. 16.*

Goliathus Africanus, *De Lamarck Anim. sans Vert.*

HABITAT: Western Africa, near the Equinoctial line.

Head, above, flesh-coloured; beneath, black; about three-fourths of an inch in length, terminating in two blunt, obtuse, and irregular horns. Two other thick and jagged horns also arise from its sides, much shorter than the former. Its breadth at the base is half an inch; having a small projecting ridge running along the middle, from thence to the extremity, at the base of the horns. Thorax an inch and a half long, being principally black; but along the sides is flesh-coloured. It has also five narrow and irregular waved lines of a flesh colour running from the anterior to the posterior edges; one of which, being in the middle of the thorax, is narrower than the rest; the two next this terminate at the posterior edges in a fine rose colour; these next the lateral edges are broadest, having likewise a patch of rose colour next the wing-cases. About the middle of the thorax, these external lines separate and divide, continuing so almost to the anterior edges, where they again unite. The under part of the thorax is flesh colour; but in the middle of a yellowish brown. The scutellum is triangular and black; with a clear white central oblong mark truncated in front. Elytra beautiful chocolate-coloured, and

covered with a great number of short fine hairs, resembling the pile on velvet; the anterior part, with a narrow and indented margin, of a cream colour, also surrounding the scutellum. The elytra are two inches broad at the base. Legs very dark green colour, almost black. Intermediate and posterior femora and tibiæ with dark yellow hairs. Abdomen very dark green, furnished on the sides and edge with dark yellow hairs. Sternum rather long.

This magnificent insect may be regarded as one of the rarest species figured in these Illustrations. Drury states, that the specimen here represented was brought from Africa by Mr. Ogilvie, surgeon of His Majesty's ship the *Renown*, being found floating, dead, in the river Gaboon, opposite Prince's Island, near the equinoctial line. Nearly seventy years have elapsed since the insect was first described, and yet the insect remains, as far as my knowledge extends, unique.* It would appear that the specimen either belonged to or passed into the hands of Dr. Hunter after the death of Mr. Drury, for Fabricius describes the species with a citation of the museum of Dr. Hunter alone; and Olivier's figure was taken from the specimen whilst it was in that gentleman's possession. After his decease it passed, with his collection, by bequest, into the possession of the University of Glasgow, where it now forms one of the most interesting objects in the Hunterian Museum. Joseph Hooker, Esq., son of Sir W. Hooker, the highly distinguished botanist of Glasgow, tells me that the individual in question was picked up by a sailor in the river above mentioned, and that it is stated in the MSS. of Dr. Hunter that it cost Mr. Drury £10. In the Catalogue of the Insects of Mr. Drury, which were sold by auction at the Natural History Sale Rooms in King Street, Covent Garden (now occupied by Mr. J. C. Stevens), on the 23rd of May, 1805, and two following days, the 95th lot is described as "*Scarabæus Goliathus, var.*" Whence it would appear that the insect here figured was not in the possession of Mr. Drury at his decease, and that he only possessed the insect figured in the 3rd volume of these Illustrations, pl. 40, which evidently on the authority of Fabricius he had regarded as a variety only of the specimen here figured.

The genus *Goliathus* is exceedingly interesting, not only on account of the gigantic size and singular form of the species of which it is composed, but also from the geographical range of the group. Mr. Kirby observes upon this subject, "Mr. W. S. Mac Leay has remarked to me that *Goliathus* Lam. appears to belt the globe, but not under one form. The types of the genus are the vast African *Goliaths* (*G. giganteus*, &c.), which, as well as *G. Polyphemus*, and another brought from Java by Dr. Horsfield, have, like *Cetonia*, the scapulars interposed between the posterior angles of the prothorax and the shoulders of the elytra, while the South American species (*G. micans*,† &c.) have not this projection of the scapulars; in this resembling *Trichius*; Mr. Mac Leay further observes, that the

* Since this was written, I have been favoured by Mr. Mac Leay with an inspection of his magnificent collection, which possesses a *Goliathus*, nearly resembling the insect here figured, and which that gentleman considers as a variety of this. It is, however, considerably smaller, and the horns of the head are not so much developed.

† *Goliath. micans* is an inhabitant of Africa, and not of South America, it is figured in the 2nd vol. of these Illustrations, pl. 32.

female of the Javanese Goliathus is exactly a Cetonia, while that of the Brazilian is a Trichius."—*Introd. to Entomology*, vol. 4. p. 494.

Since the publication of this passage, the genus Goliathus has undergone a considerable revision; the South American species, *Cetonia Ynca*, *Fabr. barbicornis*, *Mac Leay*, &c., have been separated from the genus by Saint Fargeau and Serville in the *Encyclopédie Méthodique*, under the generic name of *Ynca*, and the Javanese species above noticed (*Gol. Rhinophyllus** *Wiedemann*) is stated by Latreille in the *Règne Animal*, 2nd edition, not to belong to the genus Goliathus, but to that of Cetonia. The genus is thus restricted to the African species,† with the exception of a Mexican insect which Dejean has named Goliathus Hoffneri. The genus *Ynca* may thus be regarded rather as a geographical sub-genus, or type of form belonging to and representing the African species of Goliathus.

DIAPREPES SPENGLERI.

Plate XXXII. fig. 1.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Brachyderides.

GENUS. DIAPREPES, *Schönherr*. *Chlorima*, *Dej.* *Curculio*, *Linn.* &c.

DIAPREPES SPENGLERI. Niger, thorace albo-squamoso, elytris squamositate flava vestitis, saturâ, margine striisque tribus elevatis, nudis, nigris, notatis. (Long. Corp. 7 lin.)

SYN. *Curculio Spengleri*, *Linn. Syst. Nat.* 1. 2. 609. 32. *Fabr. Syst. Eleuth.* 2. 532. No. 149. *Oliv. Ent.* V. 83. 311. No. 345. t. 2. f. 15. *C. T.* 20. f. 254. *Herbst. Col.* 6. t. 68. f. 11. § *T.* 69. f. 1. *Schönh. Syn. Ins. Curcul.* 2. p. 8. No. 1.

Curculio Aurifer, *Drury, App.* vol. 2.

HABITAT: Jamaica.

Head black, long, and rostrated; as long as the thorax, which is also black. They are both striped underneath with streaks of a shining, golden, green colour. Scutellum very small. Elytra dark brown, extending very low down the sides, and terminating in a point, double margined. The abdomen dark brown, and, with the wing-cases, adorned with many oblong spots or streaks, of a golden green colour. Femora simple, and dark brown. Tibiæ hairy, particularly within. Underside of the tarsi brown yellow.

The golden spots, or streaks, on this insect vary very much; in some individuals being ash-coloured, some blue, and in others nearly white. The colour also of the wing-cases in some is almost black, in others of a red brown.

* The female of this insect and two other new species of Goliathus, are described by M. L. Buquet, in the *Annales de la Société Entomologique de France*, for 1835 and 1836.

† Hence I have not adopted De Lamarck's specific name *Africanus*, which is of course applicable to all the species.

COPRIS MOLOSSUS.

Plate XXXII. fig. 2.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ.

GENUS. COPRIS, *Geoffroy*. Scarabæus, *Linn.*

COPRIS MOLOSSUS. Thorace retuso bidentato, utrinque impresso; clypeo lunato unicorni integro, elytris lævibus. (Long. Corp. 2 unc.)

SYN. Scarabæus Molossus, *Linn. Syst. Nat.* 1. 11. p. 543. No. 8. *Fabricius Ent. Syst.* 1. p. 51. No. 167. *Olivier*, 1. 3. t. 5. f. 37. ♂. t. 4. fig. 25. *De Geer. Ins.* 1. t. 32. f. 2. *Schönherr Syn. Ins.* p. 43.

HABITAT: China.

Entirely black. Head broad and thin, rounded in front and margined; having a strong erect horn, near half an inch long. Thorax margined, and much elevated, terminating upwards in an high ridge, whose sides are furnished with two short horns, varying very much in their length (the females being entirely hornless); it is also, as well as the head, regularly covered with innumerable small pustules, which are scarce visible to the naked eye. Scutellum obsolete. Elytra margined, short, and almost smooth. Femora broad, hairy, and strong. Tibiæ with strong spurs. Ungues very small, scarcely visible.

PHILEURUS DIDYMUS.

Plate XXXII. fig. 3.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ.

GENUS. PHILEURUS, *Latreille*. Geotrupes, *Fabr.* Scarabæus, *Linn.*

PHILEURUS DIDYMUS. Depressus, thorace fossulâ excavatâ, capite tricuspidè, elytris striatis. (Long. Corp. 2 unc.)

SYN. Scarabæus Didymus, *Linn. Syst. Nat.* 1. 11. p. 545. No. 19. *Fabr. Ent. Syst.* 1. p. 20. No. 61. *Oliv. Ent.* 1. 3. p. 42. No. 46. t. 2. fig. 9. *Schönherr Syn. Ins.* 1. p. 19. No. 85. *Pal. Bauv. Ins. Col. pl.* 16. f. 3.

HABITAT: (— ? *Drury*). America (*Fabricius*).

Head, black, small, and triangular, having three tubercles issuing from it, of which the anterior is pointed, the others blunt. Thorax black, which is the general colour of the insect, rounded, smooth, and margined, having an impression in front, with a short tubercle situated on it near the edge; from whence runs a hollow groove or channel to the posterior margin. Scutellum small. Elytra shining, margined and furrowed. Abdomen smooth and shining, without hair. Tibiæ furnished with spines, as are the first joints of the middle and posterior tarsi.

BRACHYCERUS GLOBOSUS.

Plate XXXII. fig. 4.

ORDER: Coleoptera. SECTION: Rhyneophora. FAMILY: Curculionidæ. SUBFAMILY: Brachycerides.

GENUS. BRACHYCERUS, *Fabr.* Curculio, *Linn. &c.*

BRACHYCERUS GLOBOSUS. Ovatus niger, rostro varioloso, subcarinato, medio bifoviolato, basi bi-tuberculato, thorace utrinque spinoso, quinque sulcato, postice truncato, elytris lævibus. (Long. Corp. 9 lin.)

SYN. Curculio Globosus, *Drury, App. vol.* 2. *Fabr. Syst. Eleuth.* 2. 413. No. 6. *Oliv. Ent. V.* 82. p. 47. No. 6. t. 2. f. 10. *Schönh. Syn. Ins. Curcul.* 1. 392. No. 9.

HABITAT: Cape of Good Hope.

Head black, long, and rough above. Antennæ short, gradually increasing in size from the base. Thorax black, and very rough; each side terminating in a thick spine or tubercle. Elytra black, smooth, and round, and reaching so far down the sides of the abdomen as almost to meet underneath, being rather longer than the head and thorax. Femora and tibiæ partly black, and partly of a dirty orange; being covered in several parts with a kind of pile of the colour last mentioned. Scutellum obsolete. Each of the unguis furnished with a spine.

HIPPORHINUS VERRUCOSUS.

Plate XXXII. fig. 5.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Entimides.

GENUS. HIPPORHINUS, *Schönh.* Bronchus, *Germer.* Curculio, *Linn.* &c.

HIPPORHINUS VERRUCOSUS. Elongato-ovatus niger, æneo-micans, rostro quasi abscisso, quinque sulcato, thorace confertim tuberculato, elytris seriato-tuberculatis apice singulatim verrucâ crassâ anctis. (Long. Corp. 1 unc. 3 lin.)

SYN. Curculio Verrucosus, *Linn. Syst. Nat.* 12. p. 618. No. 90. *Fabr. Syst. Eleuth.* 2. 534. No. 161. *Herbst. Col.* 6. 308. t. 84. fig. 6. *Schönh. Syn. Ins. Curcul.* 1. 481. 27.

HABITAT: Cape of Good Hope.

General colour brassy black. Head long, and furnished with a thick rostrum, whereon are placed the antennæ. Thorax rounded, and regularly covered with small pustules. Head and thorax almost the length of the elytra, which are long, brassy, and covered with several rows of tubercles; some being small and round, others larger and oblong; they extend very deeply down the sides of the abdomen, and at their extremities terminate in two swellings. Scutellum obsolete. Femora simple. Posterior tibiæ very crooked.

LAMIA (STERNOTOMIS) PULCHRA.

Plate XXXII. fig. 6.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* &c. Cerambyx p. *Linn.* &c. SUBGENUS. Sternotomis, *Percheron.*

LAMIA (STERNOTOMIS) PULCHRA. Nigra, thorace transversé fulvo trifasciato, elytris fulvo maculatis et variegatis, maculis interdum viridi-cinetis. (Long. Corp. fere 1 unc. 3 lin.)

SYN. Cerambyx Pulcher. *Drury, App. vol.* 2. (nec C. pulcher Fabr. qui ad C. mirabilem *Drurii* pertinet.)

Lamia blanda, *Schönh. Syn. Ins.* 3. 373.

Lamia ornata, *Pal. Bauv. Ins. d'Afr. et d'Amer. Col. Pl.* 37. f. 1.

Lamia regalis, *Fabr.? Syst. Eleuth.* 2. 286.

HABITAT: Jamaica.

Head orange colour, encircled with black stripes. Antennæ black, being a little longer than the insect. Thorax orange-coloured, encircled with black rings; having a single spine on each side. Elytra with orange-coloured clouds and spots on them, separated by black partitions, some being margined with green. Abdomen orange-coloured, the middle being of a dirty green. Femora simple, dark green. Tibiæ the same.

CETONIA AURATA, var. γ .

Plate XXXIII. fig. 1.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. CETONIA, *Fabricius*. Scarabæus, *Linn.*

CETONIA AURATA. Segmento abdominis primo lateribus unidentato, elytris lineolis transversis albis. (Long. Corp. 9 lin.)

SYN. Scarabæus Pallidus, *Drury, App. v. 2. Herbst. Col. 111. p. 247. 35. tab. 31. fig. 2.*

Cetonia Aurata, *Dufschm. Fn. Aust. 1. p. 166. 3. Schonh. Syn. Ins. 111. p. 119. No. 37. γ .*

HABITAT: Smyrna (*Drury*).

General colour above, rusty copper; beneath, shining purple. Thorax smooth, margined, and narrow in front. Elytra margined, and near their extremities a little protuberant. On the first joint of the abdomen are two scales lying close under the hinder thighs, which are thin and sharp on their edges, but next the body are thick and strong.* The breast is a little hairy. Tibiæ dentated and hairy, except the fore ones. Each of the tibiæ with two spurs.

CETONIA FASCICULARIS.

Plate XXXIII. fig. 2.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. CETONIA, *Fabricius*. Scarabæus, *Linn.*

CETONIA FASCICULARIS. Thorace lineis quatuor albis, elytris viridibus, abdominis incisuris barbatis. (Long. Corp. 1 unc.)

SYN. Scarabæus Fascicularis, *Linn. Syst. Nat. 1. 11. p. 557. 75.*

Cetonia F. *Fabricius Syst. Eleuth. 2. p. 144. 45. Olivier Ent. 1. 6. p. 16. 12. t. 11. f. 108. Schonh. Syn. Ins. 3. 126. 67. Petiv. Gazoph. t. 8. f. 6. Roesel. vol. 2. tab. B. f. 6.*

HABITAT: Cape of Good Hope.

Head black, small, and quadrangular. Antennæ black. Thorax black, smooth, and shining: with a white margin on its sides, and two white lines running from the neck to the posterior edge, being placed nearly at equal distances. Scutellum triangular, black, and shining. Elytra dark green. Each joint of the abdomen is covered with tufts of orange-coloured hairs on its sides. Femora and tibiæ, particularly the fore ones, hairy. The middle of the breast and abdomen is black and shining. Anterior tibiæ with four spines and teeth; the middle ones with six, and the hind ones with five.

* These scales, which Drury in his description called "the abdominal scales," are the dilated trochanters of the posterior pair of legs.

CETONIA CAPENSIS.

Plate XXXIII. fig. 3.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. CETONIA, *Fabricius*. Scarabæus, *Linn.*

CETONIA CAPENSIS. *Rufa hirta*, punctis albis adspersa. (Long. Corp. 10 lin.)

SYN. Scarabæus Capensis, *Linn. Syst. Nat.* 1. 11. p. 556. 73. *Fabr. Syst. Eleuth.* 11. p. 144. 48. *Olivier Ent.*

16. p. 27. 28. t. 6. 38. a b. *Herbst. Col.* 111. tab. 29. f. 12. *Schönh. Syn. Ins.* 111. 127. 71.

Scarabæus albo punctatus, *De Geer Ins.* vii. p. 640. 40. t. 48. f. 2.

HABITAT: Cape of Good Hope.

Head margined, black, and nearly quadrangular. Antennæ black. Thorax margined, and of a dark chocolate colour; which, with the elytra and scutellum, are hairy, and embellished with a great number of white spots. The latter is black and shining. Elytra fine chocolate-coloured, and faintly margined (the suture being black), not covering the anus. The under part of the insect is covered with pale clay-coloured hairs; but on the fore femora, and next the head, the hairs are browner.

CETONIA FASTUOSA.

Plate XXXIII. fig. 4.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. CETONIA, *Fabricius*. Scarabæus, *Linn.*

CETONIA FASTUOSA. *Ænea nitidissima*, immaculata. (Long. Corp. 1 unc.)

SYN. Cetonía Fastuosa *Fabr. Syst. Eleuth.* 11. p. 137. 10. *Panzer Faun. Ins. Germ.* xii. 16.

Cetonía Aurata var. *Olivier Icon.* 6. tab. 1. 1. f. 1. f.

Scarabæus æruginosus, *Drury*, p. 72. (Exclus. *Syn. Linn.*)

HABITAT: Smyrna (*Drury*). South of Europe (*Fabricius*).

Entirely shining golden green-coloured, except the antennæ, which are blackish. Head margined, small, and quadrangular. Thorax smooth and margined. Scutellum triangular. The elytra margined, having two little swellings near the extremities, and not extending beyond the anus. The breast and abdomen are smooth. Mesosternum extending beyond the middle thighs. Tibiæ armed with spines at the tips, and the fore ones deeply dentated.

GYMNETIS NITIDA et var.

Plate XXXIII. fig. 5. 6.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. GYMNETIS, *Mac Leay*. (*Horæ Ent.* 1. p. 1. p. 152.) Scarabæus, *Linn.*

GYMNETIS NITIDA. *Glabra viridis*, thoracis et elytrorum marginibus testaceis, tibiis laud dentatis, capite spinâ recumbente. (Long. Corp. fere 10 lin.)

SYN. Gymnetis Nitida, *Mac Leay Horæ Ent.*

Cetonía Nitida, *Fabr. Syst. Eleuth.* 11. p. 139. 24. *Olivier Ent.* 1. 6. p. 18. 14. t. 3. f. 16. § tab. 7.

f. 56. a, b, c.

Scarabæus N. *Linn. Syst. Nat.* 1. 11. p. 552. No. 51. *De Geer*, vol. 14. t. 19. f. 8, 9.

HABITAT: Antigua, St. Christopher's, Jamaica, Maryland, New York, Virginia, &c. (*Drury*).

Head green, small, quadrangular, and margined. On the front is a tubercle, like a short thick horn; in the middle is another lying flat. Thorax margined, and of a dark green colour, but round the sides of a dirty clay colour. Elytra faintly margined; in some specimens being of a dark green, with a dark orange border on the sides; in others almost entirely of a dark orange, and in others party-coloured. Thorax terminating between the wing-cases, like an obtuse angle; but a microscope discovers something like a scutellum. Breast and abdomen shining green, and not hairy. The femora and tibiæ clay-coloured; but when held in particular positions, seem of a shining green. Posterior trochanters distinct.

MACRASPIS TETRADACTYLA.

Plate XXXIII. fig. 7.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Rutelidæ.

GENUS. MACRASPIS, *Mac Leay*. *Cetonia*, *Fabr.* *Scarabæus*, *Linn.*

MACRASPIS TETRADACTYLA. *Atra*, scutello elytris dimidio brevior, pedibus triunguiculatis, pollice fixo. (Long. Corp. circ. 1 unc.)

SYN. *Scarabæus Tetradactylus*, *Linn. Mant.* 530. *Sloane Jamaica*, t. 237. f. 2.

Cetonia T. *Fabr. Syst. El.* 11. p. 151. 80. *Olivier Enc.* 1. 6. p. 74. 93. t. 2. f. 8. & t. 7. f. 53.

HABITAT: Jamaica.

Entirely deep shining black. Front of the head margined, from whence underneath appear two lips. Thorax margined. Elytra not margined, nor covering the anus. Scutellum remarkably large and long, reaching half way down the wing-cases. Posterior trochanters distinct. Sternum long. Tibiæ dentated, and armed with spines, particularly at the tips; tarsal joints also furnished with spines. Ungues composed of two principal hooks, which divide and separate as usual; but one has an immoveable lesser hook within it, and likewise a long spine fixed to the last tarsal joint of equal length with the hooks, as shewn in the figure near the insect.

GYMNETIS LANIUS.

Plate XXXIII. fig. 8.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. GYMNETIS, *Mac Leay*. *Scarabæus*, *Linn.* *Cetonia*, *Fabr.*

GYMNETIS LANIUS. *Livida*, thorace punctis duobus, elytris maculis plurimis nigris, sterno antice cornuto. (Long. Corp. fere 1 unc.)

SYN. *Scarabæus Lanius*, *Linn. Syst. Nat.* 1. 11. p. 557. No. 77?

Cetonia L. *Fabricius Syst. El.* 11. p. 141. 34. *Olivier Ent.* 16. p. 19. 15. t. 2. f. 4. *Sloane Jamaica*, 11. tab. 237. f. 7. 8?

HABITAT: Jamaica.

Head quadrangular, with a black margin. Antennæ brown. General colour dirty clay. Thorax faintly margined, terminating between the wing-cases in a blunt angle, having four black spots on the top near the head. Elytra with a great number of black spots of different shapes sprinkled all over them. Scutellum concealed. Femora hairy. Tibiæ the same, except the fore ones; all of which are party-coloured, being at the base clay colour, and at the tips black. The tarsi and ungues black. Posterior trochanters large and strong. Sternum long, and inclined from the body.

DYNASTES SATYRUS.

Plate XXXIV. fig. 1. ♂.—2. ♀.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ.

GENUS: DYNASTES, *Mac Leay*. Geotrupes, *Fabricius*. Scarabæus, *Linn.* &c.

DYNASTES SATYRUS. Thorace inermi antice truncato; capitis cornu recurvo capite longiori ♂; clypeo tuberculato, thorace plano. (Long. Corp. 1 unc. 3 lin.)

SYN. Geotrupes Satyrus, *Fabr. Syst. Eleuth.* 1. 15. No. 49.

Scarabæus S. *Fabr. Spec. Ins.* 1. 12. No. 42. *Olivier Ent.* 13. p. 39. t. 11. f. 94. a. b.

Scarabæus Jamaicensis, *Drury, App. vol. 2.* *Jablonsky, Nat. S.* 11. p. 83. No. 68. t. 9. fig. 8. 9. (nec Scar. Jamaicensis, *Fabr. Oliv.*)

HABITAT: New York.

Male. Head black, and furnished with a single horn terminating in a point, and bending backwards, having in front two small protuberances; hairy beneath. Thorax black, shining and margined; the upper part elevated, and appearing almost perpendicular. Elytra margined and furrowed; also black, as is the anus. Abdomen reddish brown, with dark yellow hairs. Thighs brown, almost black; broad, strong, and hairy. Anterior tibiæ deeply dentated with a strong spine at the tips, and hairy. Middle tibiæ strong, and very spinose; particularly at the tips, where there are two long ones on each, which are likewise very hairy. Ungues very small. Scutellum triangular and small.

Female. Resembles the male in every part but the thorax and head; the former being quite smooth and convex without any prominence, and the latter, in the room of a horn, has a small protuberance, just discernible by the naked eye.

DYNASTES ANTÆUS.

Plate XXXIV. fig. 3. ♂.—4. ♀.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ.

GENUS. DYNASTES, *Mac Leay*. Geotrupes, *Fabricius*. Scarabæus, *Linn.* &c.

DYNASTES ANTÆUS. Thorace tricorni; cornu intermedio longiori simplici, capite mutico, elytris levissimis. (Long. Corp. fere 1 unc. 3 lin.)

SYN. Scarabæus Antæus, *Drury, App. vol. 2.* *Fabr. Ent. Syst.* 1. p. 12. No. 31. *Olivier Ent.* 1. 3. 24. No. 23. t. 12. f. 105. & t. 13. f. 124. a. b.

Geotrupes A. *Fabr. Syst. Eleuth.* 1. p. 12. No. 36. *Pal. Bauv. Ins. d'Afr. et d'Amer. Col. Pl.* 1. fig. 5. 6.

HABITAT: Jamaica.

Male. Head black, with two small protuberances like teeth in front. Thorax black, smooth, shining, and margined; having three horns on it, each of which is about a third of an inch in length; two of which are placed near the elytra, almost erect, inclining towards each other, but with their points inclining to the wings; the third arises from the front of the thorax, bending backwards in a curved direction. Elytra brown, very smooth, shining, and margined. Scutellum triangular. Abdomen red, brown, and hairy. Tibiæ the same colour, and hairy, all of them being armed with spines, principally about the tips.

Female. Resembles the male in every respect except the horns, which are wanting in that sex.

PELIDNOTA PUNCTATA.

Plate XXXIV. fig. 5.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Rutelidæ.

GENUS. PELIDNOTA, *Mac Leay*. Scarabæus, *Linn*.

PELIDNOTA PUNCTATA. Testacea, elytrorum singulo punctis tribus fuscis distantibus. (Long. Corp. fere 1 unc.)

SYN. Scarabæus Punctatus, *Linn. Syst. Nat.* 1. 11. p. 557. 76.

Melolontha P. *Fabricius Syst. El.* 11. p. 166. 28. *Olivier Ent.* 1. 5. p. 22. t. 1. f. 6. a. b. *Herbst. Col.*

111. p. 69. 16. t. 23. f. 6.

HABITAT: New York, Virginia, Maryland, Antigua.

Head brown orange; but round the eyes (which are black) and next the thorax of a shining brassy green. Thorax and elytra brown orange, and faintly margined; the former with two small black spots, and the latter with three on each side, one close to the thorax, another near the corner of the wing-cases, and the third in the middle. Scutellum shining bright green. Abdomen and legs greenish black. Tibiæ spinose and denticulated, especially at the tips; the three middle articulations of the tarsi are also furnished with spines.

AREODA LANIGERA.

Plate XXXIV. fig. 6.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Melolonthidæ.

GENUS. AREODA, *Leach, Mac Leay*. Melolontha, *Fabr.* Scarabæus, *Linn*.

AREODA LANIGERA. Capite thoraceque aureis, elytris luteis, corpore subtus lanato. (Long. Corp. fere 1 unc.)

SYN. Scarabæus Lanigerus, *Linn. Syst. Nat.* 1. 11. p. 555. 67.

Melolontha L. *Fabr. Syst. El.* 11. p. 165. 26. *Oliv. Ent.* 1. 5. p. 21. 17. t. 4. f. 39. a. b. *Herbst. Col.*

111. p. 152. 109. t. 26. f. 8.

Areoda L. *Mac Leay Horæ Ent.* 1. part 1. p. 158.

HABITAT: New York, and other parts of North America.

Head brownish yellow, being divided in the middle by a transverse suture, the front or fore part being margined, and very plain or even; posterior part shining green or pearl colour, according to the various directions in which it is held. Thorax and scutellum of a changeable brown yellow colour. Between the thorax and the elytra is a row of pale yellow or white hairs. Elytra lemon-coloured, surrounded by a very small, narrow, black margin, and minutely punctured. Abdomen shining green black, covered with a multitude of grey hairs. Legs red brown. Anterior tibiæ broad and thin; being black on the outside, where they are armed with three strong spines or teeth. Intermediate and posterior tibiæ with two spurs. Ungues remarkably bent and long.

ORYCTES NASICORNIS.

Plate XXXIV. fig. 7. ♂.—8. ♀.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ.

GENUS. ORYCTES, *Illiger*. *Geotrupes*, *Fabr.* *Scarabæus*, *Linn.*

ORYCTES NASICORNIS. Thorace prominentiâ triplici, capitis cornu recurvo, elytris lævibus. (Long. Corp. 1 unc. 3 lin.)

SYN. *Scarabæus Nasicornis*, *Linn. Syst. Nat.* 1. 11. p. 544. No. 15. *Oliv. Ent.* 1. 3. p. 37. No. 41. t. 3. f. 19. a-d. *Panzer Faun. Ins. G.* 28. No. 2. ♂. *Roesei Ins.* 11. 1. p. 41—65. n. 5. t. 7. f. 8. ♂. f. 10. ♀. § t. 6, 8 & 9. Larva, Pupa, &c. *Stephens Illustr. Brit. Ent. Mandibulata*, 3. p. 216.

HABITAT: Holland, and other parts of Europe.

Male. Head black, with a horn terminating in a point, and bending backwards. Eyes red brown. Thorax brown, almost black, margined and prominent, terminating upwards in three pointed tubercles. Scutellum black, and nearly triangular. Elytra red brown, smooth, shining, slightly margined. The abdomen, legs, and all the under parts of a red brown, and hairy. Tibiæ spined.

Female. Resembles the male in every thing but the head and thorax; having on the former, instead of the horn, a small tubercle, and on the latter a small impression in the place of the pointed knobs.

This insect has been introduced into the list of British species on the authority of the late Mr. Haworth, who recorded the fact of a living specimen having been taken by a bricklayer amongst old timber, on pulling down the roof of a building at Chelsea, (*Entom. Trans.* vol. i. p. 76.) Mr. Stephens, however, (*loc. supra citat.*) thinks it very doubtful whether the species be really indigenous, as it appears highly probable that the specimen above alluded to, may have been imported amongst some of the Continental plants which abound in the above vicinity, the insect occurring very copiously in rotten bark, the refuse of conservatories, and putrid wood in various parts of the Continent.

COPRIS SULCATUS.

Plate XXXV. fig. 1.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ.

GENUS. COPRIS, *Geoffroy*. *Scarabæus*, *Linn.*

COPRIS SULCATUS. Ater, capitis tuberculo unico, elytris striatis, thorace anticè lineâ irregulari dorsali impresso. (Long. Corp. 1 unc.)

SYN. *Scarabæus Sulcatus*, *Drury, App. vol.* 2.

Scarabæus Sulcator, *Oliv. Ins.* 1. 3. 142. 171. tab. 26. f. 225?

Copris Sulcata, *Fabricius Syst. Eleuth.* 1. p. 53. No. 104. *Ent. Syst.* 1. p. 61. No. 200.

HABITAT: Jamaica.

Head broad and thin, hairy underneath; terminating in a short straight horn, inclining backwards, with a small tubercle on each side. Eyes almost surrounded by the thin sides of the head, being placed so as to see both above and below it. Thorax margined, with several protuberances on its front; and on the top with a strong indented line running from the front to the suture of the elytra, where likewise

its margin is interrupted by two smaller impressions, forming an appearance like a square escutcheon. Elytra as long as the thorax, margined, and deeply furrowed, scarcely reaching to the anus. General colour above black or raven grey, but not shining. Thighs very strong, black, and broad. Anterior tibiæ strong, with three teeth and a spine. Tarsi and unguis very small. Middle and hinder tibiæ small at the base, but broad and thick with strong spines at the tips. Scutellum obsolete.

COPRIS CAROLINA.

Plate XXXV. fig. 2.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ.

GENUS. COPRIS, *Geoffroy*. Scarabæus, *Linn.*

COPRIS CAROLINA. Thorace retuso binodi, capitis cornu erecto brevissimo, clypeo integro, elytris sulcatis. (Long. Corp. circ. 1 unc.)

SYN. Scarabæus Carolinus, *Linn. Syst. Nat.* 1. 11. 545. No. 16. *Fabr. Syst. Eleuth.* 1. p. 43. No. 60. (Coprisc.) *Oliv. Ent.* 1. 3. p. 134. No. 160. t. 12. f. 113. *De Geer Ins.* 4. p. 310. t. 18. f. 13. *Pal. Bauv. Ins. d'Amer. et d'Afr. Col.* pl. 3. a. f. 7.

HABITAT: Maryland, New York.

Head broad and thin, not hairy underneath. Near the front is a thick tubercle (not rising to an horn, as in Fig. I.) projecting forward, being in some specimens (probably females) very small. Thorax margined, lying very high above the head, having protuberances in front, which in some are very faint, and with a small impression on each side near the margin on the lower part. Elytra longer than the thorax, margined and furrowed, (but not so deeply as in Fig. I.), and reaching to the anus. General colour deep black, and shining like pitch, both on the upper and under sides. Thighs very strong, not hairy. The anterior tibiæ strong, with four teeth, and a strong spine to each. The tarsi and unguis very small. The other tibiæ are like those in the preceding figure. Scutellum obsolete.

PHANÆUS CARNIFEX.

Plate XXXV. fig. 3. 4. ♂.—5. ♀.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ.

GENUS. PHANÆUS, *Mac Leay*. Copris, *Fabr.* Scarabæus, *Linn.*

PHANÆUS CARNIFEX. Thorace mutico angulato postice igneo-cupreo, capitis cornu longo reflexo, corpore æneo. (Long. Corp. 8—10½ lin.)

SYN. Scarabæus Carnifex, *Linn. Syst. Nat.* 1. 11. p. 546. No. 22. *Fabr. Syst. Eleuth.* 1. 48. 84. *Oliv. Ent.* 1. 3. p. 135. No. 161. t. 6. f. 46. a. b. t. 10. f. 86. var. ♀. *Brown Jamaica*, 428. t. 43. f. 5. *Pal. Bauv. Ins. d'Afr. et d'Amer. Col.* pl. 3. a. f. 8. 9. *Mac Leay Horæ Entomol.* vol. 1. Phanæus C. Scarabæus Pillularius Americanus, *Catesby Carolina*, 3. p. 11. tab. 11.

HABITAT: New York, Maryland, Virginia, Carolina, &c.

There is no doubt that all these figures belong to one species; though differing, not only in size, but structure. Antennæ light red brown. Head thin, rounded, margined, and of a green golden colour; some (which are evidently males) being furnished with a smooth, round, black horn, almost as long as the thorax, and inclining backwards; others have only a small tubercle in the place of the horn; and others have a small horn, about one-fourth the length of the first mentioned, as in Fig. IV. Thorax

next the head golden green; behind and on the upper part is golden red, and margined, rough and shagreened. In the horned specimens this part terminates on each side the posterior margin in a projecting angle, which is more or less conspicuous, in proportion as the horn is long or short. Those which are quite hornless, as Fig. V., are entirely destitute of these angulated risings, having the thorax rounded, but in its front a small black protuberance or swelling is seen. Elytra golden green, inclining to a blue, and very much channelled, with small striæ placed between others of larger size, extending almost even with the anus. Abdomen black, the sides shining green. Anterior femora and tibiæ black and hairy; the latter very strong and dentated, having a long moveable spine fixed on the inner edge of each, extending somewhat beyond the tarsi, which are very short and small. Intermediate and posterior thighs shining golden green, broad and strong. Tibiæ black, with two spines (one very long) at the tips. Tarsi five-jointed, unguis single, and not divided as most insects have them. Scutellum obsolete.

COPRIS MINUTUS.

Plate XXXV. fig. 6.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ, *Mac Leay*.

GENUS. COPRIS, *Geoffroy*. Scarabæus, *Drury*.

COPRIS MINUTUS. Niger, capitis cornu parvo erecto, thorace anticè elevato et tuberculato, elytris striatis. (Long. Corp. $4\frac{1}{2}$ lin.)

SYN. Scarabæus Minutus. *Drury, App. vol. 2.*

Copris Lævis. *Schönh. Syn. 1. 54. 126.* (Nec Lævis, *Drury, tab. 35. f. 7. sec. cit. Sch.*)

HABITAT: New York.

Entirely black. Head broad and black, extending on each side beyond the eyes, having a small horn on it projecting forwards. Thorax margined, high and prominent, with some small protuberances on its front. Scutellum obsolete. Elytra furrowed, longer than the thorax, and margined; extending beyond the anus. Femora strong and round. Tibiæ small at the base, thickened towards the tips, and armed with spines.

COPROBIUS LÆVIS.

Plate XXXV. fig. 7.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ, *Mac Leay*.

GENUS. COPROBIUS, *Latr.* Ateuchus, *Fabr.* Scarabæus p. *Linn.*

COPROBIUS LÆVIS. Niger opacus lævis, clypeo emarginato, thorace postice rotundato, elytrorum lateribus humeralibus haud incis. (Long. Corp. 9 lin.)

SYN. Scarabæus Lævis, *Drury, App. vol. 2. (1773.) Oliv. Ent. 1. 3. p. 160. No. 197. t. 10. f. 89.*

Scarabæus Volvens, *Fabr. Ent. Syst. 1. p. 66. No. 221. Syst. Eleuth. 1. p. 60. No. 26.* (Ateuchus v.)

(Exclus. syn. Scar. pilularius, *Linn.*) *Schönh. Syn. Ins. 1. 1. p. 62.*

HABITAT: New York, Maryland.

Entirely black, shining like pitch on the under side. Head broad, flattish, and smooth. Thorax margined, smooth, and convex. Scutellum obsolete. Elytra margined, smooth, not reaching to the anus, and rather longer than the thorax. Anterior tibiæ having three teeth on their outer sides, above

which are several very minute ones. Intermediate and posterior thighs and tibiæ smaller than are usually observed among those lamellicorn beetles which have no scutellum.

The advantages resulting from the modern method of investigation adopted in Natural History in general, and especially in Entomology, are no where more conspicuous than in the case of the present species of dung-rolling beetles or *pillularii*, as they were aptly termed by Pliny and other old writers; the present species inhabiting North America, having been long confounded with an inhabitant of Southern Europe, which indeed possesses a similarity in general appearance and habits, but belongs to a distinct genus. Linnæus applied the term *pilularius* specifically to the species inhabiting Italy and Spain; referring, however, to Catesby's Carolina, pl. 11., so that it is evident that this writer had never seen the North American insect. Schonher however remarks, "*scarabæus pillularius* Linn. pertinet ad *At. volvens* Fabr;"* whilst Fabricius, although quoting Drury and De Geer (who both figure the North American species) has increased the confusion by giving Southern Europe as its habitat. Under these circumstances I have done our author the justice to revert to his specific name; his being certainly the earliest systematic specific reference to the American species, which may be distinguished from the European one by the following particulars:—

GENUS. *Coprobis*, *Latreille*.

(Elytra entire at the sides; intermediate tibiæ with two spurs.)

Coprobis lævis, *Drury*. (Scarab.) *volvens*, *Fabr*.

HABITAT. North America.

GENUS. *Gymnopleurus*, *Illiger*.

(Elytra with a deep lateral notch near the shoulders; intermediate tibiæ with one spur.)

Gymnopleurus pilularius, *Linn*. (Scarab.) *Fabr*. *Oliv*.

HABITAT. Southern Europe.

ONITIS SPINIPES.

Plate XXXV. fig. 8.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ, *Mac Leay*.

GENUS. *ONITIS*, *Fabr*. *Scarabæus*, *Linn*. *Drury*.

ONITIS SPINIPES. *Exscutellatus niger opacus*, capite subcornuto, pedibus intermediis dilatatis et incis. (Long. Corp. fere 1 unc.)

SYN. *Scarabæus Spinipes*, *Drury*, *App. vol. 2.* (1773).

Scarabæus Sphinx, *Fabr. Ent. Syst. p. 25. No. 98.* (1775.) *Syst. Eleuth. 1. p. 29. 9.* (*Onitis* Sp.)

Schonh. Syn. Ins. 1. p. 31. 10.

HABITAT: China.

Entirely black. Head margined and rough, having two small protuberances entirely surrounding the eyes. Palpi rather long. Thorax convex, smooth, and margined, being as long as the elytra, and having on each side near the lateral margin a small impression. On the posterior margin next the suture are two more impressions, and a longer one between them. Scutellum obsolete. Elytra furrowed,

* If this had really been the case, the Fabrician name ought surely to have yielded to that of Linnæus.

and extending to the anus, having a double margin on the sides. Anterior tibiæ as long as the thorax, and remarkable for not having any tarsi, but being bent inwards at their extremities and dentated on their outer sides. Middle femora very broad and flat. Tibiæ short, very narrow, and small at their base, but broad at the tips. Hinder thighs and tibiæ not so broad as the middle ones. Tarsi five-jointed.

DYNASTES CENTAURUS.

Plate XXXVI. fig. 1.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Dynastidæ, *Mac Leay*.

GENUS. DYNASTES, *Mac Leay*. *Geotrupes*, *Fabr.* *Scarabæus*, *Linn. Latr.*

DYNASTES CENTAURUS. Thoracis cornu incurvo basi dentato apice bifido, capitis recurvato unidentato. (Long. Corp. 2 unc. 6 lin.)

SYN. *Scarabæus Centaurus*, *Fabr. Ent. Syst.* 1. p. 4. No. 5. *Syst. Eleuth.* 1. p. 4. No. 5. *Oliv. Ent.* 1. 3. p. 14. n. 9. t. 11. f. 104. *Jablonsk. Nat. Syst.* 1. 223. No. 4. t. 2. f. 1. *Schon. Syn. Ins.* 1. p. 4. No. 10.

Scarab. Gideon, *Drury, App. vol. 2.* (Exclus. Syn. *Linn.*)

HABITAT : Sierra Leone (*Drury*). "In India Orientali, Africa" (*Fabricius*).

Head and thorax black; the latter terminating in a horn near an inch and a half long, standing almost erect, but bending forward and diminishing towards the end, which is forked, having a strong spine on each side of the front near the base. The head is furnished with another horn that inclines backwards towards the other, and at the extremity is curled and pointed, having a square knob placed on each side near the curl. Elytra dark brown, almost black, smooth and shining. Tibiæ armed with spines and hairs.

Drury states that this insect was brought from Sierra Leone, and that it lives in the mangrove trees; many specimens having been taken from thence.

TRICHIUS FASCIATUS.

Plate XXXVI. fig. 2.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Cetoniidæ.

GENUS. TRICHIUS, *Fabricius*. *Cetonia* p. *Oliv.* *Scarabæus*, p. *Linn.*

TRICHIUS FASCIATUS. Niger, flavo-rufo-tomentosus, elytris atris fasciis duabus luteis internè confluentibus. (Long. Corp. 7-8 lin.)

SYN. *Scarabæus Fasciatus*, *Linn. Syst. Nat.* 11. p. 556. *Fabricius Ent. Syst.* 1. 119. *Donovan Brit. Ins.* 4. pl. 140. *Steph. Illustr. Brit. Ent. Mandibulata*, 3. p. 230.

Trichius Succinctus, *Fabr. Ent. Syst.* 11. p. 132 (variety).

HABITAT : Germany, France, England.

Head and thorax black, but thickly covered with yellow hairs. The scutellum black and triangular. Elytra tawny yellow, not reaching to the anus; having a black margin, and three large black spots situated on the lateral margin. Abdomen and breast black, and covered with hairs of a very light or pale yellow. Femora and tibiæ black and hairy.

The insect here figured is regarded by most authors as a variety only of the *Trichius fasciatus*. Fabricius, however, considered it as a distinct species, which he named *Trichius succinctus*. Dessau also, in the *Bulletin des Sciences Naturelles* (February 1829), has published some observations, in order to prove the specific distinctness of this and two other species with which it is generally regarded as identical. Its habits are different from those of the other *Trichii*; being generally found upon flowers, a peculiarity, with which its hirsute body and bee-like appearance apparently offer some indicatorial connexions. It is extremely rare in this country.

DYNASTES TITANUS.

Plate XXXVI. fig. 3. ♂.—4. ♀.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ, *Mac Leay*.

GENUS. DYNASTES, *Mac Leay*. *Geotrupes*, *Fabr.* *Scarabæus*, *Linn.* *Drury*.

DYNASTES TITANUS. Thorace tricorni, intermedio longiori apice bifido, lateralibus subarcuatis acutis, capite mutico. (Long. Corp. cum corn. thorac. 1 unc. $7\frac{1}{2}$ lin.)

SYN. *Scarab. Titanus*, *Fabr. Ent. Syst.* 1. p. 13. No. 36. *Syst. El.* 1. p. 13. No. 39. *Jablonsk. Nat. Syst.* 1. p. 282. t. 6. f. 2. ♂. *Olivier*, 1. 3. t. 5. f. 38.

Scarabæus Simson, *Drury, App. vol. 2.* (Exclus. Syn. *Linn.*)

Scarabæus major niger tricornis, *Sloane Jamaica*, vol. 2. t. 237. f. 4. 5.

The Great Brown Sawyer, *Brown's Jamaica*, p. 428. t. 43. f. 6.

HABITAT: Jamaica.

Male. Head black. Antennæ dark brown. Thorax black, smooth, and shining, and armed with three horns; two of which, being about one-third of an inch in length, are placed on the upper part on each side, lying almost parallel with the body. Beneath these, near the head, rises another from the middle of the thorax, which is a little longer than the two first, bending upwards, and forked at the extremity. Elytra rather rough and furrowed, but shining and black. Tibiæ armed with spines, especially at the extremity, which facilitate the animal in its passage. Abdomen black; anus with a row of light brown hairs.

Female. Differs from the male chiefly in the thorax, which is entirely unarmed. Black and shining, but rather less so than the males; and in the front, just above the head, is a small impression. All the under parts of the insect which in the males are black, in this sex are of a dark reddish brown. In other circumstances it resembles the male.

DYNASTES GIDEON.

Plate XXXVI. fig. 5.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ, *Mac Leay*.

GENUS. DYNASTES, *Mac Leay*. *Geotrupes*, *Fabr.* *Scarabæus*, *Linn.* *Drury*.

DYNASTES GIDEON. Thoracis cornu incurvo maximo apice bifido, capitis recurvato bifido supra unidentato. (Long. Corp. cum corn. 2 unc. $4\frac{1}{2}$ lin.)

SYN. *Scarabæus Gideon*, *Linn. Syst. Nat.* 1. 11. p. 541. No. 2. *Swammerdam Book of Nature*, t. 30. f. 2.

Fabr. Syst. Eleuth. 1. p. 4. No. 3. *Olivier Ent.* 1. 3. p. 14. t. 11. f. 102.

Scarabæus Oromedon, *Drury, App. vol. 2.* *Fabr. Syst. Eleuth.* 1. p. 4. No. 4. (Var. præcedentis.)

HABITAT: East India.

General colour dark brown, almost black. Thorax smooth and shining, as if polished, and terminating in a strong thick horn, which inclines forward in a curved position, and is forked at the end. From the head also springs another strong horn, forked at the extremity, which in length corresponds with the first; its outer side being broad and round, but its inner side, or that opposite the other horn, is thin and sharp, having a small swelling in the middle. Elytra smooth and shining, with a narrow margin. Anterior tibiæ with four teeth; two being at the tip, and two a little above them. The other tibiæ are furnished with several sharp spines (five or six), chiefly about the tips; which, as noticed in *D. Titanus*, assist the animal in its passage. Anus not hairy, as in many other species.

CYCLOCEPHALA SIGNATA.

Plate XXXVI. fig. 6.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Rutelidæ, *Mac Leay*.

GENUS. *CYCLOCEPHALA*, *Latreille*. *Chalepus*, *Mac Leay*. *Scarabæus*, *Drury*.

CYCLOCEPHALA SIGNATA. Glabra, pallidè lutea, thorace lineis duabus, elytris maculis tribus, duabus aut nullis. (Long. Corp. 7-8 lin.)

SYN. *Melolontha Signata*. *Fabricius Syst. Eleuth.* 11. p. 169. No. 51. *Oliv. Ent.* 1. 5. t. 4. f. 33. § 36. *Herbst. Col.* 111. p. 79. f. 2. 32.

Scarabæus Amazonus? *Drury, App. vol. 2.* *Sloane Hist. Jamaica*, 11. p. 206. 8. t. 237. f. 38. (Exclus. Syn. *Linn.*)

HABITAT: Antigua, New York, Virginia, St. Christopher's.

Entirely dark dirty straw-coloured. Thorax margined, with two oblong black spots on it. Scutellum triangular. Elytra margined, with two small faint brown spots on each. Abdomen and legs hairy, the former extending beyond the ends of the elytra. Anterior tibiæ spinose; the internal spur being remarkably long.

COPROBIUS TRIANGULARIS.

Plate XXXVI. fig. 7.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ, *Mac Leay*.

GENUS. *COPROBIUS*, *Latr.* *Scarabæus*, *Linn.* *Drury*. *Ateuchus*, *Fabr.*

COPROBIUS TRIANGULARIS. Niger; clypeo bidentato, thoracis margine fulvo obtusè angulato, femoribus posticis brunneis. (Long. Corp. fere 6 lin.)

SYN. *Scarabæus Triangularis*, *Drury, App. vol. 2.* *Fabr. Syst. Ent.* p. 30. No. 122. *Syst. Eleuth.* 1. p. 63. No. 42. *Oliv. Ent.* 1. 3. p. 166. t. 15. f. 139.

HABITAT: Surinam.

Head dirty green. Thorax very convex and broad, dark yellow all round the edge, but black in the middle, and of a coppery hue. Elytra black and margined. Abdomen yellow. Anus black. Thighs yellow. Tibiæ and tarsi black. Scutellum obsolete.

ONTHOPHAGUS SERRATIPES.

Plate XXXVI. fig. 8.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ, *Mac Leay*.

GENUS. ONTHOPHAGUS, *Latreille*. *Copris*, *Fabricius*. *Scarabæus*, *Drury*.

ONTHOPHAGUS SERRATIPES. Niger, capite lato, abdomine subæneo, elytris striatis luteo marginatis. (Long. Corp. lin. 5.)

SYN. *Scarabæus Serratipes*, *Drury*, *App. vol. 2*.

HABITAT: China.

Head and thorax black; the former very broad. Antennæ are black. Abdomen dark green, almost black. Scutellum obsolete. Elytra rather longer than the thorax, furrowed and black, slightly margined; just above which, all round their external edges, they are of a dirty clay colour. Anus the same.

PRIONUS (ORTHOSOMA) PENNSYLVANICUS.

Plate XXXVII. fig. 1.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Prionidæ, *Leach*.

GENUS. PRIONUS, *Fabr.* *Cerambyx*, *Linn.* SUBGENUS: *Orthosoma*, *Serv.*

PRIONUS (ORTHOSOMA) PENNSYLVANICUS. Obscurus, thorace marginato tridentato, pectore abdomineque ferrugineis, antennis brevibus. (Long. Corp. 1 unc. 6 lin.)

SYN. *Cerambyx Pennsylvanicus*, *De Geer Mem.* 5. p. 99. t. 13. f. 13.

Cerambyx unicolor, *Drury. App. vol. 2*.

Cerambyx brunneus, *Forster Cent. Ins.* p. 37. *Linn. Syst. N. (Gmel.)* 1. iv. 1828.

Cerambyx cylindroides, *Linn. Syst. Nat. (Ed. Gmel.)* 1. iv. 1818.

Prionus cylindricus, *Fabr. Sp. Ins.* 1. p. 207. 14. *Syst. Eleuth.* 11. p. 261. *Oliv. Ent.* iv. 66. p. 23. t. 1. f. 6. *Latr. Gen. Cr.* 111. p. 33. *Serv. Ann. Soc. Ent. France*, 1. 156. (*Orthosoma c.*)

HABITAT: New York.

Head dark chesnut-coloured. Antennæ about two-thirds of the length of the insect. Thorax somewhat darker, rounded, and margined; having three small spines on each side. Scutellum semi-oval. Elytra light chesnut, margined, and flattish; being about three times the length of the thorax and head, and broad at their extremities. Abdomen, thighs, and tibiæ red chesnut, shining as if polished.

PRIONUS (DEROBRACHUS) LATICOLLIS.

Plate XXXVII. fig. 2.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Prionidæ, *Leach*.

GENUS. PRIONUS, *Fabr.* *Cerambyx*, *Linn.* SUBGENUS: *Derobruchus*, *Serv.*

PRIONUS (DEROBRACHUS) LATICOLLIS. Niger latus, thorace marginato transverso, tridentato, atro nitido; antennis brevibus. (Long. Corp. 1 unc. 9 lin.)

SYN. *Cerambyx Laticollis*, *Drury, App. vol. 2*.

Prionus brevicornis, *Fabricius Syst. Eleuth.* 2. p. 260. 15. *Sch. Syn. Ins.* 3. 339. *Pal. Bauw. Ins. d'Afr. et d'Amer. Col. Pl.* 34. f. 3.

HABITAT: New York.

Head black. Antennæ 12-jointed, about half the length of the insect. Thorax black, broad, short, and shining; thick in the middle, but on the sides thin and jagged. Scutellum bell-shaped. Elytra

rough, black, and margined on the sides and suture; extending in one of the sexes beyond the anus. Abdomen and under parts black and shining. Tibiæ with two short spurs. Tarsi beneath of a dirty clay colour.

STENOCORUS (EBURIA) QUADRIMACULATUS.

Plate XXXVII. fig. 3.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. STENOCORUS, *Fabr.* Cerambyx p. *Linn.* SUBGENUS: Eburia, *Serville*.

STENOCORUS (EBURIA) 4-MACULATUS. Pallidè luteus, thorace spinoso scabro, elytris bidentatis maculis binis glabris albidis. (Long. Corp. fere 1 unc.)

SYN. Cer. 4-maculatus, *Linn. Syst. Nat.* 1. 11. p. 626. 27? *Fabricius Syst. El.* 11. p. 308. 16. *Syst. Ent.* p. 180. 11. *Trans. Ent. Soc.* 1. p. 83. *Oliv. Ent.* iv. 67. p. 45. 58. t. 21. f. 164. *Sloan. Hist. Jamaica*, 1. p. 209. 20. § 11. tab. 237. f. 21. *Serville Ann. Soc. de Franc.* 3. p. 9. (Eburia q.)

HABITAT: Jamaica.

Head pale clay-coloured. Antennæ (being the length of the insect) of a redder colour, and at their bases almost surrounded by the eyes. Thorax of the same colour as the head, very cylindrical; having a sharp spine on each side, and two short black ones on the top. Scutellum small, and semi-oval. Elytra pale clay-coloured, having on each two spines at the tip of each, the inner one being the smaller; and having also four oblong yellow spots, two placed at the middle and two at the base. Each of these spots appears to be composed of a large and a small one joined close together; the largest (in the upper spots) being the inner one, and in the lower spots being the outer one. Abdomen and legs of the same colour as the head, &c.; the four posterior femora with two small spines at the tips.

CLYTUS LONGIPES.

Plate XXXVII. fig. 4.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. CLYTUS, *Fabr.* Cerambyx, *Linnaeus*.

CLYTUS LONGIPES. Obscurè rufescens; thorace cylindrico, elytris pallidè sericeis, lunulis quatuor fuscis apiceque dentato. (Long. Corp. fere 1 unc.)

SYN. Cerambyx longipes, *Drury, App. vol. 2. Sch. Syn. Ins.* 3. 409. 43.
Cerambyx lunulatus, *Linn. Syst. Nat. (Gmel.)* 1. iv. p. 1864.

HABITAT: Jamaica.

General colour dark red brown. Antennæ about half the length of the insect. Thorax cylindrical, and covered with a fine short down or hair; having on each side a small tubercle or swelling, without any spine. Scutellum small, and semi-oval. Elytra party-coloured; the lighter parts (as seen in the plate) being covered with the same kind of short hair as the thorax; with four spines at their extremities, the two inner ones being the smallest. Abdomen with three yellow spots on each side, and another at the anus. The body has likewise a large one on each side, and another near the breast, joining to the middle legs. Four hind legs long. Femora rough, with two short spines at the tips. Tibiæ with two spurs.

STENOCORUS (CHLORIDA) FESTIVUS.

Plate XXXVII. fig. 5.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. STENOCORUS, *Fabr.* Cerambyx p. *Linn.* SUBGENUS. Chlorida, *Serv.*

STENOCORUS (CHLORIDA) FESTIVUS. Thorace utrinque bidentato, elytris bidentatis viridibus lineâ laterali luteâ. (Long. Corp. fere 1 unc.)

SYN. Cerambyx Festivus, *Linn. Syst. Nat.* 1. 11. p. 623. 11. *Fabricius Syst. Ent.* p. 179. 4. *Syst. Eleuth.* 11. p. 305. 3. *Herbst. Arch.* p. 92. t. 25. f. 12. *Serville Ann. Soc. Ent. de Franc.* 3. 32. (Chlorida f.)
Cerambyx Sulcatus, *Oliv. Ent.* iv. p. 67. p. 28. 32. t. 16. f. 113.
Cerambyx Spinipes, *De Geer Ins.* v. t. 13. f. 14.

HABITAT: Jamaica.

Head clay-coloured. Antennæ about two-thirds the length of the insect, very dark brown; first articulation clay-coloured. Thorax also clay-coloured; having two spines on each side of it, one larger than the other. Scutellum small, and nearly triangular. Elytra margined at the sides and suture, each with two spines at the extremities, the inner ones being the smallest; green, and deeply furrowed or grooved, having a yellow line running along their lateral margins. Legs, abdomen, and all the under side clay-coloured. Tibiæ armed with two spines at the tips.

STENOCORUS (CERASPHORUS) BALTEATUS.

Plate XXXVII. fig. 6.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. STENOCORUS, *Fabr.* Cerambyx p. *Linn.* SUBGENUS. Cerasphorus, *Serv.*

STENOCORUS (CERASPHORUS) BALTEATUS. Thorace cylindrico 1-spinoso; elytris-bidentatis griseis maculâ oblongâ obliquâ. (Long. Corp. fere 1 unc.)

SYN. Cerambyx balteatus, *De Geer Ins.* v. p. 111. t. 14. f. 3.
Stenochorus garganicus, *Fabricius Syst. Ent.* p. 178. 3. *Syst. Eleuth.* 11. p. 305. 2. *Oliv. Ent.* iv. 67. t. 15. f. 105. *Pal. Bauw. Ins. d'Afr. et d'Amer. Col. pl.* 37. f. 3.
Cerambyx cinctus, *Drury, App.* vol. 2.

HABITAT: Virginia, New York, Maryland, Antigua.

General colour greyish hazle. Antennæ longer than the insect. Thorax cylindrical, with a single short spine on each side. Scutellum triangular, and of a yellowish colour. Elytra margined; having an oblong spot, of a faint yellowish colour, running transversely cross each, near the thorax, with two small spines of equal size at the tip of each. It is covered all over with short hair, or down.

PRIONUS (STENODONTES) DAMICORNIS.

Plate XXXVIII. fig. 1.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Prionidæ, *Leach*.

GENUS. PRIONUS, *Geoffroy.* Cerambyx p. *Linn.* SUBGENUS. Stenodontes, *Serv.*

PRIONUS (STENODONTES) DAMICORNIS. Thorace marginato denticulato, mandibulis porrectis bidentatis, elytris brunneis. (Long. Corp. mandib. inclus. 3 unc. 7½ lin.)

SYN. Cerambyx Damicornis, *Linn. Mant.* 1. p. 532. *Fabricius Syst. Ent.* p. 162. 10. *Syst. Eleuth.* 11. p. 262. 23. (Prionus d.) *De Geer Ins.* v. p. 97. 2.
Lucanus fuscus maximus, *Browne Nat. Hist. Jamaica,* p. 429. t. 44. f. 8. *Sloane Jamaica, vol. 2. tab.* 37. fig. 6.

HABITAT: Jamaica (*Drury*). America (*Fabricius*).

Head dark brown, almost black, broad, large and rough on the top; mandibles triangular and sharp pointed, bending or inclining towards each other; somewhat longer than the head, and a little hairy within; having a tooth or spine on the inner edge, near the point, and another near the base. Thorax of the same colour as the head; very rough and uneven at top, being margined on the anterior and posterior edges; the sides being thin and serrated. Antennæ, rather shorter than the insect, and placed before the eyes. Scutellum triangular. Elytra brown and margined, not reaching to the anus. Abdomen and legs dark red brown. The tibiæ with three small spurs.

The larva of this beetle is a great fleshy grub, which lives in the stumps of tree. It is eaten by many persons, by whom it is considered a great dainty. The perfect insect is called by the natives the macokko beetle. The following observations, published by Mr. Drury in the introduction to his third volume, will be read with interest from the spirit of practical utility in which they are written.

“The larvæ or caterpillars, not only of this but of all the beetles that feed on decayed wood, seem to be rich and delicate eating, particularly those of the *Curculio palmarum* (vid. Linn. Syst. Nat. p. 606. 1.), and in general all those of the *Cerambyces*. So that every forest in the torrid zone affords a man plenty of very wholesome and hearty nourishment, who has an instrument strong enough to cut in pieces the decayed trees. This knowledge might have saved the lives perhaps of many seamen who have been shipwrecked on desert equinoctial shores, which are generally covered with thick woods. Mr. Smeathman has met with many maritime people, who, by living on a scanty allowance of unripe fruits, crude roots, coarse seeds, nuts, and other trash, after a shipwreck, or in other cases of distress so frequent with people in the African trade, have made themselves exceeding sick, and much increased their hardships, which by means of these caterpillars only, might have been greatly alleviated. The very best kind of vegetable food is but poor nourishment for the labouring Europeans, if not accompanied with animal flesh, or at least with animal or vegetable oils; and such foods as seamen in distress meet with, as above mentioned, have oftentimes very acrimonious qualities, and are dangerous even in small quantities to those who eat them at intervals, either out of mere curiosity or to gratify their appetites; while these kinds of insect foods, abounding with a very rich and delicious oil, are consequently the most wholesome and nutritious which men in the situation above described could possibly procure, requiring no other preparation than roasting in any manner. (See Philosophical Transactions.) To this kind of food may be added that of the termites and locusts in general among the insect tribes, which are not only wholesome to all, but palatable to many. At any rate they are sufficient to support life; and the knowledge of such a resource universally extended, might in many instances be the means of saving the lives of adventurers to distant climes. Besides these means of subsistence, if the botanists could point out a plain and obvious method for men in general to distinguish the noxious roots and herbs from those which are edible, men thrown on any thing but mere rocks and sandbanks would readily find subsistence, the kind hand of nature being extended all over the

surface of our globe to every one who will accept the friendly invitation, and use the means she has with such a motherly tenderness offered for our benefit and support.

“Mr. Smeathman has assured me, that in clearing the ground in Africa he has found great quantities of roots of the yam and potatoe kind (*Convolvulus Batatas*), that grew spontaneously, and which the slaves from distant interior regions knew exceedingly well, and sought for with great avidity. He lived near two years in Africa before he found that the most excellent greens for boiling grew wild in every open glade of the island, and even close to his very door. I mention these things because they are all within the power of men in the most naked, unarmed, and unprepared situation, and require neither fire-arms or other powerful apparatus to obtain them; and shew that in these cases, as well as many others, the study of natural history is of no small importance to mankind, since it may not only promote trade, arts, and sciences, but be conducive to the immediate happiness and safety of men’s lives.”

PRIONUS (MALLODON) MELANOPUS.

Plate XXXVIII. fig. 2.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Prionidæ, *Leach*.

GENUS. PRIONUS, *Geoffroy*. Cerambyx p. *Linn*. SUBGENUS. Malloдон, *Serv*.

PRIONUS (MALLODON) MELANOPUS. Thorace marginato denticulato, mandibulis porrectis multidentatis, elytris ad apicem mucronatis. (Long. Corp. mandib. inclus. 2 unc. 3 lin.)

SYN. Cerambyx Melanopus, *Linn. Syst. Nat.* 1. 11. p. 623. 8. *Fabricius Sp. Ins.* 1. p. 208. 20. *Syst. Eleuth.* 11. p. 264. 34. *Oliv. Ent.* iv. 66. p. 18. t. 12. f. 46. *Merian Ins. Surinam.* t. 24. f. 1. Cerambyx crenulatus, *Drury, App.* vol. 2.

HABITAT: Jamaica (*Drury*). “In America Meridionali” (*Fabr.*).

Head short and black. Mandibles short. Antennæ dark brown, almost black; shorter than the insect. The thorax broad, rough and black, margined on the posterior and anterior edges; having many small sharp spines on its sides, the two last of which are larger than the rest, and having two tubercles on the upper side. Elytra dark brown, almost black, margined on the sides and suture, with a small spine on each, at the extremities, and extending a little beyond the anus. Abdomen smooth and shining, and of a dark brown colour, nearly black. Sides of the breast hairy. Legs dark brown, almost black, smooth and shining, with three small tibial spurs.

PRIONUS (MALLODON) MAXILLOSUS.

Plate XXXVIII. fig. 3.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Prionidæ, *Leach*.

GENUS. PRIONUS, *Geoffroy*. Cerambyx p. *Linn*. SUBGENUS. Malloдон, *Serv*.

PRIONUS (MALLODON) MAXILLOSUS. Thorace marginato crenato, mandibulis porrectis intus hirsutis quadridentatis, elytris ad apicem mucronatis. (Long. Corp. fere 2 unc. 3 lin.)

SYN. Cerambyx Maxillosus, *Drury, App.* vol. 2. *Fabricius Syst. Ent.* p. 163. 151. *Syst. Eleuth.* 11. p. 264. 31. Prionus m.) *Oliv. Ent.* iv. 66. p. 16. t. 1. f. 3.

HABITAT: Barbuda, near Antigua, “where it was found dead at the foot of a tree.” (*Drury*). America (*Fabr.*).

Head black, broad, and very rough above, with two strong, thick, black triangular mandibles, nearly as long as the thorax; having the inner margin very hairy, and armed with teeth; sharp pointed at the tips, with their points bending towards each other. Antennæ about half the length of the insect; close underneath which on each side is a strong spine. Thorax black, as broad as the elytra; very rough on the sides, but shining in the middle, the surface being very uneven; the anterior angle projecting beyond the edge. Scutellum semi-oval. Elytra dark red brown, shining, and margined deeply on the edges, but faintly along the suture; having a very short and small spine at the extremities, and extending a little beyond the anus. Abdomen red brown, smooth and shining. Legs red brown, and smooth, being furnished with three very small tibial spurs.

CERAMBYX (HAMATICHERUS) HEROS.

Plate XXXIX. fig. 1.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. CERAMBYX, *Linn*. SUBGENUS. Hamaticherus, *Zeigl*. Cerambyx, *Serv*.

CERAMBYX (HAMATICHERUS) HEROS. Thorace spinoso rugoso, niger, elytris subspinosus piceis, antennis longis. (Long. Corp. 2 unc.)

SYN. Cerambyx Heros, *Fabr. Mant.* 1. p. 132. *Syst. Eleuth.* 11. p. 270. 21. *Oliv. Ent.* iv. 67. p. 12. t. f. 1. *Panzer F. I. G.* 82. pl. 1.

Cerambyx cerdo (var. major), *Linn. Syst. Nat.* 1. 11. p. 629. 39. *Drury, App.* vol. 2.

HABITAT: Italy, Smyrna, Scandaroon, Sicily, Gibraltar (*Drury*). Central and Southern Europe.

Head dirty black. Antennæ black, much longer than the body. Thorax very rough, round, black and shining, having a spine on each side; the fore-part, next the head, appearing as if surrounded by a groove. Scutellum small and triangular. Elytra black and margined, dark brown at the extremities, and narrow, covering the anus; having a small spine on each, and being very rough, and shagreened. Abdomen and legs black. Tibiæ clothed with short brown hair, and terminated by two spines; under side of the tarsi cushioned.

TRACHYDERES SUCCINCTUS.

Plate XXXIX. fig. 2.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. TRACHYDERES, *Dalm. (in Sch. Syn.* 111. p. 364.) Cerambyx p. *Linn*.

TRACHYDERES SUCCINCTUS. Thorace hispinoso rugoso, elytris fasciâ flavâ, antennis longioribus compressis. (Long. Corp. 1 unc.)

SYN. Cerambyx succinctus, *Linn. Syst. Nat.* 1. 11. p. 627. 32. *Fabr. Syst. Ent.* p. 168. 16. *Syst. Eleuth.* 11. p. 274. 20. *Oliv. Ent.* iv. 67. p. 20. t. f. 43. a. b. *De Geer Ins.* v. t. 14. f. 5.

Cerambyx Zonarius, *Voet. Col. Ed. Panz.* 111. p. 20. t. 7. f. 17.

Quici, *Macgr. Brazil, Lib.* vii. p. 25. 4. *Jonston Hist. Nat. Ins.* t. 14.

HABITAT: Surinam (*Drury*). "In America meridionali" (*Fabr.*).

Head dark brown, or dirty black, and very rough. Antennæ longer than the insect, with the two basal joints blueish black; the rest red brown, the extremity of each joint being blueish black. Thorax dark brown, shining, and very rough, with large swelling in the middle; having two short thick tubercles

on each side. Scutellum large and long. Elytra dark brown, margined and shining, rather broad at their extremities, and spineless; having a narrow transverse yellow bar in the middle. Abdomen dark brown. Femora dark brown at the base, black at the tips. Tibiæ and tarsi red brown; the latter cushioned beneath with yellow pile.

LAMIA CAPENSIS.

Plate XXXIX. fig. 3.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* Cerambyx p. *Linn. Drury.*

LAMIA CAPENSIS. Thorace bispinoso; nigra, elytris fasciis quatuor rufis, antennis mediocribus. (Long. Corp. 1 unc. $4\frac{1}{2}$ lin.)

SYN. Cerambyx Capensis, *Linn. Syst. Nat.* 1. 11. p. 628. 36. *Fabricius Syst. Ent.* p. 173. 14. *Syst. Eleuth.* 11. 296. 78. *Oliv. Ent.* iv. 67. p. 121. t. 8. f. 51. a. b.

HABITAT: Cape of Good Hope.

Head black; face vertical. Antennæ black, and about the length of the insect. Thorax black and rugged, with two obtuse spines on each side. Scutellum small, black and triangular. Elytra black, rounded and margined at the sides and suture, extending beyond the anus; being rough next the thorax, with a multitude of small round pustules. Each elytron has four red bars crossing it, placed at equal distances, and inclining toward each other; the two first, next the thorax, almost joining at the suture; the two last separated by a small space. In some specimens there are five of these bars. Abdomen and breast black; the latter having between the middle and hinder feet, two oblong red spots. Legs black. Tarsi cushioned beneath and lighter coloured.

CERAMBYX (CALLICHROMA) AFER.

Plate XXXIX. fig. 4.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidæ, *Leach.*

GENUS. CERAMBYX, *Linn.* SUBGENUS. Callichroma, *Latr.*

CERAMBYX (CALLICHROMA) AFER. Thorace rotundato spinoso, corpore viridi, suturâ elytrorum aureâ, antennis pedibusque rufis. (Long. Corp. $10\frac{1}{2}$ lin.)

SYN. Cerambyx afer, *Linn. Mant.* p. 532. *Fabr. Syst. Ent.* 166. 9. *Ent. Syst.* 1. 11. p. 252. 4. *Syst. Eleuth.* 11. p. 268. 7. (C. ater, lapsu calami.) *Sch. Syn.* 111. *App.* p. 150.

HABITAT: Sierra Leone and Calabar.

Head golden green. Mouth and palpi dirty orange. Eyes black. Antennæ longer than the insect, orange brown. Thorax round, golden green, with many small lines or waves crossing it; and having on each side an obtuse spine. Scutellum small and triangular, golden green. Elytra margined, extending beyond the anus; and, next the thorax, of a golden green, but becoming less brilliant towards their extremities, where they are spineless, having a yellow narrow line running on each side the suture. Breast and abdomen golden green. Legs dark orange.

CERAMBYX (CALLICHROMA) VIRENS.

Plate XL. fig. 1.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. CERAMBYX, *Linn*. SUBGENUS. Callichroma, *Latr. Serv*.

CERAMBYX (CALLICHROMA) VIRENS. Thorace rotundato spinoso, corpore viridi, femoribus rufis, antennis pedibusque nigris. (Long Corp. fere 2 unc.)

SYN. *Linn. Syst. Nat.* 1. 2. p. 627. 33. *Fabr. Syst. Ent.* p. 166. 8. *Syst. Eleuth.* 2. p. 267. 3. *Oliv. Ins.* 4. 67. t. 11. f. 78. t. 18. f. 138? *Browne Nat. Hist. Jamaica*, p. 430. t. 43. f. 8. *Sloane Hist. Jamaica*, 1. 1. p. 208. t. 237. f. 39. 40.

HABITAT: Jamaica.

Head green and shining. Palpi orange brown. Eyes black. Antennæ black, and twice the length of the body; the last joint very long. Thorax green and round, the upper part transversely rugose, and armed on each side with a spine, before which is a small tubercle. Elytra green, and margined; tapering gradually towards their extremities, where they are narrow and pointed; being covered with an infinite number of very small pustules. Abdomen and breast covered with small short hairs, and appearing of a grayish green colour. Thighs dark red, black at the tips. Tibiæ black, and compressed. Tarsi black beneath, cushioned, and orange-coloured.

PRIONUS (ORTHOMEGAS) CINNAMOMEUS.

Plate XL. fig. 2.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Prionidae, *Leach*.

GENUS. PRIONUS, *Geoffr.* Cerambyx, *Linn*. SUBGENUS. Orthomegas, *Serville*.

PRIONUS (ORTHOMEGAS) CINNAMOMEUS. Thorace marginato denticulato, corpore ferrugineo, elytris ad apicem denticulatis. (Long. Corp. 2 unc. 3 lin.)

SYN. Cerambyx Cinnamomeus, *Linn. Syst. Nat.* 1. 2. p. 623. 10. *Fabr. Syst. Eleuth.* 2. p. 264. 33. *Syst. Ent.* p. 163. 16. *Merian Ins. Surinam*, tab. 24.

Prionus corticinus, *Oliv. Ent.* 4. 66. p. 21. t. 9. f. 34.

HABITAT: (—? *Drury*). Surinam (*Merian*).

General colour like that of cinnamon. Head covered with hair in front. Eyes black, extending almost round the head, being only separated both above and beneath by a narrow space. Antennæ shorter than the body; flattened towards the tips. Thorax thin on the sides, and margined; having two spines, the posterior largest; and on the top are two round tubercles, covered with very short fine hairs or down. Scutellum small and rounded. Elytra margined deeply on the sides, but more faintly at the suture, extending beyond the anus; having a small spine at their extremities, where they are nearly as broad as at the thorax; clothed with exceeding short fine hairs, as are likewise the abdomen and breast. Tibiæ with two spurs.

LAMIA VERRUCOSA.

Plate XL. fig. 3.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* *Cerambyx*, *Linn.*

LAMIA VERRUCOSA. Fusca; thorace griseo lateribus angulatis, disco verrucoso; elytris basi rudè punctatis apice lævibus. (Long. Corp. 1 unc. $4\frac{1}{2}$ lin.)

SYN. *Cerambyx verrucosus*, *Drury, App. vol. 2.* (nec *Oliv. Ent. 4. t. 20. f. 148.*)

Lamia verrucata, *Schon. Syn. Ins. 3. p. 396. 189.*

HABITAT: Barbadoes.

Head black, inclining downwards. Antennæ greyish or dirty black, as long as the body. Thorax dirty grey; and, next the elytra, encircled with a hairy collar, of a red brown colour; very rough above, with short hairs on it; having a strong thick spine on each side, and underneath covered with short red brown hairs. Scutellum small, triangular, hairy, and red brown. Elytra margined at the sides and suture, not covering the anus; rough on the top and sides next the thorax, with deep punctures; but at the tips smooth and shining. Abdomen, breast, femora, and tibiæ covered with short red brown hairs; the latter with a single spur. Tarsi cushioned, and dirty yellowish coloured beneath.

SAPERDA TRILINEATA.

Plate XLI. fig. 1.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. SAPERDA, *Fabr.* *Cerambyx*, *Linn.*

SAPERDA TRILINEATA. Grisea seu luteo-rufa, vittis tribus longitudinalibus dentatis albis, antennis longis. (Long. Corp. 1 unc.)

SYN. *Cerambyx trilineatus*, *Linn. Mant. p. 532.* *Fabr. Sp. Ins. 1. 226.* *Syst. Ent. 179. 6.* (*Stenochorus t.*)

Saperda vittata, *Fabr. Mant. p. 231.* *Syst. Eleuth. 2. 322. 30.*

HABITAT: Jamaica.

Head dark brown, the top being tawny yellow, the sides striped with white. Antennæ greyish brown, much longer than the insect. Thorax very cylindrical, without spines, yellowish brown, having a white stripe on each side, and another on the top. Scutellum very small, semicircular, white, with a black spot in the middle. Elytra margined from the middle to their extremities, where each terminates in a spine, having a white line running on each side from the thorax to their extremities, internally serrated; another white line (also internally indented) runs along the suture, being parallel with those on the thorax and head. Abdomen greyish, with some tawny yellow hairs on each ring. Breast tawny yellow. Legs greyish brown, (the fore ones in one of the sexes being elongated) without any spines at any of the joints.

CLYTUS PICTUS.

Plate XLI. fig. 2.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. CLYTUS, *Fabr.* Cerambyx p. *Linn.* Leptura p. *Drury*.

CLYTUS PICTUS. Thorace rotundato flavo-fasciato, elytris fasciis septem flavis; anticis antrorsum, posticis retrorsum arcuatis. (Long. Corp. fere 9 lin.)

SYN. Leptura picta, *Drury, Append. vol. 2.*

Clytus flexuosus, *Fabr. Syst. El. 2. 345. 1. Syst. Ent. 191. 22. (Callidium f.) Oliv. Ent. 4. 70. 34. t. 6. f. 76.*

Leptura Robiniae, *Forster Cent. Ins. p. 43.*

HABITAT: New York; where they are found upon the Locust tree (*Drury*).

Head black, surrounded by a yellow line; front yellow, with a black spot between the antennæ. Antennæ red brown, Thorax black, cylindrical, and smooth, without spines or risings; being encircled with four yellow rings. Scutellum yellow and oval. Elytra black, with six irregular angulated streaks crossing them at equal distances; and another regular and even yellow line crossing them at the joining of the thorax. Abdomen yellow, with dark brown rings. Breast greyish yellow. Legs light red brown, with a small tibial spur.

STENOCORUS (ELAPHIDION) IRRORATUS.

Plate XLI. fig. 3.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. STENOCORUS, *Fabr.* Cerambyx p. *Linn.* SUBGENUS. Elaphidion, *Serv.*

STENOCORUS (ELAPHIDION) IRRORATUS. Thorace mutico inæquali, elytris apice bidentatis, albo irroratis, antennis longis aculeatis. (Long. Corp. 9 lin.)

SYN. Ceramb. irroratus, *Linn. Syst. Nat. 1. 2. p. 633. 62. Oliv. Ent. 4. 67. t. 21. f. 163. Fabricius Syst.*

Ent. p. 180. 9. Syst. Eleuth. 2. 307. 9. Serville Ann. Soc. Ent. de Franc. 1835. p. 67. (Elaphidion i.)

HABITAT: Jamaica; residing in the mahogany trees (*Drury*).

Head very dark brown, almost black; front dappled with cream colour. Antennæ dark brown, and about the length of the insect; having spines at each joint, except that next the head. Thorax spineless, brownish black, with white patches on its sides; and, when viewed through a microscope, punctured. Scutellum very small, and nearly triangular. Elytra brownish black, margined at the sides and suture, with whitish patches thereon, punctured; having two spines at the extremity of each. Abdomen and breast black, and covered with short grey hairs like pile. Legs reddish brown, with a small spine at the tip of each of the femora (except the fore ones), and another at the tips of the tibiæ.

STENOCORUS (ELAPHIDION) SPINICORNIS.

Plate XLI. fig. 4.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. STENOCORUS, *Fabr.* Cerambyx p. *Linn.* SUBGENUS. Elaphidion, *Serv.*

STENOCORUS (ELAPHIDION) SPINICORNIS. Thorace inermi tuberculato; elytris bidentatis, antennarum articulis bispinosis, corpore luteo-griseo, fusco variegato. (Long. Corp. circ. 10 lin.)

SYN. Cerambyx Spinicornis, *Drury, App. vol. 2. Fabr. Syst. Ent. p. 179. 7. Syst. Eleuth. 2. 306. 5. Oliv.*

Ent. 4. 67. t. 17. f. 130. Serville loc. cit. sup. (Elaphidion s.)

Cerambyx insularis, *Linn. (Gmel.) 1. 4. p. 1859.*

HABITAT: Jamaica.

Head clay-coloured. Antennæ red brown, about as long as the insect, each joint having two spines, except that next the head. Thorax clay-coloured and cylindrical, without spines; having a small red brown streak extending along the middle and down the head. Scutellum triangular. Elytra clay-coloured, with many small red brown streaks crossing them; margined on the sides and suture, each having two spines at its extremity. Abdomen and breast greyish clay-coloured, with a small red brown spot on each side of each of the segments. Legs red brown, having a strong spine at the tip of each of the femora, except the fore ones, and another at the tips of each of the tibiæ.

SAPERDA CARCHARIAS.

Plate XLI. fig. 5.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. SAPERDA, *Fabr.* Cerambyx p. *Linn.*

SAPERDA CARCHARIAS. Griseo-pubescent, nigro-punctata, antennis mediocribus griseo nigroque annulatis. (Long. Corp. 5.-8 lin.)

SYN. Ceramb. Carcharias, *Linn. Syst. Nat.* 1. 2. 631. 52. *Fabricius Syst. Eleuth.* 2. 317. 1. *Oliv. Ent.* 4. 68. t. 2. f. 22. *Panzer F. I. G.* 69. 1. *Stephens Ill. Brit. Ent. Mand. vol.* 4. 238.

HABITAT: Germany (*Drury*). "In Europæ Sylvis" (*Fabr.*).

Head dark clay-coloured. Antennæ clay-coloured, with black rings, and about the length of the insect. Thorax cylindrical and clay-coloured, without any spines or risings on it. Scutellum nearly square. Elytra dark clay-coloured, and margined along the sides; when viewed through a microscope they appear to be covered with a great number of small black pustules. Abdomen and breast clay-coloured; as are the legs, on each of which is a small spine at the tip of the tibiæ.

This fine insect has, within a few years, been found in considerable abundance in the fenny districts of Cambridge and Huntingdonshire, upon low salallows.

STENOCORUS ATOMARIUS.

Plate XLI. fig. 6.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidæ, *Leach.*

GENUS. STENOCORUS, *Fabr.* Cerambyx p. *Linn.*

STENOCORUS ATOMARIUS. Nigricans, sericie luteâ indutus; thorace cylindrico nec tuberculato nec spinoso; elytris fusco cinereoque variegatis. (Long. Corp. 8 lin.)

SYN. Cerambyx atomarius, *Drury, App. vol.* 2. (nec *De Geer*, 5. p. 65. 4. nec *Fabr. Syst. El.* 2. 287. nec *Oliv.* 4. 67. t. 9. 59. d.)

Stenochorus marylandicus? *Fabr. Syst. Ent.* 179. 5. *Syst. Eleuth.* 2. 306. 4. *Oliv. Ent.* 4. 70. t. 1. f. 5.

HABITAT: New York.

Head brownish black, covered with short yellowish grey pile. Thorax dirty black, covered with yellow grey pile; cylindrical, and without any spines or risings. Antennæ dusky brown; having a spine on each joint, except that next the head, and about the length of the insect. Scutellum very small. Elytra black, mottled with yellow grey; being margined at the sides and suture, and not reaching or covering the anus, each having two spines at the extremity. Abdomen and breast greyish brown, as are the legs, each of which is furnished with a spine at the tip of the tibiæ.

SCUTELLERA DRURÆI.

Plate XLII. fig. 1. 5.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Scutari, *Burmeister*.

GENUS. SCUTELLERA, *Latreille*, *Burmeister*. Tetyra, *Fabr.* Cimex. *Linn.*

SCUTELLERA DRURÆI. Supra rufa, capite, pronoti maculis duabus, scutelli fasciis duabus irregularibus maculisque duabus subapicalibus nigris. (Long. Corp. $7\frac{1}{2}$ lin.)

SYN. Cimex Druræi, *Linn. Mant.* 534. *Fabr. Ent. Syst.* 4. 83. 13. *Syst. Rhyng.* 132. 17. (Tetyra D.)
Sulzer Hist. Ins. t. 10. f. 5.

HABITAT: China (*Drury*). America (*Fabricius*, incorrectly).

Head black and small. Antennæ rather longer than the thorax, black, 5-jointed, the two basal joints being shortest. Thorax convex, and slightly margined at the sides; of a fine scarlet colour, with two black spots thereon; somewhat oval, but the outline forming with the head an obtuse angle, the points on the sides being cut off. Wings defended by a thick scaly scutellum, which is very convex and smooth, without any suture, entirely covering the abdomen and extending to the anus, of a scarlet colour, with two broad, black, indented and irregular bars crossing it; one next the thorax which is broadest, and on which are two small scarlet spots; the other placed just below the middle, and seeming to be composed of four spots united together; beneath this are two small black spots, nearly round, situated near the anus. Fig. *a.* represents one of the hemelytra, which when at rest are concealed beneath the scutellum, having the basal portion or corium strong, thick, and opaque; and the terminal portion beyond the transverse rib membranaceous. The wing at *b.* is very thin and membranaceous; being more transparent than the hemelytra. Abdomen scarlet, with an oblong black spot at the anus, and four others on each side joining to the edge. The breast appears in a strong light of a deep mazarine blue, almost black. Legs, the same. The proboscis is also blue, lying close to the breast, and extending to the beginning of the abdomen.

GALERITA AMERICANA.

Plate XLII. fig. 2.

ORDER: Coleoptera. SECTION: Adephaga. FAMILY: Carabidæ. SUBFAMILY: Brachinides.

GENUS. GALERITA, *Fabricius*. Carabus p. *Linn.* §c.

GALERITA AMERICANA. Nigra, thorace antennis pedibusque ferrugineis, elytris cyaneis. (Long. Corp. 9 lin.)

SYN. Carabus Americanus, *Linn. Syst. Nat.* 1. 11. p. 671. No. 19. *De Geer Ins.* iv. t. 17. f. 21. *Fabricius Syst. Eleuth.* 1. 214. 1. (Galerita a.) *Olivier Ent.* 111. 35. n. 77. t. 6. f. 72.

Carabus Janus, *Fabr. Ent. Syst.* 1. p. 136. No. 51.

Carabus bicolor, *Drury, App.* vol. 2. *De Jean Spec. General*, 1. p. 187. 1.

HABITAT: Virginia (*Drury*). North America.

Head very long, black, with a red brown spot on the middle. Antennæ dark brown, the basal joint being longest, thickest, and lightest coloured; the others are nearly of equal length; the whole being a little longer than the elytra. Neck distinct and black. Thorax light red brown, and almost oval, about the length of the head, and a little broader; it is also a little margined, and next the body truncate. Scutellum minute, black, and triangular. Elytra black, margined and furrowed, oval next the thorax, but more square at their extremities, and not covering the anus. Abdomen black. Breast light red brown; as are all the legs. The basal joint of the posterior tarsi is very long.

BRENTHUS MINUTUS.

Plate XLII. fig. 3. natural size, and 7. magnified.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Brenthides, *Schönh.*

GENUS. BRENTHUS, *Illiger*. *Brentus*, *Fabr.* *Curculio* p. *Linn.*

BRENTHUS MINUTUS. *Niger*, elytris striatis nigro-brunneis. (Long. Corp. fere 6 lin.)

SYN. *Curculio minutus*, *Drury*, *App. vol. 2.* *Herbst. Col. 7. 200. t. 108. f. 9. B.* (*Brentus* m.) *Schönh. Sys. Ins. Curcul. 1. 368. 6.*

HABITAT: Virginia.

Head black, with a long, horny, slender beak. Antennæ placed near the head, near the base of the beak, black, and about the length of the thorax, the first and last joints being the longest. Thorax black, smooth, and shining; being almost the length of the body, and nearly round, but thickest towards the middle. Scutellum indistinct. Elytra dark brown, with some patches on them of a lighter colour; margined on the sides and suture, and with rows of small punctures thereon. Abdomen dark brown, smooth and shining. The fore legs are longer than the rest, and at the tips of the tibiæ are furnished with a spine. All the thighs are very thick in the middle.

CASNONIA LONGICOLLIS.

Plate XLII. fig. 4. natural size, and 6. magnified.

ORDER: Coleoptera. SECTION: Adephaga-Geodephaga. FAMILY: Carabidæ. SUBFAMILY: Brachinides.

GENUS. CASNONIA, *Latrielle*. *Attelabus* p. *Linn. Drury.*

CASNONIA LONGICOLLIS. *Nigra*, elytris punctato striatis, singulo tuberculo parvo subapicali luteo; thorace fere longitudine elytrorum, pedibus luteo nigroque variis. (Long. Corp. $4\frac{1}{2}$ lin.)

SYN. *Attelabus longicollis*, *Drury*, *App. vol. 2.*

HABITAT: Virginia.

Head black, long and broad over the eyes, but narrow next the thorax. Antennæ dark brown, about the length of the head and thorax. Thorax nearly the length of the wing-cases, black, slender and shining, rising a little circularly from the body. Scutellum wanting. The elytra are margined and shining, not covering the anus, with rows of very small punctures on them, and near their extremities have a small papilla or swelling of a yellow colour. Abdomen black. Legs partly yellow, and partly black.

XYLOCOPA VIRGINICA.

Plate XLIII. fig. 1.

ORDER: Hymenoptera. SECTION: Mellifera. FAMILY: Apidæ, *Leach.*

GENUS. XYLOCOPA, *Fabr.* *Apis*, *Linn. Drury.*

XYLOCOPA VIRGINICA. *Hirsuta pallida*; abdomine, excepto primo segmento, atro. (Magn. Bomb. terrestr.)

SYN. *Apis Virginica*, *Linn. Mant. p. 540.* *Fabr. Syst. Piez. 346. 14.* (*Bombus* v.) *Ent. Syst. 2. 318. 15*

HABITAT: Virginia.

Head, between the eyes, black, with a cream-coloured spot in front, just above the mouth. Antennæ black, and shorter than the thorax, which is covered at top with hairs of a pale yellowish colour. All the four wings are membranaceous and transparent. Abdomen composed of six rings,

entirely black, except the first, which is pale yellow above, but black underneath. The breast and legs are black and hairy, the hairs on the fore legs being rather dark brown. The under parts of all the tarsi are light brown.

TESSERATOMA PAPILLOSA.

Plate XLIII. fig. 2.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Scutati, *Burmeister*.
(Longilabres, *Latr.*)

GENUS. *TESSERATOMA*, *St. Farg. & Serv. in Enc. Méth. Latr. Lap. Burm.*

TESSERATOMA PAPILLOSA. Lutea, thoracis lateribus subrotundatis, antennis fuscis basi subferrugineis, abdomine supra purpureo-ferruginoso subtus luteo. (Long. Corp. 1 unc.)

SYN. *Cimex Papillosus*, *Drury, App. vol. 2.* (nec *Fabr. Burmeister. Saint Farg. & Serv. &c.*)
Tesseratoma Sonneratii, *St. Farg. & Serv. Enc. Méth.* 10. 590. *Guérin Icon. R. An. Ins. pl.* 55. f. 4.
Cimex Chinensis, *Thunb. Nov. Ins.* 45. t. 11. f. 59. *Laporte Class. Hemipt. p.* 60.
Cimex papillosus? *Donovan Ins. India, pl.* 13. fig. 2.

HABITAT: China (*Drury*).

Head small, yellowish olive-coloured. Antennæ black. Thorax yellow olive, lying high above the level of the head, and projecting at the ligature of the wings. Scutellum triangular, terminating in a point near the middle of the abdomen; the basal part lying underneath the thorax. Hemelytra crossing each other when at rest; with the basal portion opaque, and yellow olive-coloured; the apical membrane being almost transparent. Wings entirely membranaceous, and yellow brown. Abdomen above, dark red, but underneath clay-coloured; furnished with a sharp tooth at each of its segments. Anus terminating in two angular points, with a small spine on each side. Breast pale clay colour; having a black spot directly under the fore legs, and another on each side the middle ones. Legs brown yellow colour. Proboscis brown.

This very common Chinese insect has been confounded by Fabricius, &c. with an African species (*Tesseratoma confusa* Westw.) and by Saint Fargeau and Serville, with another from Java (*Tesseratoma Javana*, Klug. *Burm.* 2. 350. figured by Stoll. t. 1. fig. 2.) As, however, *Drury's* specific name, as applied to the Chinese species, has the priority in point of date, I have here reverted to it, and would apply a new specific name to the species from Sierra Leone. The Fabrician species belongs to a different section of the genus having the terminal joint of the antennæ elongated. The only specimens which I have seen of it are those contained in the Banksian Collection in the possession of the Linnæan Society of London. Wolff figures the Chinese species. I have little doubt that Donovan's figure is intended to represent the true *papillosus*, although it is given as an inhabitant of India.

LEPTOSCELIS BALTEATUS.

Plate XLIII. fig. 3.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorida, *Latr.* FAMILY: Coreidæ, *Leach.*
(Anisoscelites, *Laporte.*)

GENUS. LEPTOSCELIS, *Laporte.* Anisoscelis p. *Burm.* Lygæus p. *Fabr.*

LEPTOSCELIS BALTEATUS. Thorace subspinoso; ferrugineus, elytris lineâ transversâ flavâ, femoribus posticis gracilibus spinulosis. (Long. Corp. 6½ lin.)

SYN. Cimex balteatus, *Linn. Mant.* 534. *Fabr. Ent. Syst.* 4. 142. 27. *Syst. Rh.* 213. 39. (Lygæus b.)

HABITAT: Jamaica.

Head small and slender, red brown, striped with black. Eyes projecting. Antennæ dark brown, or russet colour, and almost the length of the insect. Thorax red brown, with two small yellow spots in front; lying above the level of the head, and terminating at the side in right angles. Scutellum small and angular. Hemelytra coriaceous half way down, and with the basal portion brown red; the apical membrane opaque and dark brown; having a yellow bar crossing them near the middle. Wings transparent. Abdomen, above, yellow, and edged with dark brown, the sides being entire; underneath, entirely dark clay-coloured. Proboscis extending to the abdomen along the breast, and lying between the legs.

CENTRIS SURINAMENSIS.

Plate XLIII. fig. 4.

ORDER: Hymenoptera. SECTION: Mellifera. FAMILY: Apidæ, *Leach.*

GENUS. CENTRIS, *Fabr.* Apis, *Drury.*

CENTRIS SURINAMENSIS. Hirsuta nigra; abdomine, excepto primo segmento, flavo. (Mag. Xylocop. virginicâ minor.)

SYN. Apis Surinamensis, *Linn. Syst. Nat.* 1. 2. 961. 52. *Fabr. Ent. Syst.* 2. 318. 14. *Syst. Piez.* 355. 3. (Centris S.)

HABITAT: Surinam.

Head black. Antennæ black. Tongue very long, extending to the middle of the abdomen. Thorax black and hairy. Wings transparent. Abdomen deep yellow, except the basal segment which is black. Breast and legs black, and covered with short hairs like pile. Hind legs very broad and thin, resembling scales; and at the tip of the tibiæ furnished with two sharp spurs; intermediate tibiæ also with two shorter spurs.

OPHION MACRURUM.

Plate XLIII. fig. 5.

ORDER: Hymenoptera. SECTION: Pupivora. FAMILY: Ichneumonidæ, *Leach.*

GENUS. OPHION, *Fabr.* Ichneumon, *Drury.*

OPHION MACRURUM. Fusco-luteum; alis hyalinis, abdomine thorace triplo longiori ensato. (Long. Corp. 1 unc. 3 lin.)

SYN. Ichneumon Macrurus, *Linn. Mant. p.* 540. *Drury, Append. vol.* 2.

HABITAT: New York.

Head small, dark orange-coloured. Eyes large, black, and oblong. Ocelli shining brown. Antennæ nearly the length of the insect, brown orange, and resembling threads. All the other parts of the insect are of the same brown orange, except the wings, which are transparent. Thorax short. Abdomen three times as long as the thorax, very small at the base, like a thread, but increasing in depth (not in thickness) to the extremity, where it appears square and even as if obliquely cut off; arched from the base to the tip. Legs slender, the hinder ones being the longest. Tips of the tibiæ with two long spines, those of the fore legs having only one.

This insect very closely resembles the common English species *Ichneumon luteus*, Linn. It is, however, considerably larger.

After describing this insect our author took occasion to enter into the natural history of the family to which it belongs, namely, the Ichneumonidæ, so named from the Linnæan genus *Ichneumon*, which last he says, “appears to be taken from its nature and way of life.” He then proceeds as follows :—

“It is generally known that butterflies are produced from caterpillars, and that these caterpillars put on different forms before they arrive to that of the butterfly; but few persons know, who have not engaged in this study, that the bodies of these caterpillars are receptacles or habitations for lesser insects, that live and grow within them during a certain time; where they are nourished and fed by the juices of their bowels, till they arrive to a mature age; when, by the appointment of nature, they kill their fosterers, being totally unable to live on any other kind of food but what the intestines of these animals supply them with. The uses and advantages accruing to mankind by the institution of such a genus of insects, together with their natural history, are the subject of the following lines.

“If we examine the glorious works of the creation, and reflect on the paternal care and wisdom of the Almighty, displayed in the preservation and increase of all ranks and kinds of animals; that even the most direful and noxious, have such a proportion in the scale of life, as is most agreeable to the ends of His divine providence; that the limits He hath prescribed to each, extend so far and no farther; and that each species shall multiply in such abundance or scarcity, as are best adapted to preserve, by a just equilibrium, the harmony of the universe: When, I say, we behold this, the mind can scarcely forbear crying out, under a rapturous sense of conviction, “every thing is good.” It is to this end we see the strong are permitted to prey on the weak; and that the number of the latter increase in a proportion sufficient to supply the wants of the former; it is to this end we see some feed on herbs and plants, some on fruits and seeds, and some on flesh; each being furnished with appetites and powers, suited to their respective ways of life: and it is to this end, we see those of the most minute kinds, abounding in a degree far beyond those of the first magnitude. The knowledge of the insect kingdom illustrates this observation beyond all possibility of doubt; and the number that may be bred from a single pair, in many species, would exceed all credibility, if it was not to be proved by any person who

would take the trouble. The wonderful increase that only two summers would be capable of producing among many of them, if each egg was to yield its respective insect, is amazing. The world itself, in a few years, would be incapable of affording plants sufficient for the nourishment of one single species.*

“Hence will appear the ‘loving kindness’ of the Almighty, in setting such bounds, and keeping them within such limits as best answers the purpose for which He created them ; and hence appears the necessity of their becoming food to other animals. Birds, fishes, and the smaller kinds of beasts, are at eternal war with them ; but as all these would be insufficient of themselves to restrain and prevent them from multiplying too fast, other kinds of beings are instituted for this end, whose existence depends on their destruction. Of these, the species of insect I am describing, is the most singular, of which (genus) there are several sorts, differing greatly in size and shape. Some are furnished with three setæ or bristles at the extremity of their bodies, the middle one being a hollow tube, secured or fenced by the outer ones, through which they eject their eggs, after they have penetrated the body of the caterpillar they settle on. Some appear to have no bristles, others have them bent close under their bodies, and are not to be seen, unless closely examined. As their whole business appears to be the destroying the caterpillars of the butterfly and moth tribes, they are indefatigable in the pursuit of them ; but as this is confined to the pregnant females, they are observed ranging about continually in search of the proper subjects to lay their eggs on ; flying on every bush, and running with unwearied diligence on every twig, till they have arrived to the place where the scent of the caterpillar soon furnishes them with the certainty of its being there. Having thus discovered the animal it was in quest of, the Ichneumon immediately settles on it, with an intent to discharge its eggs ; but the caterpillar being sensible, from a natural instinct, of its enemy’s assault, bends its head backwards to the place where it feels itself attacked, and endeavours by various means, either by striking its head violently against the part, falling to the ground, or by some sudden contortion, to disengage itself : but this seldom happens, unless the Ichneumon is feeble, and unable to withstand the shocks of the caterpillar ; in which case they will frequently relinquish their attack, and seek out some other subject, whose resistance they are more capable of encountering. On the other hand, if the Ichneumon is strong enough to withstand the efforts of the caterpillar, it either lays its eggs on the outside of the skin, as is the nature of some to do, or else perforates the body with the bristle before described, and immediately discharges an egg. Some of these Ichneumons quit the caterpillar upon the emission of an egg, but others con-

* “ Let no one that is unacquainted with this study, suppose that there is any exaggeration in this account ; or that what I have related, is done with a view to catch the opinion of the public. Far from it. Every adept knows it, and to every adept I would appeal.

“ I have counted above three hundred eggs, contained in the bag of a spider ; and I have observed more than that number laid by a water insect (Phryganea) on a blade of grass, by a river side. The moth, common in our gardens, named the *Great Tiger* (or *Caja* of Linnaeus), lays above six hundred eggs ; and almost double that number I have known discharged by a *Long Legs*, as it is called, or *Tipula* of Linnaeus. Goedartius mentions two thousand worms that he plainly counted, springing from their parent insect, and imagines there were three thousand bred from the same animal.

tinue thereon till they have emitted them all ; which sometimes is more than an hundred. It is necessary to observe, that many caterpillars of moths and butterflies (the former more especially) are infested by a particular species of these Ichneumons, that confine themselves entirely to them alone, and never, that we know of, attack any other. Thus that of the Privet Hawk or Sphinx Ligustri of Linnæus, that of the Elephant Hawk or Sphinx Elpenor of the same author, &c. are always found to yield particular kinds of Ichneumons. Others, indeed, attack any kind of caterpillar belonging to the farinaceous-winged tribe ; and, as I observed above, if not too powerful and strong for them, will there deposit their eggs.

“ If the egg is laid on the body of the caterpillar, and not within it, a few days, by the warmth of the sun, ripens it to maturity ; and then the young destroyer, directed by nature, eats its passage through the under-side of the egg, and passes into the body of the caterpillar, but if the egg is discharged into its body, it there ripens, unseen, to maturity. In either case, it lives on the substance or juices of its intestines ; thriving and increasing in bulk, in a proportion equal to the creature it is doomed to kill. The caterpillar, also, notwithstanding its having thus received the means of a slow but certain death, increases in size, and, to outward appearance, in health ; arriving to the period when it is to undergo its metamorphosis, and become a Chrysalis, in as much strength and vigour as any other of the species : but when the time arrives for its enlargement into its complete state, and to become a moth or butterfly, the Ichneumon makes its appearance ; having arrived to its time of completion within the body of its supporter, and exhausted its juices by the nourishment drawn from it, leaving behind it a dry empty shell, in the form of a chrysalis.

“ In this manner many of these Ichneumons exist. Others, when arrived to maturity, having lived within the bodies of the caterpillars, as described, eat their way out through its sides, and, crawling to a small distance, form round themselves cases of a substance like silk ; wherein, having lain a few days, they quit their prisons in the shape of very small flies, some having two wings, others four.”—Vide Goedartius, Albin, Wilks, Harris, &c.

POLISTES ANNULARIS.

Plate XLIII. fig. 6.

ORDER: Hymenoptera. SECTION: Diploptera. FAMILY: Vespidæ, *Leach*.

GENUS. POLISTES, *Fabr.* *Vespa*, *Linn.* *Drury*.

POLISTES ANNULARIS. Fusca ; genubus, antennarum apicibus margineque primi segmenti abdominis flavis.
(Long. Corp. 1 unc.)

SYN. *Vespa annularis*, *Linn. Syst. Nat.* 1. 2. 950. 9. *Fabr. Syst. Piez.* 271. 3. (*Polistes* a.)
Vespa cineta, *Drury, App. vol.* 2.

HABITAT: Virginia (*Drury*).

Head dark brown colour, like the rust of iron. Antennæ shorter than the thorax ; dark brown, yellow at the tips. Thorax dark brown, with a black stripe on each side. Wings extending beyond the abdomen, thin, membranaceous, and dark brown, not perfectly transparent, and doubled or folded

lengthways together. Abdomen black, except* the first segment, which is dark orange, margined with yellow. Anterior femora dark brown, the other parts of those legs yellow. The other legs dark brown; the tips of the tibiæ and the tarsi being yellow.

POLISTES SQUAMOSA.

Plate XLIII. fig. 7.

ORDER: Hymenoptera. SECTION: Diploptera. FAMILY: Vespidæ, *Leach*.

GENUS. *POLISTES*, *Fabr.* *Vespa*, *Linn.* *Drury*.

POLISTES SQUAMOSA. Thoracis dorso nigro lineis flavis, scutello flavo lineâ nigrâ, abdomine fulvo annulo nigro versus apicem. (Long. Corp. 10 lin.)

SYN. *Vespa Squamosus*, *Drury, App. vol. 2.*

Polistes lineata? *Fabr. Syst. Piez. 271. 9. Ent. Syst. 2. 259. 20.*

HABITAT: New York.

Head yellow; but on the top, near the ocelli, black and hairy. Antennæ shorter than the thorax, dark brown, yellow next the head to the first joint, including about a third part. Thorax yellow, slightly hairy; having three black stripes on the top and two on each side meeting on the breast. Wings thin, almost transparent, and doubled or folded longitudinally. Abdomen dark orange, with a black ring next the anus, and two lesser ones near the thorax; none of which are seen underneath, being there entirely of a dark orange. Legs yellow, and furnished with two spines at the tips of the tibiæ; the anterior having only one.

POLYDESMUS (FONTARIA) VIRGINIENSIS.

Plate XLIII. fig. 8.

ORDER: Chilognatha, *Latreille*. Aptera, *Linnaeus*, *Drury*. FAMILY: Julidæ.

GENUS. *POLYDESMUS*, *Latreille, Brandt in Bull. Soc. Nat. Mosc. vol. 6.* *Julus*, *Fabr.* *Fontaria*, *J. E. Gray*.

POLYDESMUS (FONTARIA) VIRGINIENSIS. Corpore pallide griseo, segmentis convexis, articulo pedum secundo acutissimo. (Long. Corp. 1 unc. 6 lin.)

SYN. *Julus virginienis*, *Drury, App. vol. 2. Pal. Bauv. Ins. d'Afr. et d'Amer. Apter. pl. 4. f. 5. p. 156.*

Julus tridentatus, *Fabr.*

Fontaria Virginienis, *J. E. Gray in Griff. An. K. Ins. pl. 135. f. 1.*

HABITAT: Virginia.

This insect is entirely wingless. Head circular and flat, placed under the first segment. Antennæ composed of five equal articulations. Body rounded at top, forming an arch equal to one-fourth of a circle, and consisting of nineteen rings or scales, which lie very closely over one another, the hinder part of one exactly fitting the fore part of the next. Each of these scales, except some near the head, have four short feet fixed to them; the whole number of which is sixty. The general colour of the insect is whitish grey; the under part being lighter than the upper. Along the middle of the latter runs a darker shade, having a single spot of a wainscot colour placed on the middle of each scale.

MYDAS CLAVATUS.

Plate XLIV. fig. 1.

ORDER: Diptera. SECTION: Notacantha, *Latr.* FAMILY: Mydasidæ, *Leach.*

GENUS. MYDAS, *Fabr. Latr.* Midas, *Weidemann.* Musca, *Drury, De Geer.*

MYDAS CLAVATUS. Niger, abdominis segmento secundo aurantiaco, alis nigris. (Long. Corp. 1 unc. 3 lin.)

SYN. Musca clavata, *Drury, App. vol. 2.* (1773.)

Bibio filata, *Fabr. Mant. Ins. 2.* 328. 1. (1787.) *Syst. Antl.* 60. 1. (Mydas f.) *Weidemann Aussereur.*

Zweifl. Ins. 1. 240. 3. tab. 11. fig. 3. *Ditto in Nova Acta Nat. Curios. vol. 5. p. 2. pl. 53. fig. 8.*

Nemotelus asiloides, *De Geer Mem. vol. 6. t. 29. f. 6.*

HABITAT: New York, and other parts of North America.

Head black. Antennæ nearly the length of the thorax, black, slender, and knobbed at their extremities. Thorax black and smooth. Wings coppery brown, very membranaceous, and not transparent. Abdomen black, and composed of eight segments, the second being of a deep yellow; which colour extends only to its sides, the under part being black. Legs entirely black; the hinder ones being furnished with a strong spine at the tips of the tibiæ, the middle ones having four small ones, and the fore ones none. Each of the unguis has two small yellow scales (puvilli) placed underneath.

TABANUS PLUMBEUS.

Plate XLIV. fig. 2.

ORDER: Diptera. SECTION: Tabaniens, *Latr.* FAMILY: Tabanidæ, *Leach.*

GENUS. TABANUS, *Linn. &c.*

TABANUS PLUMBEUS. Obscurè coccinelleus, abdomine marginibus posticis pallidioribus, alis sublimpidis costâ fuscâ, antennis brunneo-rufis. (Long. Corp. 1 unc.)

SYN. Tabanus plumbeus, *Drury, App. vol. 2.*

Tabanus ruficornis, *Fabr. Syst. Ent.* 789. 8. *Syst. Antl.* 96. 14. *Weidemann Auss. Zw. Ins. 1.* 112.

Tabanus Americanus, *Forster Novæ Sp. Insect. Cent. 1.* 100.

Tabanus limbatus, *Pal. Bauvois Ins. d'Afr. & d'Amer. Dipt. t. 1. f. 2.*

HABITAT: New York, Virginia, &c. North America.

Head ash-coloured. Eyes nearly black. Antennæ red brown. Only one ocellus, placed a little above the antennæ. Proboscis almost equal in length to the depth of the head. Thorax dark greenish-brown coloured; having a white spot at the base of each wing. Abdomen dark brown colour; each segment being on the under side margined with grey. Wings transparent; anterior edges brown and opaque. Legs dark brown; the middle ones having two spines at the tips of each of the tibiæ. The unguis have two small brown scales under them. Breast hairy and ash-coloured, but white on the sides.

TABANUS AMERICANUS.

Plate XLV. fig. 3.

ORDER: Diptera. SECTION: Tabaniens. FAMILY: Tabanidæ.

GENUS. TABANUS, *Linn. &c.*

TABANUS AMERICANUS. Niger, abdomine canescente, alis fusco-nigris. (Long. Corp. circ. 11 lin.)

SYN. Tabanus Americanus, *Drury, App. vol. 2.* (nec *Forster.*)

Tabanus atratus, *Fabr. Syst. Ent.* 789. 9. *Syst. Antl.* 96. 16. *Weidemann Auss. Zw. Ins. 1.* 114. No. 3.

Tabanus niger, *Pal. Bauv. Ins. Afr. et Amer. Dipt. t. 1. f. 1.*

HABITAT: New York, and other parts of North America.

Head black. Antennæ black, being placed on the front of the head; the parts surrounding them shining, as if finely polished. Ocelli wanting. Proboscis red brown; being inclosed in a kind of sheath, which is black. Thorax very dark brown, almost black. Wings dark brown and membranaceous, not transparent. Abdomen lead coloured, the extremity nearly black; being of the same colour underneath as at top. Legs entirely black; the middle ones being furnished with two spines at the tips of the tibiæ. Breast hairy and black.

SPHEX JAMAICENSIS

Plate XLIV. fig. 4.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Sphegidae, *Leach*.

GENUS. SPHEX, *Linn.* §c.

SPHEX JAMAICENSIS. Castaneo-rufus, abdomine nitido, capite thoraceque fulvo-hirtis, antennis nigris, alis fuscis.

SYN. *Vespa Jamaicensis*, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Head brown orange. Antennæ almost black, and near the length of the thorax. Eyes large, and dark brown. Thorax brown orange-coloured, and hairy, with a black spot between the wings. Wings nearly transparent, *and doubled or folded together*. Abdomen shining and very smooth, red brown, and united to the thorax by a small but short thread-like peduncle. Legs red brown, and, except the fore ones, furnished with three spines at the tips of the tibiæ.

Drury described this insect as having the wings doubled or folded together, a peculiarity observed only in the wasps, amongst which the insect was placed by our author, who named it *Vespa Jamaicensis*. My specimen of this insect, which I have reason to believe belonged to Drury, is so pinned, that the upper surface of the thorax is pressed down, and the upper wing forced backwards, and thrown nearly upside down, which was evidently the case with the specimen described by Drury.

SCOLIA FOSSULANA.

Plate XLIV. fig. 5.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Scoliidæ.

GENUS. SCOLIA, *Fabr.* *Sphex*, *Drury*.

SCOLIA FOSSULANA. Atræ, thorace flavido hirtæ, abdomine fasciis quatuor flavis, intermediis dentatis. (Long. Corp. 1 unc.)

SYN. *Scolia fossulana*, *Fabr. Syst. Piez.* 242. No. 18.

Sphex plumipes, *Drury, App. vol. 2.*

HABITAT: New York.

Head pale yellow in front, black on the top and hairy. Antennæ black, and shorter than the thorax. Neck hairy, lemon-coloured. Thorax black, and covered with yellow hairs. Wings dark brown, almost transparent; not folded or doubled together. Abdomen black underneath and lemon-coloured above, where it has three black lines crossing it, two of them being broadest in the middle. Anus and breast

black. Legs black and hairy; the hinder ones being furnished with two remarkable long spines at the tips of the tibiae. Tarsi, particularly those of the hinder legs, furnished with very strong hairs, or rather bristles at each of the joints; pale yellow-coloured.

I should have retained the specific name given to this insect by Drury, on account of its priority, but it is so inappropriate, not only being applicable to one sex alone, the female, but the spines on the fore legs being found throughout the genus, as well as in nearly all the burrowing Hymenoptera. Fabricius has incorrectly referred this figure to his *Scolia radula*, which has a spotted thorax.

PELOPÆUS CÆMENTARIUS.

Plate XLIV. fig. 6. Imago—fig. 7. Cocoon—fig. 8. Imago taken out of the Cocoon.

Plate XLV. fig. 8. Nest—fig. 9. Section of the Nest—fig. 10. two Cocoons exposed.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Spegidæ.

GENUS. *Pelopæus*, *Latr. Fabr. Spheg, Linn. Drury.*

PELOPÆUS CÆMENTARIUS. Abdomine petiolato nigro, segmento primo (excl. pedunc.) lunulâ flavâ thoraceque punctis flavis, pedibus flavis posticorum femoribus apiceque tibiæ nigris. (Long. Corp. 1 unc.)

SYN. *Sphex Cæmentaria*, *Drury, App. vol. 2.*

Pelopæus lunatus, *Fabr. Syst. Piez.* 203.

HABITAT: Jamaica, Antigua, St. Christopher's (*Drury*). "In America insulis, in India orientali frequens."
(*Fabricius*, incorrectly?)

Head black and hairy. Antennæ black, basal joint yellow. Thorax black, with short hairs on it, but next the head yellow, having a yellow spot at the base of each wing, and another next the abdomen. Wings brown, and almost transparent; lying flat, not folded. Abdomen black and round, nearly as long as the thorax; basal segment (exclusive of the peduncle) yellow; pointed at the tip, and armed with a retractile sting. Peduncle very slender, black at top, and yellow underneath; being nearly the length of the thorax itself. Breast black. Fore and middle legs black next the body, but from the middle of the thighs yellow. Hinder thighs and lower parts of the shins black, the remainder yellow. Claws black.

The following particulars relative to the economy of this species were communicated to Mr. Drury from a correspondent in Antigua, who forwarded to him specimens of the insect.

"This insect is called at Antigua, and several other places in the West Indies, the Mason Fly, a name given it from the remarkable manner in which it builds its nest, or receptacle for its young.

"When the male and female have performed the business of copulation, their* next care is to provide a proper habitation for raising and securing their future progeny; to this end they seek out a proper spot that is secure from rains, &c. and is so situated as to afford a

* From our information respecting the habits of the indigenous and European species of Fossorial Hymenopterous insects, including the *Pelopæus spirifex*, it is evident that the male takes no share in the labour of constructing the nest. See my memoirs upon this subject in the "Annales de la Société Entomologique de France," for 1836, and the Transactions of the Entomological Society of London, vol. i. for the same year, and the Memoirs of Saint Fargeau and Shuckard therein referred to.

sufficient warmth for the young offspring, but not so hot as to destroy instead of nourishing them. The sides of a wall underneath the eaves of a house, is the place often pitched on for this purpose. Thus prompted by nature, and instinctively knowing the necessity of performing this work, they carry a quantity of dirt, and place it against the wall, which they temper and soften with a liquor issuing from their bodies, that renders it sufficiently strong and tenacious, and when dry, is proof against any rains that may happen to get at it. The nest is composed generally of about a dozen cells, that are round, and sufficiently capacious to hold the caterpillar when grown to its full size ; each of which is about an inch long, and about three-eighths of an inch in diameter, lying parallel with each other, and formed in such a manner, that each cell lies between two others, both above and below it, except the outward ones, having a hole left open at the extremity of each, for the parents to go in and out at pleasure. See Plate 45. Fig. 8. that at 9 being a nest supposed to be cut through its middle, to shew the form of the cells, and manner of their being built. The industry exerted on this occasion is remarkably great, for in a few days the whole is completed. There is no doubt but the heat of the climate greatly contributes to facilitate this work, as the dirt of which it is composed is quickly dried, and by that means enables them to be very expeditious. Their next employment is procuring a number of small spiders, with which each cell is properly filled, and are to serve for food to the young brood ; of these they always take care to lay in such a sufficient store, that the young ones seldom, if ever, perish from want. I have opened many of these cells, and constantly found a spider remaining uneat, sometimes two, and not seldom three, so that it is evident the parent animal makes ample provision for the appetite of its young. By the time one cell is replenished with provision, the pregnant female, finding the eggs within her ripening to maturity, and under the necessity of discharging them, lays a single one in the cell, and then covers up the hole with dirt, which was left open for a passage, in so neat and curious a manner, that the nicest eye could not discover the place where they used to enter. She then proceeds in the same manner to the next, and so on, till all her eggs are emitted and laid in their respective cells, each cell being furnished with a single egg and no more. My correspondent assures me, he is not certain whether the male assists in building the nest, or whether it is the sole production of the female ; but they both equally contribute to furnish it with provision, which they carefully watch and preserve from the ants, that in that hot climate would soon rob them of. In a little time the young ones are hatched ; and each, finding in its respective habitation a proper quantity of food, subsists thereon, and there lives unseen, till it arrives to its complete state. When it (the caterpillar) is advanced to its full size, it forms round itself a brown case, as appears at Fig. 7. Plate 44. and at Fig. 10. Plate 45. and in that inclosure undergoes its transformation ; when it puts on its form as at Fig. 8. Plate 44. remaining with its legs, wings, and horns, closed round, as is there shewn, till it has acquired strength to break its enclosure. At its first assuming this form, it is white, soft, and tender, and its wings shorter than those in the figure ; in a few weeks its becomes hard, strong, and of its proper

colour. The wings, also, before that time, grow to their proper size ; and now, finding itself arrived at a period when the forementioned circumstance of its confinement is no longer necessary to its well being, it obtains its liberty, by making a hole at the end of its cell, with its jaws and fore legs, large enough to permit its escape.

“ The separation of the thorax and abdomen, by such a long slender membrane or ligament, is very singular, and the power the insect is invested with, by means of those jaws or forceps placed at its mouth, is really wonderful ; for the number of insects, of a superior strength, as well as size, which it is capable of destroying, is scarcely credible. It will overcome a spider of twice its own size, if it can but get upon the back of it, by means of its forceps and sting : nor will multitudes of other insects find it a less formidable enemy, if they are not guarded by nature with a covering too hard to yield to the force of these destructive weapons. In short, it seems to be an animal formed by nature, as one of those instruments instituted for subduing and lessening the vast numbers of small insects that abound in warm climates.”

LEPTOSCELIS PICTUS.

Plate XLV. fig. 1.

ORDER : Hemiptera. SUBORDER : Heteroptera. SECTION : Geocorisæ, *Latr.* FAMILY : Coreidæ, *Leach.*
(Anisoscelites, *Laporte.*)

GENUS. LEPTOSCELIS, *Laporte.* Anisoscelis p. *Burm.* Lygæus p. *Fabr.*

LEPTOSCELIS PICTUS. Niger, capitis lineâ dorsali, thoraceque crenulato rufis, hoc anticè maculâ margineque postico nigris, femoribus gracilibus denticulatis, abdomine supra cyaneo maculis marginalibus rufis. (Long. Corp. $7\frac{1}{2}$ lin.)

SYN. Cimex pictus. *Drury, App. vol. 2.*

Lygæus crenulatus, *Fabr. Ent. Syst. 4. 144. 33. Syst. Rh. 250. 11.* (Alydus cr.)

HABITAT : Antigua.

Head small and slender ; red, striped with black. Eyes round and projecting. Antennæ black, and nearly the length of the insect ; four-jointed. Thorax red, with black marks near the head, and another near the abdomen ; the sides lying high and angular. Scutellum black and triangular. Hemelytra dark (almost black), the apical membrane being rather less so than the basal portion. Wings almost transparent. Abdomen above, blue along the centre, and red on the edges, indented with black ; beneath red and brown, as are also the breast and sides. Legs black. Hinder thighs, having several spines on them. The proboscis extends to about the middle of the abdomen.

This species is very closely allied to the insect figured in Plate 43, fig. 3. ; nevertheless, their descriptions are placed very widely apart in the Systema Rhyngotorum. They appear to form a good subgenus, nearly allied to Hypselopus of Burmeister, which is confined to Africa.

EUMENES ABDOMINALIS.

Plate XLV. fig. 2.

ORDER: Hymenoptera. SECTION: Diploptera. FAMILY: Vespidae, *Leach*.

GENUS. EUMENES, *Fabr. Latr. Vespa, Linn. Drury*.

EUMENES ABDOMINALIS. Fusco-fulva, antennis fuscis apice nigris, abdomine pyriformi petiolo longo nigro apice fulvo, segmento sequenti nigricanti. (Long. Corp. $10\frac{1}{2}$ lin.)

SYN. Spheg abdominalis, *Drury, App. vol. 2*.

HABITAT: Jamaica.

Head brown yellow. Eyes black. Antennæ brown, but near their extremities black, being the length of the thorax. Thorax brown yellow. Wings membranaceous, yellowish, and almost transparent, being folded longitudinally. Abdomen round, and longer than the thorax, brown yellow; the first segment (exclusive of the peduncle) black, with several black spots or streaks on the under side. It is attached to the thorax by a curved peduncle, considerably less than itself, being black; but at the tip yellow, and of the length of the thorax. Breast and sides black, streaked with brown. Legs brown yellow, furnished with a spine at the tips of the tibiæ, except the hinder ones, which have two.

CENTRIS GROSSA.

Plate XLV. fig. 3.

ORDER: Hymenoptera. SECTION: Mellifera. FAMILY: Apidae, *Leach*.

GENUS. CENTRIS, *Fabr. Apis, Linn. Drury*.

CENTRIS GROSSA. Aureo-viridis, nitida; antennis pedibusque nigris. (Magn. Bomb. terrestr.)

SYN. Apis grossa, *Drury, App. vol. 2*.

HABITAT: Jamaica.

Head black, inclining to blue, with a mixture of green. Eyes large. Antennæ black, and shorter than the thorax. Tongue yellow, and secured within its brown case. Thorax shining, of a dark golden green, with a mixture of blue, having a few black hairs on it. Wings membranaceous and brown. Abdomen of the colour of the thorax, but underneath more of a mazarine blue. Breast the same. Legs hairy and black; posterior tibiæ more so than the others.

This fine species appears nearly allied to the *Centris versicolor*, *Fabr.* (Syst. Piez. 359. 23.) which is an inhabitant of the Islands of America, but which is described thus, "thorace hirto cinerascente, abdomine cyaneo, ano rufescente."

ECHINOMYIA HIRTA.

Plate XLV. fig. 4.

ORDER: Diptera. SECTION: Athericera. FAMILY: Muscidae, *Leach*.

GENUS. ECHINOMYIA, *Dumeril. Tachina, Fabr. Musca, Drury*.

ECHINOMYIA HIRTA. Atra; alis obscuris, abdomine rufo-fusco setis longis nigris obsito, pedibus nigris. (Magn. Muscæ carniaræ.)

SYN. Musca hirta, *Drury, App. vol. 2*.

HABITAT: Jamaica.

Head black. Eyes light brown. Antennæ like jointed scales, not hairy. Thorax above almost black, with a few hairs on the sides. Wings brown and opaque, not transparent. Abdomen red brown, covered with very long black hairs. Legs black.

REDUVIUS (CONORHINUS) VARIEGATUS.

Plate XLV. fig. 5.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Reduviidæ, *Leach*.

GENUS. REDUVIUS, *Fabr.* Cimex, *Linn.* SUBGENUS: Conorhinus, *Laporte, Burm.* Triatoma, *Lap. olim.*

REDUVIUS (CONORHINUS) VARIEGATUS. Niger; thoracis lateribus maculisque marginalibus abdominis ferrugineis, corio nigro rufo-marginato. (Long. Corp. fere 1 unc.)

SYN. Cimex variegatus, *Drury, App. vol. 2.*

Reduvius gigas, *Fabr. Syst. Rh.* 267. 3. *Burmeister* II. 246. 1.? (Conorhinus G.) *Stoll.* 13. f. 85.? *Wolff,* 12. f. 113.?

HABITAT: Antigua.

Head black and small. Eyes black. Antennæ black, and shorter than the insect. Thorax black, the sides red brown and angular. Scutellum small, black, and angular. Basal portion of the hemelytra black, verged with red; the apical membrane opaque and brown. Wings transparent. Abdomen black, with red spots on its sides, which are seen also beneath. Legs black, yellow at the base.

The antennæ of this insect, as represented in the figure, are quite unlike those of any of the Reduviidæ, although in every other respect, and more especially in the peculiar neuration of the membranous part of the upper wings, it agrees with the *Reduvius gigas* of Fabricius, a species very widely dispersed, being found in South America, Sierra Leone, East Indies, as well as the Island of Mauritius.

ERISTALIS CINCTUS.

Plate XLV. fig. 6.

ORDER: Diptera. SECTION: Athericera. FAMILY: Syrphidæ, *Leach*.

GENUS. ERISTALIS, *Meigen.* Musca, *Drury, &c.*

ERISTALIS CINCTUS. Ater; thorace punctis quatuor fasciâque posticâ sulphureis, abdomine castaneo fasciâ mediâ sulphureâ. (Magn. Musc. carnariæ.)

SYN. Musca Cincta, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Head large and black. Eyes brown (antennæ broken off). Thorax black, with two yellow spots next the head, and one on each side, at the base of the wings, with a yellow line crossing it next the abdomen. Scutellum chesnut-coloured. Abdomen chesnut-coloured at the base, with a yellow ring crossing the middle; at the extremity golden green. Legs and breast black. Wings transparent.

ECHINOMYIA PILOSA.

Plate XLV. fig. 7.

ORDER: Diptera. SECTION: Athericera. FAMILY: Muscidae.

GENUS. ECHINOMYIA, *Dumeril*. Tachina, *Fabr.* Musca, *Drury*.

ECHINOMYIA PILOSA. Atra; setis rigidis numerosissimis obsita, alis opacis fuscis, capite brunneo. (Echin. hirta paullo minor.)

SYN. Musca pilosa, *Drury, App. vol. 2.*

Tachina hystrix, *Fabr. Syst. Antl.* 310. 8. *Weidemann Auss. Zic. Ins.* 2. 284.

HABITAT: Jamaica.

Head red brown. Antennæ short and thick, without hairs. Thorax and abdomen entirely covered with thick black hairs, or rather bristles, when compared with the size of the insect. Wings opaque and brown, not transparent. Breast black, covered with black bristles. Legs black, spinose.

MYRMELEON LIBELLULOIDES.

Plate XLVI. fig. 1.

ORDER: Neuroptera. SECTION: Filicornes. FAMILY: Myrmeleonidæ, *Leach*.

GENUS. MYRMELEON, *Linn. ꝯc.*

MYRMELEON LIBELLULOIDES. Alis fusco punctatis maculatisque corpore nigro flavoque maculato. (Expans. Alar. 4 unc. 9 lin.)

SYN. Myrmeleon Libelluloides, *Linn. Syst. Nat.* 1. 2. p. 913. 1. *Fabr. Ent. Syst.* 2. 92. 1.? *Latr. Gen. Crust. ꝯ Ins.* 3. 191,

Libella turcica major alis locustæ, *Pet. Gaz.* 6. t. 3. f. 1.

HABITAT: Smyrna (*Drury*). "In Europa australiori et per totam Africam" (*Latreille*).

Head dark yellow, divided by a black line, which runs along it from the thorax. Antennæ black and clubbed, small at the base, and gradually increasing to their extremities. Thorax brownish yellow; having a black line running along its upper part, and two small black spots at the base of the superior wings, being covered with greyish hairs. Abdomen about an inch and a quarter long, yellow, with a black line on the top, and one on each side; the male having two small horny tails issuing from the extremity. Wings membranaceous and pellucid (the inferior ones being as long as the superior), and elegantly adorned with a great number of dark spots of various shapes and sizes.

Fabricius gives the Cape of Good Hope as the habitat of this species, referring not only to the present figure, but also to that given in Vol. 3. Plate 41. which is said by Drury to have been brought from Sierra Leone. This is the more inexcusable, because Drury expressly observed in a note, "There is a species found near the Cape of Good Hope very much like this, but distinctly different," although in the synoptical appendix to the third volume, he gives the large species from Sierra Leone as a variety of *M. Libelluloides*.

EUPTILON ORNATUM.

Plate XLVI. fig. 2.

ORDER: Neuroptera. SECTION: Filicornes. FAMILY: Myrmeleonidæ, *Leach*.

GENUS. EUPILON, *Westw. Gen. Nov.* Hemerobius, *Linn. Drury*.

EUPILON ORNATUM. Viride, thoracis puncto antico abdomineque lineâ dorsali nigris, alis hyalinis venis numerosissimis, strigisque duabus obliquis obscuris. (Expans. Alar. circ. 3 unc.)

SYN. Hemerobius ornatus, *Drury, App. vol. 2.*

HABITAT: Dinwiddie, in Virginia.

Head dark green. Antennæ pectinated or combed. Eyes black. Thorax dark green, with a black patch next the head. Abdomen dark green, with small rings of yellow, and a small black line running along the upper side from the thorax to the extremity. Wings membranaceous and pellucid, or transparent, of equal length; the superior ones having two small transverse black stripes placed near their posterior edges, at about half an inch distance from each other.

Latreille, in his *Genera Crustaceorum et Insectorum*, Vol. 3. p. 199, after describing the genus *Chauliodes* belonging to the family Hemerobiidæ, observes, “*Congenerica videntur insecta a Dom. Drury iconibus vivis expressa, tom. 1. Pl. 46. Fig. 2. 3.*” I have never seen the present species, but from the admirable accuracy of Moses Harris (by whom the figures were drawn) it is evident that the neuration of the wings of this species is identical with that of *Myrmeleon*, agreeing especially with the insect represented at Fig. 4. of this plate, and exhibiting the irregular longitudinal nerve below the subcostal nerve and the strong furcate nerve running along the middle of the wing; whilst, at the same time, the neuration is quite unlike that of Fig. 3. Hence I have no hesitation in placing this insect in the family *Myrmeleonidæ*. It however disagrees with the genera of which that family is composed, viz. *Myrmeleon*, *Linn.* (*Myrmecoleon*, *Burm.*) *Ascalaphus*, *Fabr.* and *Nymphes*, *Leach*, in having bipectinated antennæ, so that I have been compelled to establish a new genus for its reception. Can it be possible that, according to the not uncommon practice of the time, the specimen had been mended, and that pectinated antennæ had been substituted in the stead of the ordinary ones of a *Myrmeleon*?

CHAULIODES VIRGINIENSIS.

Plate XLVI. fig. 3.

ORDER: Neuroptera. SECTION: Filicornes. FAMILY: Hemerobiidæ, *Leach*.

GENUS. CHAULIODES, *Latreille*, Hemerobius, *Linn. Drury*.

CHAULIODES VIRGINIENSIS. Capite thoraceque nigris fulvo punctatis, alis latis hyalinis venis nigro punctatis. (Expans. Alar. 3 unc.)

SYN. Hemerobius Virginensis, *Drury, App. vol. 2.*

Hemerobius pectinicornis, *Linn. Syst. Nat. 1. 2. 911. 1.?* *Pal. Baur. Ins. Afr. et Am. Neur. pl. 1. f. 2.?*

HABITAT: Virginia.

Head black, with a yellowish spot in the front, and another on the top. Eyes greyish, and shining like polished bell-metal. Antennæ pectinated or combed, and longer than the thorax. Ocelli three. Thorax black, with three small yellowish spots on the posterior part. Abdomen almost black at top,

and underneath of a greyish yellow (as are all the legs), having two short setæ or tails at the extremity. Wings membranaceous and transparent; the nerves appearing, when viewed by a magnifier, to be black and white, like the quills of a porcupine. Inferior wings shorter than the superior.

Drury has figured the wings as of an uniform colourless appearance, which induces me to consider that it may be distinct from the Linnæan *H. pectinicornis*, that species being described by the great Swede with "*signaturis nervisque fuscis albo subarticulatis.*" From the paleness of the present species it is evident that the transverse nerves connecting the longitudinal ribs of the wings in the typical species of this genus have been overlooked, especially as the longitudinal nerves are correctly represented. This genus and *Corydalis*, seems to form a connecting link between *Hemerobius* and *Perla*.

MYRMELEON AMERICANUM.

Plate XLVI. fig. 6.

ORDER: Neuroptera. SECTION: Filicornes. FAMILY: Myrmeleonidæ, *Leach*.

GENUS. MYRMELEON, *Linn*, §c.

MYRMELEON AMERICANUM. Thorace griseo nigro notato, alis hyalinis fusco et luteo punctatis, punctis nonnullis lineam centralem longitudinalem formantibus, abdomine fusco. (Expans. Alar. 5 unc.)

SYN. *Myrmeleon americanus*, *Drury*, *App. vol. 2*

HABITAT: New York.

Head black, front grey and hairy. Mouth with four long palpi. Eyes dark brown, almost black. Antennæ black, and as long as the thorax; being small at the base, and increasing in size to their extremities. Neck yellowish, striped with black, and covered with longish grey hairs. Thorax yellowish, with black stripes, and covered with long grey hairs. Abdomen, which is full an inch and a half long, brownish-coloured, and darker on the sides; being furnished at the extremity with two short hairy tails, seemingly of a horny substance. Wings of equal length, membranaceous and transparent, having a great number of small spots thereon of a dark brown colour; the superior ones being most spotted. Legs black, and covered with grey hairs; each of them being furnished at the tips of the tibiæ with two long spines that bend inwardly towards each other.

LIBELLULIDÆ, Pl. 47 & 48.

All the insects represented in these two plates belong to the genus *Libellula* of Linnæus, or the family of Dragon-flies, *Libellulidæ*. When the original edition of this work was published, there was no English work in which the natural history and curious transformations of this tribe of insects were detailed. Our author, therefore, in order to supply the deficiency, published the following interesting series of observations upon the subject:—

“As I have not met with any English author who has given the natural history of the insects delineated in these two plates, I shall make no apology for its introduction;

the frequent opportunities I have had of observing their mode of life and action, together with the many singular circumstances observable in both, being motives for its publication too powerful to be resisted.

“It is not easy to determine whether they should be ranked among the water insects, or those of the land, nor shall I attempt here to ascertain it; my present business being only to relate the several circumstances attending them during their respective states in which they are passing from the egg to the complete animal: and although these observations have been confined to our English ones, yet they so exactly agree and coincide with those of foreign countries, (as my correspondents have assured me), that their nature and behaviour appear to be just the same; so that what is observable in ours, is at the same time applicable to the whole genus wherever found.

“If we take a cursory view of the different ranks of animals that inhabit our globe, we shall hardly find one that can excite our wonder and astonishment more than this genus; nor is it from that general ignorance of the insect world, that reigns so strongly in these kingdoms, that I am emboldened to say this; but if we reflect that the beasts, birds, and reptiles are furnished with powers for living only in the air, and that even the amphibious tribes can perform the office of respiration only in that element: if we also consider that fishes, on the contrary, are unable to respire but in water, and when deprived of that must certainly perish, we cannot but conclude that all these animals are most wisely fitted with means and faculties for filling up the respective orders and ranks wherein they are placed. But let us cast our eyes on the subjects I am about to describe, and there behold a tribe of beings, who, as soon as they leave their eggs, subsist for a certain number of months, (I had almost said years), creeping and swimming in the liquid element; are there invested with organs and powers for existing and weathering out the utmost severity and intemperance of the winter; that afterwards as the spring and summer advances, and the period arrives when they are to appear in other forms, in the space of about half an hour those very organs and powers that before enabled them to live under water should be so entirely altered, the very natures and abilities of the creatures so changed as to permit them to quit their former element and place of residence, insomuch that all the remaining part of their lives is spent in the open air, furnished with wings, and flying about in the full glee of wanton liberty; that in a very few weeks after, having performed the business of generation, the same animals should die of mere old age, with their wings quite ragged and worn out, their strength exhausted, and all the powers of their bodies lost by a total imbecility and weakness, which but a little before enabled them to transport themselves through the air with the swiftness of a bird. If, I say, we reflect on all these circumstances, we cannot but allow them to be objects of a very extraordinary nature, and well adapted for leading the mind to the contemplation of their supreme Author, who has thought proper to exhibit to us these kind of insects, thus differing from almost all the animals in the creation.

“They have been variously named by different authors, owing perhaps to the time when they wrote, or the progress natural history had made in the world. Some have called them by the name of Dragon Fly, others Adder Bolt, Balance Fly, Perla, Libellula or Libella. I shall prefer the last, as conveying an idea well known to English adepts. The caterpillars of them all live in ponds and stagnant waters (that are undisturbed by cattle) during the greatest part of their lives, and make their appearance under three general forms. The first is shewn by Fig. 1. 1.; the second by Fig. 2.; and the third by Fig. 3. See Plate 47. As these are the shapes in which they all appear, it will not be improper to mention each particularly.

“The two caterpillars at Fig. 1. 1. Plate 47, belong only to or produce those that sit at rest, with their wings erect, (see Plate 48. Fig. 2.), and differ from both the others not only in size but in the roundness and slenderness of their bodies; at the extremity whereof they are furnished with three tails, each of which upon examination being found to be a kind of feather, and is an appendage that neither of the others have. Their behaviour also in the water is different from the others, being enabled to twist and bend their bodies in a more circular manner. [Subfamily Agrionides.]

“The second sort of caterpillars, at Plate 47. Fig. 2. are much shorter and thicker in their bodies than either of the others, producing those Libellas with flat bodies, as Plate 47. Fig. 4. and 6. and Plate 48. Fig. 1. and 5. These are, of all others, the most disagreeable in their appearance; most of them having their bodies and legs very rough and shaggy, and of the exact colour of mud. Others appear of a dirty green, and very unpleasing hue, a colour that in general reigns among them all; for none can boast of any beautiful appearance while in this state, unless the different shapes here exhibited can be called so. Indeed the beauty and symmetry, so apparent in their complete states, make ample amends for the want of it in this; all of them in general being then very beautiful, discovering colours superior to art. [Subfamily, Libellulides. Genus, Libellula.]

“The caterpillars of the third sort (see Plate 47. Fig. 3.) are very different from the preceding, being the size of the figure, with the abdomen flat at bottom and rounding at top, longer and slenderer than those at Fig. 2. but not so much as those at Fig. 1. 1. These produce those large Libellas with long slender bodies, who sit at rest with their wings expanded, as Plate 47. Fig. 5. [Subfamily, Libellulides. Genus, *Æshna*.]

“Under these three forms are all the caterpillars of Libellas found, there being but little difference in the colours or marks of the respective tribes; the various sizes and shapes being the chief observable circumstances attending them. They are all furnished with six legs, and have each of them four little membranaceous substances issuing from the back, or upper part of the thorax, that are the follicles, or cases, wherein the wings are inclosed. When the young caterpillars issue from their confinement in the eggs, there is no appearance of these cases, nor till a considerable time after; but as they arrive to a maturer state they become more conspicuous, and, like the young leaves of trees that open

and expand themselves on the arrival of the spring, their appearance increases, till having approached the period when they are to forsake their former habitations and become inhabitants of the air, these wing-cases have then arrived to their due size, and carry the appearance in which they are here seen. They are all of them, from the largest to the smallest, armed with a strong offensive weapon, which serves them, and is indeed the means they are endued with, for obtaining their food. This weapon being placed in the under part of the head, just beneath the mouth, I have displayed in Fig. 1. and 3. of Plate 47. where it appears just in the same manner as when they are endeavouring to catch their prey. In the largest figure at 1. and also in Fig. 2. it appears contracted and shut up, as when at rest. The strength and power that these animals discover in the use of this instrument is very singular and extraordinary. There are two joints to it, one about the middle, the other underneath the mouth, close to the throat; and in some (particularly all those of Fig. 2.) when it is closed or contracted, it appears fastened to the face of the creature, by fitting it so exactly as to form a perfect mask; covering the mouth, and reaching almost as high as the eyes. In others it is made to fit only the under part of the mouth, and when at rest is drawn up close underneath it. At the extremity of those that are extended may be observed two very strong and remarkable fangs; that, shutting over each other, form a pair of forceps, of such strength that few, if any of their captives, can escape if once inclosed therein. [This organ is the greatly developed lower lip of the larva, and is analogous in its structure to the same part in the imago.]

“The motion of these creatures in the water, particularly those of the largest size, is very slow; seldom exercising any swiftness or activity, unless they are disturbed and threatened with danger, in which case they can transport themselves to places of more security with the quickness or agility of a fish; but, in general, they appear to have so little inclination to move, that I have often seen them (I mean those that I have kept in glass bowls) remaining in their respective places above a week together, and could not discover the least motion in them, unless under the circumstance above mentioned, or when they had seen their prey and were advancing to seize it. The caterpillars of Fig. 1. 1. and 3. generally fix themselves to some little stick or straw, &c. that they find in the water, and there remain, as I said before, without stirring. Those of Fig. 2. are more frequently seen in motion among the thickest part of the roots and plants that grow there, routing and searching for those small animals inhabiting that part, which are their proper food. This aversion to motion, so apparent in those of No. 1. and 3., appears to me to be the effect of an extraordinary cunning and sagacity; and may be considered as the principal means by which they obtain their prey: for while they continue thus motionless in the water, the small animals, who constitute their proper food, approach them with less fear than they would otherwise do, not suspecting their grand enemy lies upon the watch to seize them the moment they come within his reach; but no sooner has their insensibility of danger brought them within a small distance of those destructive weapons (mentioned before, being placed under their mouths) but that very instant they dart upon them with

the utmost rapidity, suddenly throwing out their forceps, and seizing them with as much eagerness as a pike does the unwary gudgeon ; they then bring their forceps up to their mouth with their prey in it, and feast on their captive prisoner. Nor is their voracious nature less astonishing ; and the greediness with which the large ones seize other small animals would hardly gain belief among persons entirely ignorant of this study. I have seen one of them, in less than an hour's space, devour three insects, each of which was full two thirds as big as itself ; but, in general, the small ones are the sacrifices made by the greater ; wherein I must observe, that when they have got a caterpillar of the small *Libellas* in their forceps, such as those of Fig. 1. Plate 47., they leave no part uneaten, except the three tails, which they let fall to the bottom, as perhaps not having substance in them sufficient to afford them proper nourishment ; for as their food consists altogether of animals less than themselves, they neither spare the caterpillars of the lesser *Libellæ*, nor confine themselves to those belonging to other tribes. They will eagerly prey upon the different kinds of Cads, or caterpillars of the *Phryganææ* ; great numbers of whom, at certain seasons, quit those husks or cases they make and swim about, with less fear and dread than in the early part of the spring. I have also seen the caterpillars of the *Notanecta*'s or Boat-flies devoured by them, and not seldom the small blood-worms, as they are called. In short, there are but few of the lesser animals that live in the water, but when once they get within the reach of their instruments will certainly fall victims to these fresh-water Leviathans.

“ I could never observe that these caterpillars ever threw off any exuvia, or skin, in their progress from the egg to the complete animal, as most other insects do that live in the open air ; neither could I ever perceive any difference between the caterpillars and chrysalis's of this genus in their outward forms* : the same voracious behaviour in seizing and devouring their prey, reigning both in one and the other ; but that they internally undergo some material alteration, when passing their respective states, is what I do not entertain the least doubt of ; as the organs of respiration during the creature's life in the water, appear to me to be under a necessity of receiving a great alteration, when they are to perform the same office in so different a medium as the air ; nor can I suppose this business to be done in so quick and sudden a manner, as the short space of time in which the creature would then be passing from the caterpillar state to the perfect one would permit, without having the intestines prepared, as it were, and fitted by some previous change. However, as this is conjecture only, I shall dwell no longer on this head, my present purpose being to point out and describe their general circumstances and behaviour.

“ When the caterpillars of the respective species have arrived to their full growth, and nature informs them they are to quit their former element of water, for one wherein they are to appear invested with very different powers, they prepare for this extraordinary change ; and, creeping up the sticks, straws, or plants they find for their purpose, whose tops grow out of the water, they entirely quit that element, and, stopping at about six or

* The presence of the dorsal wing cases indicates the arrival of the insect at the pupa state.

eight inches above its surface, there fix themselves, and continue some time, till their internal form, growing too big to be confined within the skin, that a few minutes afterwards will be entirely thrown off, on a sudden, that part of it that covers the thorax, splits or bursts on the upper side, and the creature, pushing out its head, next disengages its fore legs, which fastening to any substance within its reach, draws gently the remainder of its body and legs entirely out, just as a man draws his leg out of a boot, leaving its slough or skin sticking in its place, and in the exact form wherein it appeared itself but a few moments before. Having thus quitted its former covering, it waits for the wings to expand themselves, and grow to their proper size, being before confined within those small cases I mentioned were placed on its back. In about half an hour, if the weather is favourable, this extraordinary operation is completed; and the wings having arrived to their proper size, the creature generally makes an effort to try its strength, well knowing, that if it fails in attempting to fly without being endued with a sufficient degree of it, it must certainly fall in that water it lately quitted, and there perish; but having made several motions with its wings, and finding its power equal to its desire, it suddenly flies into the air, and there fills up a character, as different from the former as one element is from the other. At the time this change is accomplishing, the instrument or weapon for catching their prey, before mentioned, by an effect of nature, totally disappears, and not the least vestige of it then remains; the mouth, indeed, is furnished with jaws, and those of a very extraordinary form (dividing themselves both horizontally and perpendicularly), but no part of them appear extended beyond the rest, or have the least appearance of being furnished with an instrument like what they had in their former state.*

“Hitherto I have considered these creatures only in their infant or incomplete states; wherein the faculties and powers they are endued with, are entirely different from those of their perfect and complete ones. In the former I have described them swimming and grovelling about in the water, preying upon the lesser kinds of insects, being incapable of subsisting for any length of time out of that element; in the latter we must view them capable of flying in the open air, and conveying themselves from place to place. If they are then confined to the limits of a small pond, they are now capable of roving from tree to tree, and from field to field, darting and skimming along with all the rapidity and seeming joy, that a being sensible of, and exulting in its own powers, can be supposed to do; in short, we

* “The morning is the time they generally choose for completing this change, because I am pretty certain it is in their power to retard this regeneration considerably, if I can judge from concurrent circumstances attending those I have kept in glass bowls, on purpose to observe their nature and behaviour. In one of these I have seen two libella-caterpillars, that were fully grown, for three days successively creep up the straws out of the water, in order to undergo their transformation; but finding themselves deprived of the sun-shine, (a circumstance generally attending this performance,) or at least that agreeable warmth of air so necessary for their purpose, they retired into the water: in an hour's time they made another essay, but finding the same circumstances subsisting as before, they again retired under water, and this they continued doing for three mornings; till at length one of them, wearied out by those frequent efforts, the period of nature not being to be totally avoided or suppressed, although it might be retarded, perished in the water, being at length so weak as to be unable to creep above its surface. The other, on removing the vessel into the sunshine, yielded its proper insect.”

must now view them in shapes so distinct and different from their former ones, that they hardly seem to bear any relation to each other, except in their nature and appetites; for although they appear in a far more elegant dress than when in their caterpillar states, yet these are just the same, the same voracious inclinations subsisting now as formerly; hunting after, and preying upon, the lesser genera, with the same eagerness and desire as they did when inhabitants of the water. Incredible numbers of small moths, bees, flies with four and two wings, are the daily sacrifices offered to the insatiable appetites of these hungry gluttons; and where they devoured one insect in the water they now destroy a hundred, if the mildness of the season will permit them to range about in quest of them. In rainy weather they seldom or ever move, nor when the wind is very strong and boisterous. Indeed, it is not to be wondered at. The small insects, who are their proper food, being by the same reasons prevented from being abroad, consequently are an impediment to those motives, that so strongly induce the Libellas to fly about. During such inclement times they generally shelter themselves from the wind, &c. being suspended by their feet in a perpendicular position on some twig, that is remote and separate from any boughs, waiting in that manner, without motion, for better weather and sunshine.

“ I am strongly inclined to believe, that the greater part, if not all the Libellas, are two years in passing from the egg to the complete animal. But as this is a circumstance I do not remember to have seen in any author, I shall not attempt to establish my opinion as an absolute truth. I shall mention my reasons for this belief, and leave it to every person either to confirm or confute it, as his observations shall hereafter give him an opportunity.

“ In order to do this, it would be necessary I should mention the times when each species first makes its appearance here in England. But as this would not only take up too much of the reader's time, (there being at least twenty-two of them) but it would likewise be impossible to be understood by any, but the experienced adept, unless I gave figures of them all; I shall therefore content myself with observing, that the Libella figured in Plate 45. Fig. 5. though found in America, about New York, &c. is nearly the same with our English one, differing but a very little from it, and which I have inserted chiefly as an instance to illustrate this subject. Ours is the last species but one, that comes forth in the summer, breeding only once a year, appearing about the 2nd of August. Therefore, to elucidate this point, suppose we allow a fortnight or three weeks from that time for all the Libellas of this species to make their appearance in, that nature intended should be bred that year; but in order to set this matter in the strongest light, I shall allow a month to that purpose. If, therefore, the Libellas were only one year in passing from the egg to the perfect state, we might justly conclude, that after the 2nd of September, (a month from the time of their first appearing) all of this species would have arrived to their complete states; and that none of their caterpillars could be found in the waters after that time, by reason they had all quitted that element, and were become flying insects. This, I say, is the conclusion we might fairly, and without presuming on the matter, make. But this is

very far from being the case. For let any one examine stagnant waters at any time during the months of August, September, or October, and from thence in any part of the following winter, and he will find these very caterpillars at any of those times: and this, not in any one particular year, but they will be found also in any one whatever, fully fed, and of the largest size. Nor are the caterpillars of this species the only ones to be found fully fed. Those of N^o. 2. belonging to the flat-bodied *Libella*, will also be found very plentifully, many of them being of the first magnitude, together with numbers of the same species, very young according to the time of year when sought for; and appearing to have been hatched from those eggs that were laid by parent insects in the spring; for such I must conclude them to be, how else can we account for their smallness, at the same time that we may find others of the largest size? We must not suppose there can be this difference of size in the same species, owing to some eggs having been laid three weeks or a month sooner than others; that, being so short a space of time as not to allow it possible for one of those caterpillars to attain its full size, (and all the species of flat-bodied *Libellas* appear within a month of each other.) Nor can we be so deceived as to mistake a species of the long-bodied caterpillars, for one of the short-bodied; the difference being extremely apparent at the first glance.

“These reasons appear to me so convincing, I should have thought myself inexcuseable to have passed them over in silence, when I was giving the history of these animals. I shall therefore think myself happy to have this circumstance corroborated by future experience, or rectified and cleared up, if found to be an error. I shall only say, I have dwelt the longer on it, as it is an observation I never heard of before. I have likewise singled out the largest *Libella*, and the flat-bodied ones for its illustration, as being more conspicuous by their size, and easier to be observed than those of the smaller sorts.

“The two principles of hunger and lust, so apparent through the animal kingdom, are in no class or tribe more manifest and visible than in these insects. The former I have described and explained through their different states; it remains for me to shew the manner in which they obey the calls of the latter. And herein I must observe, that the different manner in which the act of copulation is performed, depends on the difference of the respective kinds; the organs of generation being placed in different parts of the body, according to the distinct species. All the flat-bodied ones have those parts placed in common with most other insects, at the extremity of the tail. In all the slender-bodied ones, the organ of the male is placed next the breast, close to the part where the thorax and abdomen unite; while the same organ in the female lies in the very extremity of the tail, and the singular manner of these creatures coupling is a circumstance worthy of observation.

“As soon as they have arrived to their perfect state, the males seek out their mates, in order to propagate their species; for this purpose they frequent ponds and standing waters, places where the females generally harbour, and when the male in the course of his flight comes within a certain distance of her, if it be one of that species whose sexual parts

in both sexes are placed in the tail, he immediately flies to her, and fixing himself by his feet to the hinder part of her abdomen, bends his body round her tail, and performs the business of generation, both flying about all the time this act is performing ; the whole transaction not exceeding the space of half a minute. Within a few hours after, the female, thus impregnated, begins to lay her eggs in the following manner. She singles out a leaf, grass, or some such matter, that is floating just below the surface of the water, in some pond, and, hovering in the air about a foot above this spot, on a sudden she descends, and dips the extremity of her tail in the water, at which instant she discharges an egg, that at the moment of its emission is enveloped in a glutinous liquid, sufficiently tenacious to enable it to adhere firmly on the floating substance above-mentioned without sinking. In this manner she continues depositing them till she has discharged the proper quantity, hovering in the air all the time, and emitting them as fast as the pendulum of a clock performs its vibrations ; placing them close to one another in no regular or exact order. Whether she discharges at one time all her quantity of eggs, or only those that were fecundated and ready for emission, waiting to have the remaining eggs within her again fecundated by the male, or whether the first act of copulation sufficiently impregnates the whole quantity which she discharges at different times, as nature ripens them, is a circumstance I cannot determine. However this may be, it is certain she does not discharge them all at once ; but comes again to the same place, when those within her are ready for emission, and there lays them in the same manner as at first.

“ In this manner all the flat-bodied Libellas copulate and lay their eggs ; the others, which are formed with slender bodies, behave very differently in every circumstance ; for in each of those species, when the male has singled out its mate, he flies to her, and by means of two little bony substances placed at the end of his tail, issuing on each side, and composing a kind of forceps, he fixes himself to the forepart of her neck, close behind the head, the female discovering no sign of fear while he is performing this action ; having fixed himself in this position, he remains there several days, sometimes appearing with his body quite erect, at other times bending himself, and settling with his legs on the same substance she may happen to alight on, without ever quitting his hold ; but flies through the air, thus united, wherever the fancy or inclination of the female disposes her to go. This behaviour we must consider as a prelude to copulation, for that is not performed till a considerable time after they are thus united ; and therefore I look on it as a wooing, or act of courtship in the male. But having remained a sufficient time in this manner, that is, till the female is disposed to receive him, she bends her tail round to that part where I described the organ of generation to be placed in the male, and, being still held fast by the neck, in that attitude they perform the mandate of nature. This action being over, that in the smaller kinds takes up a considerable space of time (for I have known them in this posture above eighteen hours) the female soon after begins to lay her eggs. She flies to some rush, reed, or other plant growing in the water, and settling close to its edge dips

the end of her tail a little below the surface, and fixes her eggs to the rush or substance she is settled on ; which, by means of the glutinous matter all eggs of this kind are surrounded with, adheres sufficiently fast, and there remains till the heat of the sun has brought the young animal into life ; which immediately on quitting its confinement sinks to the bottom, or repairs to the place where nature directs it to seek out its food.

“ In this manner all the slender-bodied tribe behave, differing only in some particular circumstances ; as, for instance, the largest Libellas, as that at Fig. 5. Pl. 47. are not near so long in copulating or wooing as the small ones ; for by the former this act is performed in a very short space, and while they are flying about in the air. Others, of a smaller size, are less quick in this performance ; and as we descend to the smallest species, we shall find they take by much the longest time ; observing, by the way, that all these slender-bodied ones lay their eggs in the same manner, that is, by fixing them to some substance to which they adhere, till they are ripened into life. My experience well informing me they never scatter them in any loose careless manner as some insects do, but are placed in such proper and apt situations as to receive the influence of the sun to bring them to maturity.

“ If we attentively consider these creatures, either in their caterpillar or complete states, we cannot help concluding them to be a rank of beings of greater benefit and advantage to mankind than they appear to be at first view ; for, not to mention their being annual ‘ ministers of nature,’ they are appointed by the great Governor of the universe as grand instruments for assisting to preserve that equilibrium so apparently reigning through the insect world, and which all who have made any progress in the study of natural history unanimously confess. Hence the voracious disposition of the Libellas is wisely made to answer a most necessary and beneficial purpose ; and the great numbers of small insects which are daily sacrificed to their insatiable appetites, both in their caterpillar as well as complete states, is as strong an instance as any I know of the necessity and propriety of the existence of these animals. The general principle reigning through the whole animal kingdom, of the stronger preying upon the weak and defenceless, can hardly be explained to the purpose of being useful to mankind, and agreeable to the laws of nature, in any one instance more than is evidently to be observed in the subjects I have been describing. The least reflection will confirm this ; for if the food of the Libellas when in their complete forms had consisted of the leaves of plants, like the locust genus, and not of those small insects they now prey on ; or had it, like the beetle tribe, consisted of the superfluous parts of nature, as the putrid carcasses of dead animals, rotten wood, &c. how great a chasm would there have been in the universal chain ? how evident and conspicuous would it have appeared ? and how could the vast number of small insects, increasing every day during the summer, be restrained and lessened ? what genus of the transparent-winged class could possibly have performed this business singly ? or could all the genera of flies, and even birds that we know of, have accomplished this end ? could all the Dipteræ, or any other

kinds that prey on the lesser genera, have prevented such an increase of them as to become in a little time a plague too great to be borne? No. The Almighty Creator has most wisely constituted this genus for executing His commands in the manner I have described; and for this reason they must be considered as beings of greater consequence than the inconsiderate part of mankind allow them to be.

“Nor is this the only advantage arising from their existence. The still waters, where these creatures are inhabitants during their infant state, are in some degree by their assistance preserved sweet and good, that otherwise might corrupt and putrify, for the motion the waters receive by these insects is not trifling; the respiration they perform in that element being observable by a close attention, which, together with that and the motion of thousands of other insects, does in some measure contribute to keep it sweet and wholesome.”

LIBELLULA LYDIA.

Plate XLVII. fig. 4.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Linn.* &c.

LIBELLULA LYDIA. Subænea, abdomine (♂) cœruleo lateribus luteis, alis hyalinis, singulâ strigâ parvâ basali fasciâque latâ transversâ pone medium, fusco-chalybeis. (Expans. Alar. 2 unc. 9 lin.)

SYN Libellula Lydia, *Drury, App. vol. 2.*

HABITAT: Virginia.

Front of the head green. Eyes dark brown, very large, and placed near each other. Thorax green, having on each side two transverse yellow stripes. Abdomen of the male blue, with small yellow indented marks on the sides; that of the female yellow; the former having two little horny substances like tails at the extremity, which are wanting in the female. Wings reticulated and transparent; the middle of each being of a very dark blue colour, occupying about a third part, and crossing them from the anterior to the posterior edges, which by the reflection of white paper becomes dark brown. A dark brown stripe also, about a quarter of an inch in length, issues from the base of each wing, almost joining to the anterior edge; below which the males have a white patch placed on their inferior wings.

ÆSHNA JUNIA.

Plate XLVII. fig. 5.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. ÆSHNA, *Fabr.* Libellula, *Linn.* &c.

ÆSHNA JUNIA. Fuscescens, unicolor (in vivis virescens?), alis hyalinis, costâ pallidè infuscatâ, stigmatè oblongo, nigro. (Expans. Alar. 4 unc. 3 lin.)

SYN. Libellula Junia, *Drury, App. vol. 2.*

HABITAT: New York.

Head large, and in front of a brown yellow. Eyes brown, almost black, large, and placed close together. Thorax, when the insect was living, apparently green. The abdomen is now brown, but

was probably green also; for these kind of insects are very subject to lose the gay colours they exhibited when alive. Wings reticulated and transparent, appearing of a brownish colour along the anterior edges; having a small slender black stripe, about a quarter of an inch long, placed thereon near the tips, and a small angular white spot at the base of each next the body.

“ This insect is very much like one we have in England, but not entirely so, differing in some circumstances from ours; and is introduced rather as a subject for illustrating the history of these insects, than as a specimen meriting a place in this work.”—*Drury*.

LIBELLULA SERVILIA.

Plate XLVII. fig. 6.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA SERVILIA. Alis hyalinis, basi flavis, thorace fusco, abdomine rubro. (Expans. Alar. 2 unc. 9 lin.)

SYN. Libellula Servilia, *Drury, App. vol. 2.* (1773.)

Libellula ferruginata, *Fabr. Mant. Ins.* 336. 11.

Libellula ferruginea, *Fabr. Ent. Syst. t. 2. p.* 380.

HABITAT: China.

This insect was of a beautiful red colour when living, but is now much altered; being considerably darker. Head red brown. Eyes darker, but not black. Thorax red brown; having a kind of ridge running along the middle of its upper side. Abdomen red brown, flat underneath, but above terminating in a high ridge, from the extremity of which a small black line runs along the upper ridge to the thorax. Wings reticulated and transparent; having a small, slender, dark stripe placed near the tip of each, and also near the body a small reddish brown cloud.

LIBELLULA CAROLINA.

Plate XLVIII. fig. 1.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA CAROLINA. Thorace fusco, abdomine (♂) cœruleo, alis hyalinis, posticis basi dentato maculâ magnâ ferrugineâ flavo cinctâ. (Expans. Alar. 3 unc. 9 lin.)

SYN. Libellula Carolina, *Linn. Syst. Nat.* 2. 904. 17. *Amoen. Acad.* 6. 411. 85. *Fabr. Ent. Syst.* 2. 382.

Libellula Chinensis, *De Geer, vol. 3. tab.* 26. f. 1.

HABITAT: New York, Virginia, China, Madras (*Drury*).

Front of the head dark yellow. Eyes large, and situated near together. Thorax dirty green. Abdomen round; and in some appears to have been of a yellow, in others of a blue, colour. Wings reticulated and transparent; the superior (being narrowest) have only a small dark spot on the anterior edge of each near the extremity; all the remaining part being transparent. The inferior have also a small dark spot on each, like the superior; but close to the abdominal edge they have a large dark

cloud on each, which reaches from the anterior edge almost to the posterior. At this part the wings are much broader than is generally observed in any of this genus; gradually widening from the extremity to the abdominal edge.

AGRION VIRGINICA.

Plate XLVIII. fig. 2.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. AGRION, *Fabr.* Libellula, *Linn.* Calepteryx, *Leach*.

AGRION VIRGINICA. Aureo-viridis, abdomine nigro, alis fusco-luteis apice nigricantibus, stigmatibus (♀) albo.
(Expans. Alar. 2 unc. 9 lin.)

SYN. Libellula virgo var. Gamma, *Drury, App. vol. 2.* (Exclus. Syn. *Linn.*)

HABITAT: Virginia.

Head beautiful golden green. Eyes round, black, not so large as those in the other figures, and placed at a distance from each other. Thorax golden green. Abdomen black, long, and slender. Legs black, very spinose. Wings reticulated, and of a fine shining brown, somewhat inclining to dark blue, with a remarkable white oval spot near the tips of each, which part is much darker than the rest; but in the males is the same, the wings there being of a deep mazarine blue, almost black, and without the white spots.

Drury observes of this insect, that "it is somewhat like one we have in England, but distinctly different, and soon to be discovered by comparing them together." He nevertheless applied to it the name of the English species, which I have been consequently obliged to reject.

LIBELLULA BERENICE.

Plate XLVIII. fig. 3.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. AGRION, *Fabr.* Libellula, *Linn.* Calepteryx, *Leach*.

LIBELLULA BERENICE. Lutea, thorace nigro lineato, abdomine (♂) cœruleo; (♀) luteo; alis hyalinis uubilâ centrali costali fuscâ stigmatibus nigro. (Expans. Alar. 2 unc. 3 lin.)

SYN. Libellula Berenice, *Drury, App. vol. 2.*

HABITAT: Virginia, New York, Maryland.

Front of the head yellow. Eyes brown, large, and joined close together. Thorax yellow, and beautifully marked with black stripes, both at top and on its sides; the former running parallel with it, the other obliquely. Abdomen yellow, the characteristic of the female; but in the other sex blue, with black joints. Legs black. Wings transparent, with a slender black spot near the tips of each; in the middle of each also is a rather large dark cloud placed on the anterior edge, and another at the base next the body.

CORDULEGASTER SABINA.

Plate XLVIII. fig. 4.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. CORDULEGASTER. *Leach, Steph.* Libellula p. *Drury*.

CORDULEGASTER SABINA. *Aëna*, thorace nigro lineato; abdomine clavato nigro, flavo annulato, alis hyalinis stigmatibus minutis. (Expans. Alar. 3 unc. 3 lin.)

SYN. Libellula Sabina, *Drury, App. vol. 2.*

HABITAT: China, and the Island of Johanna, near Madagascar.

Front of the head green. Eyes brown, large, and placed close together. Thorax green, with three black longitudinal stripes at top, and with several others running obliquely on its sides. Abdomen, next the thorax, large and green, with black transverse stripes, but of a sudden becomes very small and slender for about five-eighths of an inch; black, with yellow rings; afterwards it becomes broad near the extremity, where it is black, the apex being yellow. Legs black. Wings transparent, except a small slender spot near the tips of each on the anterior edges.

LIBELLULA PULCHELLA.

Plate XLVIII. fig. 5.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA PULCHELLA. Thorace villosio olivaceo, lineolis duabus sub alis, abdomine (♂) cœruleo lateribus luteis; alis hyalinis maculâ baseos fasciâ mediâ apiceque fuscis. (Expans. Alar. 3 unc. 6 lin.)

SYN. Libellula pulchella, *Drury, App. vol. 2.* (1773.)

Libellula bifasciata, *Fabr. Ent. Syst. 2.* 374. (1793.)

HABITAT: New York.

Front of the head green. Eyes brown, large, and placed close together; behind each are two yellow spots, one round, the other oblong. Thorax hairy, and of a dirty brownish green; having on the sides two long yellow spots placed obliquely above one another, the under one being the shortest. Abdomen flattish, but triangular; in the male blue, but in the female yellow. Legs black. Wings transparent, with a small brown cloud on the tip of each; from whence issues along the anterior edge, a slender black stroke near the middle of each wing. Another small brown cloud begins on the anterior edge, and reaches about two-thirds cross the wing. At the base of each, also, a third dark cloud of a longish form seems to extend from the body near the anterior edge, to almost a third part of the wing. Between these clouds the males have a remarkable white patch or spot on each wing, and also another on the abdominal edge of the posterior ones, all which are not to be discerned in the females.

LOCUSTA (RUTIDODERES) SQUARROSA.

Plate XLIX. fig. 1.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Locustidæ (*Acridites, Serv.*).

GENUS. LOCUSTA. Gryllus; Sect. Locusta, *Linn.* Gryllus, *Fabr.* Acrydium, *Latr.* (SUBGENUS. Rutidoderes, *Westw.* Acrydium, *Serv.*)

LOCUSTA (RUTIDODERES) SQUARROSA. Viridis, pronoto tripartito spinoso, elytris viridibus fusco-punctatis, alis rubris nigro punctatis. (Expans. Alar. 4 unc.)

SYN. Gryllus Squarrosus, *Linn. Mant. 533.* *Fabr. Ent. Syst. 2.* 52.

HABITAT: Sierra Leone.

Head green. Eyes perfectly round and dark brown, very prominent, and standing at a little distance from each other. Antennæ 18-jointed, longer than the thorax, which is dark green, and on the upper part gibbous; having on each side three swellings, each of which terminates in three short and thick spines. Tegmina darkish green, with a great number of small black spots on them of different shapes. Wings scarlet, spotted with black; the spots being larger than those of the wing-cases, and of different shapes. Abdomen green, with several yellow rings surrounding it, and about the same length as the tegmina. Legs green; the thighs being armed with spines.

Our author states, that he was informed by a gentleman who lived several years at Sierra Leone, and by whom this species was communicated to him, that "they appear about the end of June, and soon afterwards retire among the branches of the palm trees, where they reside till the violent rains compel them to quit that situation, and live among the plants, &c. on the ground." In the Introduction to the third volume, he however states on the authority of Mr. Smeathman, that "this beautiful locust is an inhabitant of the sandy plains, called Savannas, which indeed abound with palms; but my friend is in doubt whether they have any kind of predilection for those trees.

" ' Although the hot climates abound in every part with insects of the locust and cicada kinds, insomuch that their chirping, particularly that of the cicadas, becomes in some instances intolerable; yet in the sandy plains before mentioned, which are thinly covered with grass, their numbers are immensely greater, and of various kinds, sizes, and colours, skipping or flirting about in all directions at every step of the traveller.' Perhaps, indeed, their kinds may not be so various as one would at first imagine, the same insect differing so much from itself in the various periods of its life. From the fact however here mentioned, it seems most certain that these insects breed under ground in Africa, as well as in these climates, according to Linnæus and other entomologists."

From the knowledge which we possess at the present time relative to the economy of this tribe of insects, it is necessary to observe, upon the last above-quoted passage, that the term "breeding under ground," must be restricted to the mere circumstance of the eggs being buried beneath the surface of the earth, because the insects in all their active stages (including that of the pupa) feed upon grass and other vegetable substances above ground.

In following up the very proper plan proposed and partially effected by Mr. Kirby, in the Zoological Journal, of restoring to the primary divisions of the Linnæan genus *Gryllus* the names which he gave to them, and which have been so confusedly employed by Fabricius and the French entomologists, and of which I have elsewhere given a more complete explanation, it is necessary that the generic name *Locusta* should be restored to the true migratory locusts composing the genus *Acrydium* of Latreille, and that a new name (*Rutidoderes*) should be given to the subgenus *Acrydium* of Serville, comprising the present and other allied species.

LOCUSTA TARTARICA ?

Plate XLIX. fig. 2.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Locustidæ (*Acridites, Serv.*)

GENUS. LOCUSTA. *Gryllus*; Sect. *Locusta, Linn.* *Gryllus, Fabr.* *Acrydium, Latr.* (SUBGENUS: *Locusta, Ædipoda, Serville.*)

LOCUSTA TARTARICA. Thorace subcarinato tripartito; fusco, lineâ dorsali pallidâ; elytris fulvescentibus fusco punctatis, alis hyalino subvirescentibus. (Expans. Alar. 4 unc. 6 lin.)

SYN. *Gryllus tartaricus?* *Linn. Syst. Nat.* 1. 2. p. 700. 42. *Fabr. Ent. Syst.* 2. 53. *Serville Revis. Orthopt.* p. 92. (*Acryd. t.*)

Gryllus americanus, Drury, App. vol. 2.

HABITAT: Virginia, Antigua, New York, Madras, and Sierra Leone (*Drury*). “Tartaria et Africa.” (*Linn.*)

Head striped with dark and light brown. Eyes oblong. Thorax dark brown; having a light brown stripe running along it from the front of the head, which, when the wings are closed, is continued along the margin of the tegmina; on the sides it is light brown, and margined beneath with stripes and spots of dark buff. Antennæ thread-like, and about the length of the thorax. Tegmina dark buff-coloured, almost transparent, variegated with stripes and spots of different shapes; those next the shoulders being nearly black, and those toward the extremity more transparent. Wings very thin, and more transparent than the tegmina, being of a greenish hue. Abdomen light brown on the sides; having a small stripe of a paler colour running along it, and on the upper ridge is black. Legs pale brown. Hinder thighs almost square, the outer sides being white and prettily chequered, which, when viewed by a magnifier, seem like scales laid over one another; on the outside of the tibiæ is a round white spot, and over that a long black one. Posterior tibiæ brownish red, with two rows of spines on the hinder sides of a white colour, and tipped with black, consisting of nine in the outer and eleven in the inner row.

The different habitats given of this insect by Drury, leads to believe that he had confounded several closely allied species under one name, *Americanus*; which I should have adopted, but for its inapplicability for the individuals of the Old World. It is also on the like account that I have given the reference to Linnæus with doubt, although Fabricius cites Drury's figure under *Gryllus tartaricus* without any hesitation.

EMPUSA PENNICORNIS.

Plate L. fig. 1.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Mantidæ.

GENUS. EMPUSA, *Latr. Serv.* *Gongylus, Thunberg.* *Mantis, Fabr. Drury.*

EMPUSA PENNICORNIS. Capite subulato, prothorace longissimo, femoribus anticis fusco trifasciatis, alis virescentibus. (Long. Corp. 2 unc. 1½ lin.)

SYN. *Mantis pectinata, Drury, App. vol. 2.*

Empusa pectinicornis, Fabr. Ent. 2. 25. Oliv. Enc. Méth. No. 32. Serville Revis. Orthopt. 21. (nec Linn. Syst. Nat. 1. 2. 691. No. 10.)

HABITAT: Jamaica.

Head yellowish brown; the upper part terminating in a point like a strong spine. Antennæ strongly pectinated or combed, and about half the length of the thorax. Thorax long and slender, flat on the under side, and rounded at top. Tegmina very thin, green, and almost transparent; extending, when

closed, beyond the abdomen. Wings green, transparent, towards the tips brownish, being near the same length as their cases. Abdomen about the length of the thorax, and near the extremity three times its breadth. Fore legs brownish yellow, with dark spots on them. Trochanters terminating in a thick spine; femora on the outer side furnished with two rows of spines, and a deep groove between them, which seems formed for receiving the tibiæ when closed up, like as the blade of a razor is received in the haft. Tibiæ furnished at the extremity with a strong spine, bending inwards, from whence the tarsi arise. Middle and hinder legs furnished with two spines at the tips of the tibiæ, and at the tips of the femora with one; having four small membranes almost joining to them.

This insect has been considered by all writers as identical with the Linnæan *Mantis pectinicornis*; but as that insect is described by Linnæus as an inhabitant of China, and the former as found in Jamaica, I have thought it more correct to restore the name of *pectinicornis* to the Linnæan insect, and give that figured by Drury another denomination.

EMPUSA GONGYLODES.

Plate L. fig. 2.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Mantidæ.

GENUS. *EMPUSA*, *Latr. Serv.* *Gongylus*, *Thunberg.* *Mantis*, *Fabr. Drury.*

EMPUSA GONGYLODES. Capite subulato, prothorace antice dilatato, trochanteribus anticis spinâ, femoribus quatuor posticis lobo terminatis. (Long. Corp. 3 unc. 4½ lin.)

SYN. *Mantis Gongylodes*, *Linn. Syst. Nat.* 1. 2. 690. 4. *Stoll. Mant. t.* 16. f. 58. 59. 61. *Fabr. Ent. Syst.* 2. 17. 17. *Serville Revis. Orthopt.* 21. *Roesel. Ins.* 2. *Gryll. tab.* 7

HABITAT: Madras (and Philadelphia, sed? *Drury*). Africa, Asia (*Fabricius*). East India (*Serville*).

Head yellow, exactly resembling the colour of a withered leaf, and inclining downwards; terminating at top in a spine, with a small membrane on each side. Antennæ short, and thread-like; about the length of the head. Thorax very slender, flat at bottom, rounded at top, and grooved on the sides; being about the length of the abdomen, exactly representing a twig of a tree, being furnished on each side next the head with a thin yellow membrane of an angulated shape. Tegmina yellow, about two-thirds the length of the abdomen; the edges are margined, and the principal tendons by which they are united to the body extend like the rib of a leaf from the base to the extremity; several other smaller ribs or tendons branching out from the first, make them the exact figures of the leaves of trees. Wings green and transparent, except on the anterior edges, and rather shorter than the tegmina. Abdomen yellow, broad towards the extremity, but where it joins the thorax it is narrow, terminating at the anus in a short point; having two smaller ones above it on the last segment but one. Middle and hind legs greyish brown, and shaped exactly like the twig of a tree; the former being furnished at the tips of the tibiæ with three small spines, and the latter with two; each of the femora has a single spine to it, and close thereto are placed three membranes; two on the fore part, smaller than that behind, which is circular and remarkably thin. Fore legs yellow, with brown spots or clouds on them. Trochanters flat and thin, and ending in a short strong spine, a little crooked. Femora broad, and on the outer side thick and hollow, with two rows of spines; but on the inner side very thin and smooth. Tibiæ joining to the shins, long and triangular; the under side being hollow, and furnished with two rows of

small teeth like hairs; the extremity terminating in a long sharp spine, from whence issue the tarsi. Middle and hind legs furnished with two spines at the tips of the tibiæ.

BACTERIA LINEARIS.

Plate L. fig. 3.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Phasmidæ. (Spectra, *Latr.*)

GENUS. BACTERIA, *Latr.* Mantis, *Drury.*

BACTERIA LINEARIS. Obscurè fusca (viridis insecto viventi) pedibus gracilibus simplicibus. (Long. Corp. 2 unc. $4\frac{1}{2}$ lin.)

SYN. Mantis linearis, *Drury, App. vol. 2. Gray Syn. Phasm. p. 17.* (Bacteria? l.)

HABITAT: Antigua.

This insect resembles a parcel of straws united together, being entirely wingless, and is indeed, but incorrectly, stated by Drury to be the larva of an insect like that at Fig. 1. Its general colour, as he was informed, is green; but having received it in spirits, it had become of a dusky brown colour. Head small and long, reaching almost to the fore legs. Eyes round and black. Antennæ like hairs; being as long as the insect itself. Body, which extends from where the hinder legs are placed, consisting of nine segments, almost as long as the remaining part of the insect; those legs being fixed nearly in the middle, at a small distance from whence are placed the middle legs.

This insect belongs to a singular and numerous family, known to collectors by the names of Spectres, or Walking-stick insects; and others, Walking-leaves, from the strong resemblance which they exhibit to pieces of dried sticks and detached leaves.

The insect here figured appears to be in an immature state, and would probably in its final state have acquired wings. Our author appears to have been aware of this, but he incorrectly describes it as the caterpillar of an insect like that at Fig. 1.

END OF VOL. I.

ILLUSTRATIONS
OF
EXOTIC ENTOMOLOGY,

CONTAINING
UPWARDS OF SIX HUNDRED AND FIFTY
FIGURES AND DESCRIPTIONS

OF
FOREIGN INSECTS,
INTERSPERSED WITH
REMARKS AND REFLECTIONS ON THEIR NATURE AND PROPERTIES.
BY DRU DRURY.

A NEW EDITION,
BROUGHT DOWN TO THE PRESENT STATE OF THE SCIENCE,
WITH THE SYSTEMATIC CHARACTERS OF EACH SPECIES, SYNONYMS, INDEXES,
AND OTHER ADDITIONAL MATTER.

BY J. O. WESTWOOD, F.L.S.

SOC. CÆS. NAT. CUR. MOSQ. SOC.

ETC. ETC.

VOL. II.

LONDON:
HENRY G. BOHN, 4, YORK STREET, COVENT GARDEN.
MDCCCXXXVII.

MR. DRURY'S PREFACE

TO THE FIRST EDITION.

VOL. II.

To gratify a laudable curiosity, and lead the mind to the exercise of one of its noblest faculties, was the motive that first encouraged me to publish a work of this kind. How far it has answered these ends, what pleasure it has produced, of what benefit or advantage it has been to mankind, by inducing them to contemplate the admirable works of Providence, and trace its wisdom and goodness through the medium of this branch of the history of nature, are circumstances, the confined sphere of life in which I have hitherto moved, has not given me those opportunities of knowing that I could wish. But the kind reception the first volume of this work has met with, seems to justify the opinion that it has not been written in vain.

In the Preface to my former volume, I told my readers, that my design of giving an addition to that work, would entirely depend on the reception the public should be pleased to give it. I was willing to have some proof of the public approbation, before I ventured rashly to engage further in so considerable an expense as the engraving and colouring the plates, &c. which was too great for me to incur without a prospect of a reimbursement.

It is now with the utmost pleasure I can declare, that I have the greatest reason to be satisfied on that head; the world has generously encouraged my first attempt, and it is to that cause the present volume owes its appearance. The quick sale of a great number of copies, on the first publication, was a proof of the great progress natural history had made; and gave me the utmost hopes a continuation might be equally as acceptable, if conducted on the same plan, and rendered as agreeable by the exertion of the artist's abilities. I have now the satisfaction of offering a volume to the public not inferior to the first.

It is a pleasing reflection to consider the great strides natural history is making in this kingdom, as well as in other parts of the world; and the many publications on the various subjects of nature, that have made their appearance within these last three or four years, is a circumstance that must give every man of a liberal mind the greatest satisfaction. We

see persons, skilled in natural history, receiving encouragements and reward from men of rank and property, according to their respective abilities. Some are encouraged to pursue their studies in foreign parts, and investigate the secrets of nature among the trees and plants ; others are employed in discovering countries, and searching the shores of coasts, hitherto unknown, for subjects that will afford either profit or speculative pleasure ; while the artist at home is not neglected and abandoned, but meets the reward his merit entitles him to.

Natural history has, certainly, less reason to court the favour of mankind than many other branches of knowledge ; as the pursuit of it, either as a science or amusement, is so replete with pleasure, that it is hardly possible to refuse it our approbation and encouragement, so soon as we give ourselves the least time to enquire into its merits ; and we are often stimulated to pursue it from the appearance of that inexhaustible store of entertainment it is sure to afford. It is therefore less to be wondered at that publications on these subjects are more numerous than formerly ; as the desire of communicating knowledge and happiness is irresistible, and men, for their own sakes, will be induced to follow the tracks, where the enjoyment of unallayed pleasure lies within their grasp.

I shall not dwell any longer on this part of the subject, but inform the reader, that the same plan, of giving *just* and accurate figures, that was followed in the first volume, is continued in this. The utmost care and nicety has been observed, both in the outlines and engraving. Nothing is strained or carried beyond the bounds nature has set ; and whoever will compare the engravings with the originals, I flatter myself will allow, that nothing is borrowed from fancy, or any colour given to an insect that does not really exist in the subject intended to be represented.

It is true, the want of those remarks and observations on their natural history, similar to those inserted in my first volume, is a circumstance I have great reason to lament. I mentioned my opinion of the cause in my former address, in which I have since been confirmed by repeated proofs ; and notwithstanding the great labour and trouble I have been at, not only in procuring the subjects of the present volume, but in endeavouring also to get the natural history of some of the most extraordinary of them, I have not been able to obtain one single piece of information proper to be laid before the public.

It is to little or no purpose to make further enquiry into the reasons of this want of curiosity, among all ranks of people, situated in distant climates, more than I have already done. I find it is so ; and whether it proceeds from an ill-judged pride, in thinking such minute animals below their notice, or whether it arises from that languor of mind, as well as of body, that generally prevails in warm climates, is a matter of no consequence to mankind : the world is not benefited by their situations, and we must be content to remain in our present ignorance, till Providence shall think proper to give us a second Swammerdam, or Reaumur, &c. and place him in a distant part of the globe, for the advantage of the human race.

It is necessary to mention, that both the descriptions, and engravings, were finished about the beginning of the year 1771; and as some of the insects are mentioned as non-descripts, that since that time have appeared in other works, I hope I shall not be considered as guilty of an imposition on that account.

The present age has made great improvements in *entomology*, as well as other parts of natural history. The many publications that have appeared on that subject within these two years, are proofs how well works of this kind are received; and as all iconographers aim at giving representations of unfigured subjects, it is no wonder if some contained in this volume should be presented to the world by those who happened to have got the start of me. The plates were actually engraved, and great part of the prints coloured, before I discovered that any of the subjects had been figured by other authors; and to have suppressed them on account of the very few that are found in other works, would have incurred an expense greater than the nature of the case would allow.

The objection made of the want of *names* to the insects contained in my first volume, the reader will here find removed; and *trivial* as well as *generical* ones, given to every insect in the whole work: and likewise a few errors of the press corrected, that have almost imperceptibly got in. I was, indeed, truly sensible of the defect and incompleteness of that volume, occasioned by the above circumstance, and would gladly have named every insect then delineated; but the different opinions subsisting at that time among entomologists, some preferring one author and some another, made me exceeding cautious of entering on that business: and I rather chose to defer it to the present opportunity, than give occasion for any reflections against me, for my attachment to an author, whose method I should certainly have pursued, and whose works have deservedly entitled him to the appellation of *father* of natural history. I mean the excellent Linneus, whose system seems now to be generally approved and followed; and I must here mention, the opportunity that the present work affords of giving an explanation of the terms, &c. in his work, I should certainly have availed myself of, for the benefit of the young beginner; but as my friend, Mr. Curtis, has published a good translation of the “*Fundamenta Entomologiæ*” of that author, wherein the young student, as well as the adept, who are not versed in the Latin tongue, may receive great improvement; I must refer them to that work for the properly understanding the plan and design of that great author.

The reader will observe, that in giving *trivial* names I have strictly followed the method of Linneus. The Butterflies entitled to be ranked among the Equites, are named after some great personage found among the Greeks and Trojans; as in Plate iii. Fig. 1. where I have named the insect Antenor, from a Trojan prince; and Plate ix. Fig. 1, 2. Menestheus from a Grecian one; one belonging to the Eq. Trojanes, the other to Eq. Achivi. I have likewise followed his rule in naming the insects belonging to other classes; and given such as I concluded to be the most easily retained in the memory. To this end also I have used the Latin language in preference to the English, for the great liberty it allows

of compounding and decompounding words and names ; a circumstance of the greatest consequence in a business of this sort.

I should think myself totally unpardonable, if I finished this address without acknowledging the obligation I am under to several friends, whose assistance in this work claim the utmost return of gratitude ; among these, in a most particular manner I must mention Dr. Fothergill, whose readiness to encourage and promote every part of natural history, must endear him to every man who wishes well to so useful and beneficial a branch of knowledge ; and it is to the kindness of that gentleman the reader will perceive I am indebted for a great number of figures that form a considerable part of this work ; many of which are so very rare, as not to be met with in any other cabinet.

ILLUSTRATIONS

OF

EXOTIC ENTOMOLOGY.

HÆTERA PHILOCTETES.

Plate I. fig. 1, 2.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Sacainson*.

GENUS. HÆTERA, *Fabr. (Syst. Gloss. in Illig. Mag.)* Satyrus, *Latr. & God.* Papilio p. *Linn.*

HÆTERA PHILOCTETES. Alis suprà violaceo-fuscis; posticis ad angulum ani maculis tribus cœruleis, externis duabus puncto nigro, punctisque tribus albis, subtus fasciâ latâ communi purpureo-fuscâ utrinque albo-marginatâ. (Expans. Alar. 4 unc. fere.)

SYN. Papilio (Equ. Archiv. Philoctetes), *Linn. Syst. Nat.* 2. 750. No. 29. *Cramer, tab.* 20. fig. A. B. C. *Fabr. Ent. Syst.* 111. 1. p. 83. p. 259. (Nymphalis Ph.) *Herbst, tab.* 55. fig. 2. 3. *Enc. Méth.* ix. p. 481. (Satyrus Ph.)

HABITAT : Surinam (*Drury*). "In Indiis." (*Linn.*)

Upper Side. Head, thorax, and abdomen dusky brown. Anterior wings fine mellow dark brown or snuff colour towards the tips; but near the body, glowing with a fine dark glossy purple. Near the tip of each wing are two small white specks, one scarcely visible; on the lower part of each wing is a rather large oval spot, of the same snuff colour with that near the tips. Posterior edges circularly dilated, and gradually widening from the shoulders to the external edges. Posterior wings dark brown, but glowing all over in some directions with a dark glossy blueish purple. Near the abdominal corners are two black eyes on each wing, surrounded by beautiful dazzling blue.

Under Side. Breast and sides yellowish sandy-coloured. Anterior wings divided into three parts by two lines or bars; one being brown and narrow, the other white and rather broad. The first division, next the body, is of a russet or light hair colour, tintured with pearl, having a short black streak near the middle; the next, or middle division, is light brown; the third is dark clay-coloured. A considerable number of long hairs arising from a single point or stalk, spreading like the leaves of a fan, and occupying the space corresponding with the oval spot mentioned before; those on the outside bending downwards, and curling. (See Fig. 3. This circumstance is peculiar to one sex only.) Posterior wings next the body russet, with a single black spot near the middle of each. Abdominal groove russet.

Middle of the wing with a rather broad bar of a fine deep chocolate colour, beginning at the anterior edge and ending at the abdominal groove; the upper side of the bar next the body being russet. Lower part of the wing, next the external edge, of a colour between russet and chocolate, with three small white spots near the upper corner. The two black eyes are distinct on this side, with narrow blue irides. The wings are a little dentated.

Drury's figure represents an individual in which the posterior wings have no appearance of the short tail, which the species ordinarily exhibits. It may, perhaps, originate in the figure being taken from a mutilated specimen. The *Papilio Morna* of Fabricius, appears nearly allied to this insect.

THECLA FAUNUS ♀.

Plate I. fig. 4, 5.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidæ, *Leach*.

GENUS. *THECLA*, *Fabr.* *Polyommatus* p. *Latr.* *Hesperia* p. *Fabr. olim.* *Papilio* (Pleb. *ruric.*) *Drury*.

THECLA FAUNUS. Alis supra fusciscenti-violaceis apice atro, subtus albis strigâ communi mediâ fulvâ; posticis tricaudatis, lineâ marginali nigricante maculisque duabus nigro viridique mixtis. (Expans. Alar. 1 unc. 3 lin.)

SYN. ♀ *Papilio* (Pleb. *ruric.*) *Faunus*, *Drury, App. vol. 2.* *Cramer, pl. 39.* B. C. ♂. 96. F. G. ♀. *Fabr. Ent. Syst.* 111. 1. p. 161. No. 11. (*Hesperia* F.) *Encycl. Méth.* ix. p. 618. 1. (*Polyommatus* F.)

♂ *Hesperia* R. *Hesiodus*, *Fabr. Ent. Syst.* 111. 1. p. 260. 8. *Pal. Bauv. Ins. d'Afr. et d'Amer. Lep. Pl. 7. f. 5. 6. 7.* ♂. ♀.

HABITAT: Sierra Leone (*Fabr.*). Gold Coast (*Drury*).

Upper Side. Antennæ ringed with white and black. Anterior wings greyish brown, without markings. Posterior wings of the same greyish brown. Cilia white. A little above the abdominal corners are four white spots, placed close together; the two inner ones being smallest. Each of these wings is furnished with three tails, the upper parts of which are black, the other parts white; the middle one being almost as long as the wing, the other two are about half that length.

Under Side. Palpi, head, and breast white. Legs white and brown. Wings fine silvery white. A small, narrow, orange-coloured line begins at the middle of the anterior edge of the fore wings: which, crossing them and the hind ones, runs almost to the abdominal corner, where it suddenly turns back and ends at the abdominal groove. Near this part are two small black spots, one placed between the two outer tails, and the other on the abdominal edge.

Fabricius gives the sexes of this insect as distinct species, under the names cited above, stating India to be the habitat of *Hesiodus* (or the male). *Paliset de Bauvois* has, however, satisfactorily cleared up the error, by figuring both sexes from Africa. The male has the disc of the wings, on the upper side, of a rich blue colour.

EREBUS HIEROGLYPHICUS.

Plate II. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. EREBUS, *Latr.* Thysania, *Dalm.* Noctua, *Fabr.*

EREBUS HIEROGLYPHICUS. Alis dentatis atris; anticis fasciâ abbreviatâ albidâ maculâque subocellari, posticarum margine bisinuato. (Expans. Alar. 3 unc. 7 lin.)

SYN. Phalæna (Noctua) hieroglyphica, *Drury, App. vol. 2. Donovan Ins. India, pl. 54. fig. 3. Oliv. Enc. Méth. 8. 253. 11.*

Noctua hieroglyphica, *Fabr. Ent. Syst. 111. 2. p. 11. No. 10.*

Phalæna Magdonia, *Cram. Ins. 2. t. 174. f. F.*

HABITAT: Madras.

Upper Side. Antennæ setaceous. Tongue spiral. Thorax and abdomen dark brown. Wings beautiful mellow dark brown, or deep chocolate, appearing like velvet. Anterior wings with two long, square, yellow spots on each, joined together at their corners, placed near the tips, and joining to the anterior edges of each wing; and also a rather large central eye, almost joining to the anterior edge; iris black and narrow, the pupil large, and the same colour with the wing. Posterior wings immaculate.

Under Side. Palpi filiform at their extremities, and standing erect over the head. Breast, sides, and abdomen dark brown. Wings dark brown, rather lighter than on the upper side. Anterior with three yellow spots on each. Posterior wings immaculate. All the wings dentated; the scollops of the anterior wings being small, and those of the posterior very large.

DEIOPEIA? PUELLA.

Plate II. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Lithosiidæ, *Steph.*

GENUS. DEIOPEIA? *Steph.* Phalæna (Noctua), *Drury.*

DEIOPEIA? PUELLA. Alis anticis albis, maculâ parvâ discoidali nigrâ, fasciisque 4 transversis rubris, posticis abdomineque carneis. (Expans. Alar. 1 unc. 3 lin.)

SYN. Phalæna (Noctua) Puella, *Drury, App. vol. 2.*

HABITAT: Madras.

Upper Side. Antennæ setaceous. Head white. Tongue spiral. Neck red. Thorax red and white. Abdomen grey. Anterior wings white, having a small black central spot in the middle of each, with four narrow red lines crossing them. Posterior wings yellowish flesh-coloured, immaculate.

Under Side. Breast, sides, and abdomen light grey. Anterior wings having the anterior edges tinged with red at the base, the four narrow red lines being faintly seen on this side. Posterior wings coloured as on the upper side.

NOCTUA MYRTÆA.

Plate II. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. NOCTUA, *Auct.*

NOCTUA MYRTÆA. Testacea, alis strigis nonnullis undatis fuscis. (Expans. Alar. 1 unc. 3 lin.)

SYN. Phalæna (Noctua) Myrtæa, *Drury, App. vol. 2.*

HABITAT: Madras.

Upper Side. Antennæ brown and setaceous. Palpi, head, neck, thorax, abdomen, and wings reddish flesh-coloured; the latter having some very faint waved lines crossing them. Cilia dark brown.

Under Side. Breast, sides, legs, and abdomen coloured as on the upper side. Wings yellowish, with many small narrow streaks. On the external edges of the anterior wings is a dark brown patch, near the tips. Cilia dark brown.

I do not know to which of the modern genera of Noctuidæ this insect belongs.

HELEONA PAPILIONARIS.

Plate II. fig. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Arctiidæ? *Steph.*

GENUS. HELEONA, *Swains.* (*Zool. Illust. N. Ser.* 116.) *Gymnautocera?* *Guérin.* (*Mag. d'Entomol. t.* 12.)

HELEONA PAPILIONARIS. Alis albido-flavis; margine venisque dilatatis, ramosis, nigris et versus medium coalitis, maculas albas efformantibus. (Expans. Alar. 3 unc. 3 lin.)

SYN. *Phalæna* (Noctua) *Papilionaris*, *Drury, App. vol. 2. Cramer, t.* 29. fig. A.

Phalæna venaria, *Fabr. Ent. Syst.* 111. 2. p. 156. No. 96. *Gmel. Linn. S. N.* 2470. No. 701.

HABITAT: China (*Drury*). "In Indis" (*Fabr.*).

Upper Side. Antennæ dark blue and pectinated. Tongue spiral. Head, neck, and thorax dark mazarine blue, spotted with white. Abdomen deep blue, with six white rings. Wings black, covered with a number of streaks and spots of a dusky brimstone; those nearest the body being much longer than those next the external edges; where eight of them form a kind of border on each wing, and are all placed on the membranous parts between the nerves. Margins of the wings entire.

Under Side. Breast and sides blue. Legs blue and white. Anterior wings with the anterior edges fine mazarine blue. The remaining parts of all the wings are exactly the same as on the upper side.

PAPILIO ANTENOR.

Plate III. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach.*

GENUS. PAPILIO, *Auct.* *Papilio* (Eq. Troj.) *Drury.*

PAPILIO ANTENOR. Alis dentatis concoloribus albo maculatis; posticis caudatis; disco atomis viridibus lunulisque marginalibus rubris. (Expans. Alar. 6 unc. 6 lin.)

SYN. *Papilio* (Eq. Troj.) *Antenor*, *Drury, App. vol. 2. Donovan Ins. of India, pl.* 15. f. 1. *Fabr. Ent. Syst.* 111. 1. p. 40. No. 9. *Boisd. Hist. Nat. Lep.* 1. p. 189. No. 2.

HABITAT: Central Africa.

Upper Side. Antennæ red brown, but thickening gradually to the tips. Head fine scarlet. Thorax velvety black. Abdomen white with scarlet rings. Anterior wings black, with three rows of cream-coloured spots on each; the two upper ones next the anterior edge being a little confused by running into each other; the lower one, running parallel with the external margin, is more regular. These spots, being nineteen in number, are of different sizes and shapes; some being round, some oval, triangular, &c. Posterior wings black, with two tails; having four rather broad scarlet crescents placed above

each of them, the ends of which are verged with cream. On the middle of each wing is placed a great number of small powder-like spots of a golden green colour; and on the abdominal edges, just below the body, are two scarlet and cream crescents placed opposite each other. The upper part of each wing exhibits ten cream-coloured spots of different shapes and sizes, whereof three are larger than all the rest.

Under Side. Breast scarlet. Sides black. Abdomen scarlet, with white rings. Wings coloured nearly as on the other side; the spots being rather more distinct, the crescents broader, and the cream edges stronger than on the upper side. All the wings are dentated; the superior very faintly, the inferior very deeply.

Drury states that he was ignorant from what part of the world his specimen (which was given to him by Mr. Leman) came from. No other individual of this species is recorded to exist in the modern collections, and it is from the figure and description of Drury that all subsequent writers have derived their knowledge of this splendid and unique insect.

Donovan, however, figured this butterfly, or rather copied Drury's figure in his beautiful work upon the Insects of India, observing merely that it might be "mentioned with much propriety amongst the rarest of the *Papilio* tribe found in India," without giving any account of the source from whence his figure and information had been obtained.

At the sale of Mr. Drury's collection, this butterfly composed lot 1 of the first day's sale, May 23, 1805, and was purchased by Mr. Latham at the price of £2. 12s. 6d.

The Rev. F. W. Hope, however, possesses a specimen, which he has informed me, that he obtained in a small collection of rare insects from tropical Africa, collected by the late Mr. Ritchie.

THECLA SYLVANUS.

Plate III. fig. 2, 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycenidæ, *Leach.*

GENUS. *THECLA*, *Fabr.* *Polyommatus* p. *Latr. & God.* *Hesperia* p. *Fabr. olim.* *Papilio* (*Pleb. ruric.*) *Linn. Drury.*

THECLA SYLVANUS. Alis suprà maris obscurè violaceis, feminae albido cœrulescentibus; subtus fuscis, annulis numerosis albis seu albidis; posticis, ocellis duobus anguli aui argenteis rufo cinetis. (Expans. Alar. 1 unc. 3 lin.)

SYN. *Papilio* (*Pleb. rur.*) *Sylvanus*, *Drury, App. vol. 2.*

Pap. Larydas, Cramer, pl. 282. fig. H. Herbst, tab. 290. f. 1. Latr. & God. Enc. Méth. ix. 619. (*Polyommatus Larydas.*)

HABITAT: Sierra Leone.

Upper Side. Head, thorax, and abdomen black. Wings of a dark mazarine blue, tinged with brown; immaculate. Posterior wings with three small narrow tails to each, which appear to be clusters of small hairs, extending from the wing below the cilia.

Under Side. Palpi, breast, and thighs grey. Wings russet or hair-coloured. Anterior near the tips with a few faint markings. Posterior wings irregularly spotted with black, dark brown, and whitish

spots and marks; two black ones being situated next the abdominal corners, and sparkling with small sapphire-coloured specks placed thereon, being scarcely discernible. All the wings are entire.

POLYOMMATUS ISIS.

Plate III. fig. 4, 5.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidæ, *Leach*.

GENUS. POLYOMMATUS, *Latr. & God.* Hesperia (rur.), *Fabr.* Argus p. *Scop.*

POLYOMMATUS ISIS. Alis supra violaceo-cærulescentibus, disco anticarum maculâ, posticarum fasciâ albis; subtus albis; posticis fasciis duabus repandis, et macularum serie nigris, harum duabus internis argentatis ♂. (Expans. Alar. 1 unc. 3 lin.)

SYN. Papilio (Dan. Festiv.) Isis, *Drury, App. vol. 1.*

Hesperia Isarchus, *Fabr. Ent. Syst.* 111. 1. p. 316. 198. *Herbst. Pap.* 320. f. 8, 9. *Enc. Méth.* ix. p. 679. No. 194. (Pol. Isarchus.)

Papilio Camillus, *Cramer, pl.* 300. fig. A. B.

HABITAT: Sierra Leone (*Drury*). "America, Dom. Drury" (*Fabricius*). Timor (*Enc. Méth.*).

Upper Side. Head, black. Thorax and abdomen dark blue. Anterior wings fine violet, a little inclining to purple; round the external edge runs a small narrow black line. Cilia white and black. On the middle of these wings is a white patch, with two small faint dark spots on its upper side. Posterior wings violet-coloured, with the same narrow black line running along the external edges as on the anterior. An irregular white bar crosses these wings from the anterior to the abdominal edges, beginning near the upper corner and ending near the extremity of the body.

Under Side. Palpi, breast, and sides white. Legs black. Abdomen white. Anterior wings white, with some dark brown markings running along the anterior and external edges, whereon are some white streaks and patches. Posterior wings white, whereof one-third next the external edges is dark brown, but next the cilia is whitish; whereon are six small round brown spots, two of which, next the abdominal corners, sparkle with blue like a sapphire; the upper parts of these wings, next the shoulders, have a brown double streak on each. All the wings are entire.

PAPILIO NIREUS.

Plate IV. fig. 1, 2.

ORDER. Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PAPILIO, *Linn. &c.* (Section Equit. Achiv.)

PAPILIO NIREUS. Alis dentatis, nigris, fasciâ communi maculisque viridibus; posticis breviter caudatis; his subtus fasciâ subargenteâ, marginali, nervis divisâ. (Expans. Alar. unc. 4. lin. 8.)

SYN. Papilio Nireus, *Linn. Syst. Nat.* 2. p. 750. No. 28. *Fabr. Ent. Syst.* 111. 1. p. 36. No. 106. *God. Enc. Méth.* ix. p. 48. No. 67. *Cram.* 187. A. B. § 378. F. G. *Herbst. Pap. tab.* 37. f. 1. 2. *Boisduval. Hist. Nat. Lepid.* 1. 224.

HABITAT: Sierra Leone (*Drury*). Coast of Guinea, Caffraria, Madagascar (*Bdv.*). India (*Linn. & Fabr.*).

Upper Side. Head, thorax, and abdomen velvety black. Wings fine deep black; with two narrow bars of a beautiful Saxon or blueish green colour, which begin about the middle of the anterior edges of the anterior wings, and crossing both them and the posterior, meet at the abdominal edges near the

abdominal corners, running parallel with the external edges. Anterior wings with two small blue spots placed on each near the tips, and another, larger, divided into three by the nerves, near the middle of the anterior edge; being placed at the top and even with the bar, but divided from it by a small separation of black. The edges of these wings are entire. Posterior wings with six blue spots on each, placed along the external edges; the four lower ones being in pairs, and another small one at the abdominal corners; margins deeply angulated.

Under Side. Breast and sides dark brown, spotted with white. Abdomen brown. Wings dark brown hair-coloured, immaculate, except the posterior ones, which have a row of eleven cream-coloured spots running along the external edges.

The female differs from the male in being somewhat larger in size, with the spots on the upper side of a brighter green colour, and with the marginal row of spots on the under side of the posterior wings of a pearly greyish hue, and with a tinge of this colour upon the disk of the wings. Cramer has figured the male as the female, and vice versa. Mr. Smeathman informed Mr. Drury that this insect feeds upon the orange and lime trees, about which the butterfly is always seen flying, considering it as remarkable that most of the insects which feed upon the orange or citron tribes, have some tinge of green upon them; in like manner the beautiful green snake, so common about Sierra Leone, is always to be found about these kind of trees. These circumstances led our author into a series of observations which, though upwards of half a century old, may still be read not only with pleasure, but with the hope of beneficial results.

“The particular qualities, dispositions, and uses of by far the greater part of insects, as well as of plants, are at present totally unknown to us, nor are the methods by which we are to acquire that knowledge at present ascertained.

“Their colours have hitherto been of no further use to us than merely to discriminate one genus or species from another; and yet it is possible that, by a combination of observations even on the colours of insects, we may form some ideas of their natures and properties.

“The observation of Mr. Smeathman, if well founded, supposing it did not lead to a discovery of the nature and properties of an insect itself, might at least indicate those of the plant on which it feeds. The various species of the *Danai Candidi*, among which are included the different white butterflies of Europe, feed chiefly on such plants as are reckoned not only nourishing, but salutary to the human body, such as the various species of cabbages, coleworts, turnips, &c. Every foreign country produces butterflies of that family; some of them so very like those of Europe, that it is a fair inference they feed on plants of a similar property. This is countenanced by many corroborating circumstances. The *Papilio Iris*, and the various *Fritillary* butterflies fly exceedingly swift; and it appears from Mr. Smeathman’s observations, that foreign butterflies that bear a resemblance to them, also fly exceedingly swift. The green and golden *Scarabei* of this country are found to delight in flowers; those of the hot climates are also found on flowers; while the black,

purple, and darker coloured *Scarabei*, are generally found frequenting the excrements of animals, and are, in every quarter of the globe, called Tumble dung-beetles, from their making balls of those substances, and rolling them to their holes. The locust tribes feed here chiefly on grasses and roots ; so it appears they do in the torrid zone. Those of the torrid zone are found to be wholesome food. The inference is plain, that those of this climate, in case of necessity, or perhaps even as an article of luxury, might be found the same.

“ The caterpillars of certain beetles, from his account, are the greatest delicacies of the hot regions. They might, in some degree, be found to be so here. The palm-worm of the West Indies, which is sought at a monstrous expense, is the caterpillar or maggot of a beetle, of the same genus with that small beetle, which is produced from the maggot or caterpillar in a hazel-nut or filberd. This is often eaten here, and esteemed by those who do so as more delicate than the nut itself.

“ The Cantharides is a *green* beetle. A green beetle of our own, *Cerambyx Moschatus*, is found capable of raising blisters ; and other *green* beetles may probably have the same effect.

“ The butterflies that are found in the cultivated spots of Africa, have in shape and appearance a strong resemblance to many of ours, particularly the white ones. These seldom visit the thick woods ; but, when seen in any number, are certain indications of neighbouring plantations. This observation might save the lives of bewildered travellers : as in some instances it might be dangerous to enter into a very large wood, or a thick part of it ; in others again, immediate safety might be the consequence of leaving a forest, by following the indications of an open or cultivated spot. The analogy between the colours, the dispositions, and the qualities of insects, may yet be greater, and between insects, and the plants on which they feed, still more useful ; for if an insect is found in one part of the world to feed on a plant useful in food, medicine, or manufactures, an insect of a similar appearance, in another part of the world, will in all probability be found to feed on a plant of similar virtues. We do not know but insects may affect, when perfect, to frequent different soils ; or to visit the recesses, where valuable drugs remain hid from human search, and useless to mankind.

“ As, however, observation and experience have demonstrated, through length of time, that useful hints may be drawn from very trivial properties in the smallest insects, it seems that none are unworthy of being noted. Future travellers may draw useful inferences from those now given, and may add to the number, for the benefit of those who follow after them. There can be no doubt that every species of insect has its use in the creation, and probably there are few from which mankind might not derive some advantage, if their nature and properties were ascertained. We know of a few direct methods, and must therefore in general wait with patience, till a variety of observations, such as Mr. Smeathman has given us, by being frequently compared, strike out new lights upon this part of

science, and elucidate matters at this time buried in obscurity. The uses of many insects in the creation are obvious at the first sight : such, for instance, are those which feed on putrid animal or vegetable substances ; while others promote the general good by such remote means, that we cannot immediately see to what end their operations verge. We are not therefore, however, to suppose them mere expletives in the great system of beings ; neither are we rashly to attribute an importance to them which they do not deserve, or ridiculously affect to admire circumstances in them of little moment, and praise the Creator for dispositions of a secondary nature.

“ When I recommend observations to be made on the most trivial circumstances, it will readily be conceived I do not wish to derogate from experiment, from which alone solid hopes are to be formed, and those which have been hitherto made give great encouragement. Mr. Reaumur has found that the moth, which feeds on clothes, refines the colour with which they are dyed in a wonderful manner ; for the excrement of the animal is the colour of the cloth on which it is fed ; and therefore, for miniature paintings, infinitely surpasses all others. How far this kind of experiment can be refined on, must be left to the curiosity and diligence of travellers and experimental philosophers, who may perhaps, in some part of the world, realize and improve this reasoning upon a large and useful scale.”

MELITÆA CYTHERIS.

Plate IV. fig. 3, 4.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Swains.*

GENUS. MELITÆA, *Fabr.* Argynnis p. *Ochs. Latr. & God.* Papilio (Nymph. Phal.) *Drury.*

MELITÆA CYTHERIS. Alis supra fulvis nigro maculatis, subtus anticis fulvis apice fusco, strigâ albâ, posticis fuscis strigâ discoidali maculâque marginali albis. (Expans. Alar. 1 unc. 3 lin.)

SYN. Papilio (Nymph. Ph.) Cytheris, *Drury, App. vol. 2.*

HABITAT : Falkland Islands.

Upper Side. Head, eyes, thorax, and abdomen dark brown. Anterior wings brown orange, with a number of small black spots thereon (not less than twenty) of various shapes and sizes. Next the body these wings are darker and pilose. Posterior wings are the same colour as the superior, and spotted with many small black spots of different shapes dispersed all over the wings ; they are also darker next the body and hairy.

Under Side. Palpi reddish. Anterior wings sandy orange-coloured, rather paler than the upper side. Near the tips is a white streak placed next the anterior margin, and close thereto is a cloud of a dark red colour. Most of the small black spots are seen on this side, but less distinctly. Posterior wings dark red, with several faint clouds. A narrow white streak, about a quarter of an inch in length, is placed near the middle of each of these wings ; and another much shorter is placed on the anterior edge, near the upper corner. All the wings are entire.

SATURNIA MYLITTA.

Plate V. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidæ, *Steph.*

GENUS. SATURNIA, *Schrank*. Attacus, *Germer*. Phalæna (Attacus), *Linn.*

SATURNIA MYLITTA. Alis cervino-fulvis, strigâ ferrugineâ submarginali ocelloque fenestrato, in medio lineâ diviso. (Expans. Alar. 6 unc. 3 lin.)

SYN. Phalæna (Attacus) Mylitta, *Drury, App. vol. 2.* *Oliv. Enc. Méth.* 5, 26, 9. *Fabr. Ent. Syst.* 111. 1.

411. No. 11. *Gmel. Linn. S. N.* 2403. 463.

Phalæna Paphia, *Cramer, t.* 146. f. A.

HABITAT: Bengal.

Upper Side. Antennæ pectinated, reddish fox-coloured. Neck grey. Thorax and abdomen greyish yellow. Wings reddish fox-coloured, having a round transparent eye in the middle of each; those in the superior being largest. These eyes are encircled with a narrow yellow edging, then with a greyish band, and lastly with a narrow black line; the transparent pupil appearing as if a fine hair crossed it. The anterior edges of the superior wings have a grey margin from the shoulders almost to the tips, where the reddish colour is paler than on the rest of the wing. A narrow dark line begins near the tips, and runs along the external edges to the lower corners, which is continued along the external edges of the posterior wings to the abdominal corners. On these wings a faint arched line of a dark colour is observable over each eye.

Under Side. Breast, feet, and abdomen grey. The wings greyish brown; eyes appearing as on the upper side. A faint dark-coloured bar, beginning at the anterior edges of the anterior wings, and running across the lower parts of the eyes, is continued along the posterior ones; where it crosses the middle of the eyes, and ends at the abdominal edges below the body. All the wings are entire; the superior ones being arched, or hooked at the tips.

NOCTUA ? SPECIOSA.

Plate V. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ ? *Steph.*

GENUS. NOCTUA ? *Auct.*

NOCTUA ? SPECIOSA. Fulva, alis anticis medio, posticisque albidis, illarum basi fulvo, maculis 6 parvis nigris, dimidio apicali obscuriori. (Expans. Alar. 2 unc. 9 lin.)

SYN. Phalæna (Noctua) Speciosa, *Drury, App. vol. 2.*

HABITAT: Sierra Leone.

Upper Side. Antennæ black, setaceous. Tongue long and spiral. Head, neck, thorax, and abdomen yellow. Anterior wings pale clay-coloured; but next the shoulders yellow, gradually changing to a white towards the middle of the wings, and occupying almost half of them; each wing having six small black spots on the yellow part, three being placed on the anterior edge, and the other three near the shoulder, where likewise is another small spot. Posterior wings white, immaculate.

Under Side. Palpi long and yellow at the base, but the ends are black and filiform. Legs white, striped with brown. Breast and abdomen white. Anterior wings with the tips pale clay-coloured, as on the upper side; all the remaining part being white. A small black bar begins about the middle of

the anterior margin, and crossing the wing ends at the lower corner. Next the shoulders is a small tuft of hairs of a silver colour placed on each wing. Posterior wings white and immaculate. The margin of the wings entire.

This and several nearly allied species of tropical moths constitute a very distinct subgenus characterized by the prevailing colour, the spots at the base of the wings, the elongated palpi, and the peculiar neuration of the anterior wings. I have not, however, ventured to propose the establishment of a subgenus for them. They appear in some respects to be allied to the genus *Leucania*.

CALLIMORPHA? PYLOTIS.

Plate V. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Lithosiidæ, *Steph.*

GENUS. CALLIMORPHA? *Latr.* Setina p. *Schr.* Phalæna (Bombyx), *Drury.*

CALLIMORPHA? PYLOTIS. Alis atro-cæruleis, anticis fasciâ latâ mediâ albâ. (Expans. Alar. 2 unc. 6 lin.)

SYN. Phalæna (Bombyx) Pylotis, *Drury, App. vol. 2. Oliv. Enc. Méth. 5. 99. No. 255. Fabr. Sp. Ins. No. 263. Syst. Ent. 585.*

Phalæna cribraria, *Clerck. Ins. 54. f. 4.*

HABITAT: Bay of Honduras.

Upper Side. Antennæ black and pectinated. Tongue orange-coloured, and spiral. Head, thorax, and abdomen fine mazarine blue. Anterior wings dark mazarine, having a single white bar running from the middle of the anterior edge to the lower corner. A small part of the cilia at the tips is white, the rest being of the same colour as the wings. Posterior wings of the same colour as the superior, and immaculate, except the cilia, which is entirely white.

Under Side. Palpi black. Neck white. Breast and sides mazarine. The legs black and white. Abdomen orange, ringed with mazarine. Wings coloured as on the upper side; but next the body of a finer and stronger blue. The white part of the tips is also stronger and more distinct. The margins of all the wings are entire.

BOTYS (DESMIA?) SERICEA.

Plate VI. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Pyralidæ.

GENUS. BOTYS, *Latr.* SUBGENUS: Desmia? *Westw. in Guer. Mag. d'Ent.*

BOTYS (DESMIA?) SERICEA. Alis sericeis viridi-margaritaceis, anticarum margine antico luteo. (Expans. Alar. 2 unc. 3 lin.)

SYN. Phalæna (Pyralis) Sericea, *Drury, App. vol. 2.*

HABITAT: Gold Coast of Africa.

Upper Side. Head light green. Eyes black. Antennæ thread-like, and very long; appearing at the middle as if they had been broken, and had branched out again to their proper length. Thorax and abdomen light green. Tail dark brown. Wings fine light green, almost transparent, and resembling mother of pearl. Anterior edges of the anterior wings pale orange-coloured.

Under Side. Palpi, neck, breast, abdomen, and legs light green; except the anterior tibiæ, which are pale orange. Tail dark brown. Wings of the same colour as on the upper side, immaculate. Wings entire.

The curious structure of the antennæ of this insect (which is, doubtless, peculiar to the males alone) is very similar to that of *Desmia maculalis*, (Westw. in *Mag. Zool.*) but the larger size, pearly wings, and different quarters of the globe in which these two species are found, make it doubtful whether the two insects belong strictly to the same subgenus. It is evidently nearly allied to the British genus *Margaritia*. Mr. Smeathman informed Drury that this is one of the *Phalænæ* which fly during the day. A little noise or rustling disturbs it, when it takes rapid flights of twenty or thirty yards, hiding itself with great ingenuity, which makes it difficult to catch.

SATURNIA CYNTHIA.

Plate VI. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, *Steph.*

GENUS. SATURNIA, *Schrank.* Attacus, *Germer.* Bombyx p. *Fabr.*

SATURNIA CYNTHIA. Alis falcatis luteo-fuscis, fasciâ communi albidâ strigâ basali lunulâque discoidali; anticis ocello parvo apicali. (Expans. Alar. 5 unc. 3 lin.)

SYN. *Phalæna* (Attacus) *Cynthia*, *Drury, App. vol. 2. Oliv. Enc. Méth. 5. 30. 26.*

HABITAT: China.

Upper Side. Head greyish brown. Antennæ strongly pectinated. Thorax and abdomen greyish. Anterior wings with a bar rising near the middle of the anterior margin, continued along the posterior wings parallel with the external edges, and ending near the abdominal corners; the inner part forming an equilateral triangle. The outer part of this triangle is ash colour, the inner part pale brownish grey, but darker than the rest of the wings. The tips of the superior wings are adorned with a small eye, the lower part of which is black, and the upper part white; from whence a faint white serpentine line runs to the very extremity of the wing. The spaces between the ash colour mentioned above, and the external edges of all the wings, are filled up with light brownish grey, appearing as if powdered thinly with black dust. A small narrow black line runs along the external edges of all the wings, which, beginning at the abdominal corners and ending at the tips, appears as if broken or interrupted just below the eyes. A narrow ash-coloured bar begins on the posterior edges next the shoulders of the superior wings, which, running towards the tips, suddenly turns off, and ends on the anterior edges about half an inch from the shoulders. On the middle of the posterior wings is an ash-coloured crescent, verged at top with black; and about a quarter of an inch above this is another crescent, larger and much fainter, running from the anterior to the abdominal edge, and ending at the extremity of the body.

Under Side. All the parts on this side are nearly of the same colour as on the upper, but not quite so distinct and bright. The angular bar on the anterior wings next the shoulders, and the faint crescent on the posterior, not being discernible. The margins of all the wings are entire; the superior ones being hooked at their tips.

From Dr. Roxburgh's interesting memoir upon the silk-producing moths of the East Indies,* it appears that this species is named the Arundi or Arrindy silk-worm, the caterpillars feeding upon the Arrindi, Ricinus, or Palma Christi. It is capable of being reared in the same way as the common silk-worm, the eggs are hatched in about ten or fifteen days; in about a month the caterpillars attain their full size, during which period they cast their skins three or four times. The caterpillar is from two and a half to three inches in length, each segment being furnished with several small soft conical tubercles, the prevailing colour being pale green. In this state they are very voracious, devouring daily many times their own weight of food. The cocoons are white or yellowish, of a very soft and delicate texture; in general about two or three inches in length, and three in circumference, and pointed at both ends. In this cocoon the chrysalis remains from ten to twenty days, the moth appearing at one end, the period of its final state not extending beyond from four to eight days. The moths are quiet, seldom attempting to fly from the apartment in which they are reared. The silk is so exceedingly delicate and flossy, that it is impracticable to wind it off; it is, therefore, spun like cotton, and the thread thus manufactured is woven into a coarse kind of white cloth, of a loose texture, but of surprising durability, the life of one person seldom being sufficient to wear out a garment made from it, the same piece descending from mother to daughter. It is used not only for clothing, but also for packing light clothes, &c. Some manufacturers in England to whom it was shewn seemed to think that it could be made here into shawls equal to any received from India.

DEIOPEIA ASTREA.

Plate VI. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Lithosiidæ, *Steph.*

GENUS. DEIOPEIA, *Steph.* Phalæna (Noctua), *Drury.*

DEIOPEIA ASTREA. Alis fulvis; anticis fasciis septem albidis nigro-punctatis, posticis fulvis nigro-punctatis.
(Expans. Alar. 1 unc. 7 lin.)

SYN. Phalæna (Noctua) Astrea, *Drury, App. vol. 2. Oliv. Enc. Méth.* 8. 261. (Noctua A.)

Phalæna (Bomb.) Pylotis? *Fabr. Ent. Syst.* 111. 1. 479. *Gmel. Linn. S. N.* 2440. 575.

Phal. Geometra cribrata, *Gmel. Linn. S. N.* 2482. 751.

HABITAT: The Gold Coast, Africa.

Upper Side. Head deep yellow. Antennæ filiform, dark brown. Neck and thorax yellow, with two small black spots on the former, and four on the latter. Abdomen yellow. Wings deep yellow; the anterior being nearly orange-coloured, and having several rows of small black spots crossing them from the anterior to the posterior edges, most of which are very irregular and uneven; the two last next the external edges being the least so. The number of spots on each of these wings is forty. Posterior wings with black spots, but much larger than those on the anterior, except three, which run along the external edges; the whole number being eleven.

* Trans. Linn. Soc. Vol. 7.

Under Side. Palpi yellow, tipped with black. Tongue spiral. Legs, breast, and abdomen yellow, the last spotted with black. Wings deep yellow. The anterior spotted with forty black spots, larger and stronger than on the upper side. Posterior wings also spotted as on the upper side. Edges of all the wings entire.

CALLIMORPHA? GLAUCOPIS.

Plate VI. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* Zygæna p. *Fabr.* Phalæna (Bombyx), *Drury.*

CALLIMORPHA? GLAUCOPIS. Collari sanguineo, alis nigricantibus, anticis fasciâ obliquâ niveâ. (Expans. Alar. 2 unc. 3 lin.)

SYN. Phalæna (Bombyx Spiriling.) Glaucopis, *Drury, App. vol. 2. Cramer, tab. 322. f. D.*

Zygæna Glaucopis, *Fabr. Ent. Syst. 111. 1. p. 400. No. 47. Gmel. Linn. S. N. 2397. 140. (Sphinx.)*

HABITAT: Bengal (*Drury*). Carolina (*Fabr.*).

Upper Side. Head black. Antennæ black, and very large and deeply pectinated. Neck fine scarlet. Thorax and abdomen black, tinged with mazarine. Wings black, immaculate; except the anterior, whereon is a white bar, beginning near the middle of the anterior edge, crossing the wing, and ending at the lower corners.

Under Side. Palpi small and black. Tongue spiral. Breast mazarine, intermingled with black. Legs long and black. Thighs mazarine. Abdomen black, tinged with mazarine. Wings coloured as on the upper side. Edges entire.

IDÆA LYNCEA.

Plate VII. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidae, *Swains.*

GENUS. IDÆA, *Fabr. God.* Papilio (Dan. Fest. or Eq. Hel.), *Drury.*

IDÆA LYNCEA. Alis elongatis integerrimis cinerascentibus, venis maculisque permultis nigris; anticis sub-falcatis. (Expans. Alar. 6 unc. 9 lin.)

SYN. Papilio Lynceus, *Drury, App. vol. 2.*

Papilio Idea, *Stoll. Suppl. Cramer, pl. 42. f. 1.*

Idea Lyncea, *Enc. Méth. ix. p. 195.*

HABITAT: The Island of Johanna, near Madagascar.

Upper Side. Antennæ black and subfiliform. Head, neck, and thorax black, spotted, and streaked with white. Abdomen black. Wings almost transparent, and of a glassy hue, much resembling common glass; having a great number of black spots like velvet on them of different shapes and sizes, some being round, some oblong, and others like streaks; there being on each of the anterior wings twenty-eight distinct ones, besides those placed next the anterior edges, which are not easily ascertained, from their running into one another. Posterior wings with thirty-three distinct spots like those on the anterior, whereof some appear double.

Under Side. Palpi white. Tongue black, and spiral. Breast, sides, and legs streaked with black and white. Abdomen white. Wings coloured as on the upper side. Margins of the wings entire.

The Linnæan specific name of the type of the present genus was *Papilio Idea*, a name admirably expressive of the delicate transparent structure of these butterflies. As several closely-allied species were discovered in addition to the original type, all partaking of the same appearance, Fabricius transposed the original specific name into that of the genus; a new specific name, *Agelia*, being given to the original species, which is beautifully figured by Donovan, in his *Insects of India*, Pl. 24, and is by him considered identical with the insect figured by Drury. I have adopted the opinion of the authors of the *Encyclopédie Méthodique*, who consider the two insects as distinct.

ACRÆA CAMÆNA.

Plate VII. fig. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sw.*

GENUS. ACRÆA, *Fabr. Latr. God.* *Papilio* (Helicon.), *Fabr. §c.*

ACRÆA CAMÆNA. Alis oblongis fuscis, posticis basi nigro-punctatis ad extimum fasciâ flavescente transversâ extus nigro-marginatâ. (Expans. Alar. 2 unc. 9 lin.)

SYN. *Papilio* (Eq. Helic.) *Camœna*, *Drury, App. vol. 2. Herbst. Pap. t. 81. f. 3. Fabr. Ent. Syst. 111. 1. p. 173. No. 539. Enc. Méth. ix. p. 234. (Acraea C.)*

HABITAT: Cape Coast, Africa.

Upper Side. Antennæ black. Neck, thorax, and abdomen black, spotted with white. Anterior wings dark snuff colour, immaculate. About two-thirds of the posterior wings (upwards) also snuff-coloured, having some faint black spots thereon, seen more distinctly on the other side; beneath this is a yellow clay-coloured bar, running from the abdominal corner and ending near the external edge by the upper corner; below this bar is a black indented margin running along the external edge, with some small faint spots thereon, which are much stronger on the other side. Abdominal groove clay-coloured; and on each wing next the shoulders is a small triangular clay spot.

Under Side. Palpi clay-coloured. Breast and sides black, with white spots. Anterior wings coloured as on the upper side. Posterior wings clay-coloured, with twelve black distinct spots, two near the upper corners being small and round. These wings next the breast are black, with some white spots thereon: and along the external edges is a black indented margin, with eight small white spots on it, two of which next the abdominal corners are joined together. Margins of the wings entire.

HELICONIA DIAPHANA.

Plate VII. fig. 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sw.*

GENUS. HELICONIA, *Fabr. Latr. God.* *Papilio* (Eq. Helicon.), *Drury, §c.*

HELICONIA DIAPHANA. Alis oblongis integerrimis hyalinis, margine omni fasciâque transversâ abbreviatâ anticarum fusco-nigris, posticis subtus costâ baseos sulphureâ. (Expans. Alar. 2 unc. 3 lin.)

SYN. *Papilio* (Eq. Helic.) *Diaphanus*, *Drury, App. vol. 2. Cramer, pl. 231. C. and pl. 315. D. E. Fabr. Ent. Syst. 111. 1. p. 184. No. 570.*

HABITAT: Jamaica, Brazil to Virginia (*Enc. Méth.*).

Upper Side. Antennæ black, and very long. Thorax and abdomen dark brown. Wings transparent, vitreous. Anterior ones with the posterior edges bending as it were inwards. A small narrow border of dark brown runs entirely round the edges of these wings; and on the anterior edges, about a third from the tips, runs a dark brown streak towards the middle of the wing, close to which is a small white spot joining to the anterior edge. Posterior wings having also a very narrow border running about two-thirds round them, and stopping at the abdominal edges; some long yellowish hairs are placed on the anterior edges near the body.

Under Side. Palpi, breast, sides, ash-coloured. The dark brown borders surrounding the wings appear on this side of an orange brown colour; the rest as on the upper side. Margins of the wings entire.

NYMPHALIS SALMACIS.

Plate VIII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sic.*

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis Phal.), *Drury, §c.*

NYMPHALIS SALMACIS. Alis dentatis, supra nigris disco cœruleo-radiatis, subtus fuscis; fasciâ strigâque maculari albidis (♀). (Expans. Alar. 4 unc. 3 lin.)

SYN. Papilio (Nymph. Ph.) Salmacis, *Drury, App. vol. 2. Herbst. tab. 166. f. 5. G. Fabr. Ent. Syst. 111. 1. p. 132. No. 408.*

Papilio Omphale, *Stoll. Suppl. Cram. pl. 26. f. 1. 1. A.*

HABITAT: Sierra Leone (*Drury*). Amboina (*Stoll.*).

Upper Side. Antennæ black. Neck spotted with grey. Thorax and abdomen black. Anterior wings next the body black brown, but at the tips russet, or dark hair-coloured; about a quarter of an inch from thence are two small white spots placed on each wing, near the anterior margin; near the middle is a short white bar, crossed by the black nerves of the wing, whose under part joins to a patch of blue which runs to the posterior margin. Posterior wings next the body black brown, but along the external edges a little lighter. A white bar on each rises at the abdominal groove, and runs to the middle of the wing towards the anterior edge, being margined with blue which seems to shoot in rays; a row of twelve small white spots runs along the external edge in pairs.

Under Side. Palpi, neck, and breast black brown, spotted with white. Anterior wings russet, darkest next the body; the white spots and bar being very plain on this side, with the addition of a row of white spots running half way along the external edges. Posterior wings russet, with the same marks and spots as on the other side, but rather of a pearl colour. Margins of the wings dentated, the indentings being white.

PIERIS PASITHOE.

Plate VIII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach.*

GENUS. PIERIS, *Schrank. Latr. God. Boisduval.* Pontia p. *Ochs.* I apilio (Dan. Cand. or Heliconii), *Linn. Drury, §c.*

PIERIS PASITHOE. Alis suboblongis nigris, supra cœrulescenti-albo-maculatis, posticis subtus disco flavo, nigro venoso, fasciâque baseos ferrugineâ incurvâ. (Expans. Alar. 3 unc. 6 lin.)

SYN. Papilio (Helicon.) Pasithoe, *Linn. Syst. Nat. 2. 755. No. 53. Fabr. Ent. Syst. 111. 1. p. 179.*

Papilio (Dan. Cand.) Dione, *Drury, App. vol. 2.*

Papilio Porsenna, *Cramer, pl. 43. fig. D. E. § pl. 352. fig. A. B.*

Pieris Pasithoe, *Enc. Méth. ix. p. 148. Boisduval Hist. Nat. Lep. 1. p. 451.*

HABITAT: India (*Drury*). China, Bengal (*Boisduval*).

Upper Side. Antennæ black. Head, thorax, and abdomen dirty black. Wings soot-coloured, or dirty black, having a small white spot in the middle of the anterior; a row of oblong white spots runs from the anterior edge to the lower corner, some being pointed and placed a little distance from the tips; base of the wings powdered with white dust, increasing to a clear white as it recedes from the body. The posterior wings powdered in the same manner; and having four pointed white spots on each, crossing them from the upper to the abdominal corners. Abdominal groove yellow, extending towards the middle of the wing.

Under Side. Palpi, sides, and breast sooty. Neck and abdomen grey. Anterior wings as on the upper side, but the white more distinct. Posterior wings next the body black, and surrounded by a red circle. The remainder of the wings principally yellow, having the nerves and also a margin running along the external edges soot-coloured. Margins of the wings entire.

PAPILIO MENESTHEUS.

Plate IX. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PAPILIO, *Auct.* Papilio (Eq. Ach.) *Drury*.

PAPILIO MENESTHEUS. Alis dentatis, caudatis, nigris, fasciâ maculari maculisque marginalibus flavis, omnibus subtus basi albido striatis, posticis lunulis rufis cœrulescentibusque. (Expans. Alar. 5 unc. 3 lin.)

SYN. Papilio (Eq. Ach.) Menestheus, *Drury, App. vol. 2. Cram. pl. 142. fig. A. B. Fabr. Ent. Syst. 111. 1. p. 31. Enc. Méth. ix. p. 59. Boisd. Hist. Nat. Lep. 1. p. 236.*

HABITAT: Sierra Leone (*Drury*). India (erroneously, *Fabr.*).

Upper Side. Antennæ brown. The head, thorax, and abdomen greenish black. Anterior wings black, covered with minute green spots, the tips like black velvet. Some long russet-coloured hairs, occupying a space the size of a sixpence, are situated close to the posterior margin, near the lower corner; there are also twenty lemon-coloured spots on each, eight of which are very small and marginal; eight other oblong spots form a bar, rising on the anterior margin and running obliquely across the wings, meeting near the extremity of the body. Posterior wings velvety black, covered at the base with small green spots, and having five lemon spots running along the external edges. Each of these wings is furnished with a tail, having a lemon spot on each side; and on the abdominal edge is an eye, whose under part is red, and the upper blue. Near the upper corner is a red spot, hidden in the figure by the superior wings.

Under Side. Head and breast ash-coloured. All the spots and marks which on the upper side are lemon colour, on this are pale cream-coloured. Anterior wings soot-coloured, the spots very distinct; those next the external edges being larger, with many cream-coloured stripes at the base running longitudinally parallel with the tendons both of the anterior and posterior wings. These are adorned with several eyes of velvety black; the upper sides being blue, and the under orange verged with cream. The marginal spots are considerably larger than on the upper side.

THECLA THETIS ♀.

Plate IX. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidae, *Leach*.

GENUS. THECLA, *Fabr.* Polyommatus p. *Latr. God.* Hesperia p. *Fabr. Linn.* Papilio (Dan. Cand.), *Drury*.

THECLA THETIS. Alis integris; maris supra fulvis margine exteriori nigro; fœminæ fuscis disco albo: subtus albis. (Expans. Alar. 1 unc. 9 lin.)

SYN. Papilio Thetis, *Drury, App. vol. 2. Cramer, pl. 238. fig. D. ♀.*

Hesperia Phædrus, *Fabr. Ent. Syst. 111. 1. p. 307. ♂.*

Hesperia Æsopus, *Fabr. op. cit. p. 307. ♀.*

Papilio Cinyra, *Cram. pl. 238. C. ♂.*

Polyommatus Phædrus, *Enc. Méth. ix. p. 675. No. 181.*

HABITAT: Bombay (*Drury*). Bengal, Coromandel (*Enc. Méth.*).

Upper Side. Antennæ black. Head, thorax, and abdomen dark brown. Wings russet, or dark hair-coloured, with a white spot in the middle of each, of an oblong shape in the anterior wings, and much smaller and placed transversely in the posterior. Cilia and abdominal groove white.

Under Side. Palpi, breast, and legs white. Wings on this side fine silvery white, immaculate. Margins of the wings entire.

I have reverted to the original name first proposed by *Drury*.

BIBLIS UNDULARIS.

Plate X. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidae, *Sw.*

GENUS. BIBLIS, *Fabr. Latr. God.* Papilio (Nymphalis), *Fab. olim.* Papilio (Nymph. Phal.), *Drury*.

BIBLIS UNDULARIS. Alis dentatis nigris aut fuscis; anticis suprâ fasciâ apicali cyaneâ, posticis externe ferrugineis, omnibus subtus ferrugineo undulatis, punctoque costali posticarum albo. (Expans. Alar. 2 unc. 7 lin.)

SYN. Papilio (Nymph. Phal.) Undularis, *Drury, App. vol. 2. Cramer, pl. 256. fig. A. B. Fabr. Ent. Syst. 111. 1. p. 127. No. 389. Enc. Méth. ix. p. 326. (Biblis Und.)*

HABITAT: East Indies (*Drury*). Coromandel, Java (*Enc. Méth.*).

Upper Side. Antennæ brown. Head, thorax, and abdomen brown. Superior wings dark brown, somewhat lighter along the external edges, with an oblong subapical blue streak, beneath which are four oval blue spots placed along the external edges, discernible only when the light falls in a particular direction. Posterior wings reddish clay-coloured, surrounding a dark brown patch placed on the upper part.

Under Side. Breast, abdomen, and legs brown. Wings dark reddish clay, with short red streaks all over the wings, and a white spot placed at the middle of the anterior edges of the posterior wings. Margins of the wings dentated.

NYMPHALIS (LIMENITIS) ARTHEMIS.

Plate X. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Stc.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymphal. Phal.), *Linn. Drury, &c.* SUBGENUS: Limenitis.
Fabr. Steph.

NYMPHALIS (LIMENITIS) ARTHEMIS. Alis dentatis fuscis; utrinque fasciâ communi albâ strigisque duabus lunularum cœrulescentium, subtus rufo-maculatis. (Expans. Alar. 2 unc. 6 lin.—3 unc.)

SYN. Papilio (Nymphal. Phal.) Arthemis, *Drury, Append. vol. 2. Say. Amer. Entomol. 2. pl. 23.*

Papilio Lamina, *Fabr. Ent. Syst. 111. 1. p. 118. 361. Enc. Méth. ix. p. 380. (Nymphalis L.)*

HABITAT: New York.

Upper Side. Antennæ, head, thorax, and abdomen black. Wings black, at the base surrounded by a white band, separating it from the external part, which is black likewise. On the anterior wings, near the tips, are four small white spots, the two uppermost being largest; along the external edges is a narrow marginal row of small blue crescents, continued along the posterior wings, where it is double, having above it a row of brown orange spots, verged at top with blue. A white bar begins on the middle of the anterior edges of the anterior wings, which, crossing them and the posterior, ends at the extremity of the body.

Under Side. Palpi, head, breast, and legs brown. The parts that on the upper side are black, are of a fine red brown. The basal parts having some brown orange spots on both wings, verged with black. Margins blue; scollopings edged with white. Margins of the wings dentated; the inferior ones most.

Mr. Say observes of this beautiful species that it occurred sparingly in the North-western territory, during the advance of Major Long's expedition toward Lake Winnepec. He also found it at that lake as well as at the Lake of the Woods, and in other parts of Upper Canada. He procured specimens likewise from Arkansaw, in the expedition to the Rocky Mountains, and received it from Cambridge (Massachusetts).

PIERIS EUCCHARIS.

Plate X. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach.*

GENUS. PIERIS, *Schrank. Latr. God. Boissduval.* Pontia p. *Ochs.* Papilio (Dan. Cand. or Heliconii), *Linn. Drury, &c.*

PIERIS EUCCHARIS. Alis suboblongis integerrimis, supra albis, omnibus utrinque venis limboque nigris: posticis subtus flavis, maculis marginalibus coccineis alboque cinetis. (Expans. Alar. 3 unc. 2 lin.)

SYN. Papilio (Dan. Cand.) Eucharis, *Drury, App. vol. 2. Cramer, pl. 201. B. C. ♂. 202. C. ♀.*

Papilio (D. C.) Hyparete, *Fabr. Ent. Syst. 111. 1. p. 176. (Exclus. Syn. Linn.)*

Pieris Epiecharis, *God. Enc. Méth. ix. p. 153. No. 122. Boisd. Hist. N. Lepid. 1. p. 456.*

HABITAT: Bombay.

Upper Side. Antennæ black. Head grey. Thorax and abdomen grey. Anterior wings white: nerves black, with seven white oblong spots placed along the external edges and tips on a black ground. Posterior wings cream-coloured, with six oval flesh-coloured spots placed along the posterior margin on a black ground, separated by the black nerves.

Under Side. Palpi, breast, and abdomen grey. Anterior wings white, with very broad and black nerves, forming white oblong spots on the upper side. Posterior wings yellow, with a broad black margin along the external edges, whereon are placed six oval scarlet spots, edged or surrounded with white. Nerves black and broad. Margins of the wings entire.

Drury correctly considered this species as distinct from the Linnæan *Hyparete*, and accordingly named it *Eucharis*. Fabricius, notwithstanding, united the two species, and applied the name *Eucharis* to another Indian species (*Anthocaris Eucharis* of Boisduval, but which it would be more correct to name *Aurora* after Cramer). Godart, in order to obviate the confusion arising from two distinct species having the same specific name, altered the oldest name (*Eucharis*, Drury), instead of the incorrectly imposed name of Fabricius. I have therefore reverted to the name proposed by Drury, the other species being now removed to the genus *Anthocaris*.

SATURNIA PROMETHEA.

Plate XI. fig. 1, 2. ♂.—Plate XII. fig. 1, 2. ♀.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, *Steph.*

GENUS. SATURNIA, *Schrank.* Attacus, *Germar.* Phalæna (Attacus), *Linn.*

SATURNIA PROMETHEA. Alis subfalcatis, maris fuscis, fœminæ ferrugineis, fasciâ tenui undatâ communi pallidâ margine griseo, anticis utrinque ocello atro. (Expans. Alar. 4 unc. ♂. 4 unc. 3 lin. ♀.)

SYN. Phalæna (Attacus) Promethea, *Drury, App. vol. 2. Fabr. Ent. Syst. 111. 1. 411. No. 12. Gmel. Linn. S. N. 2403. 464. Cram. Ins. tab. 75. A. B. ♂. 76. A. B. ♀. Abbot & Smith Ins. Georgia, 1. tab. 46. Oliv. Enc. Méth. 5. 27. 12. Pal. Bauv. Ins. d'Afr. et d'Amer. Lep. pl. 21.*

HABITAT: New York, Virginia, Georgia.

MALE.—*Upper Side.* Antennæ strongly pectinated, dark brown. Head, thorax, and abdomen the same. Anterior wings very dark chocolate, hooked at the tips; having a margin of light hair colour running along the external edges from the tips to the lower corners, through the middle of which runs a narrow black serpentine line like a hair, dividing the margin into two shades, the external one being darkest; near the tips is a black spot like an eye, partly surrounded by a blue iris; a narrow waved line of a light hair colour begins at the anterior edge, about one-third from the tips, and, crossing both the anterior and posterior wings, ends about half an inch below the body. Posterior wings of the same colour as the anterior, having a hair-coloured margin running round them; being also divided in the middle by a waved narrow line, above which are several dark-coloured spots and marks.

Under Side. Breast, legs, and abdomen of a beautiful dark chocolate colour. Anterior wings at the base dark chocolate, with a small single spot in the middle of each; about a third part of these wings, next the external edges, is hair-coloured, appearing next the chocolate part to be thickly powdered with grey, so as to form a margin along the chocolate part of that colour. The black eye, and hair-coloured margin, as on the upper side. The middle of the posterior wings fine chocolate, surrounded, except at the abdominal edges, with hair colour, and like the superior finely powdered and verged with grey; about the middle of the chocolate field is a small transverse white streak; the hair-coloured margin less distinct. Margins of all the wings entire.

FEMALE.—*Upper Side.* Antennæ brown and pectinated. Thorax and abdomen red brown. Anterior wings dark red next the body, from whence a narrow light-coloured bar begins at the anterior edge, and running towards the posterior suddenly turns off and ends at the body, forming an obtuse angle; another light-coloured waved bar crosses the wings, ending on the abdominal edges a little below the body; the inner side of this bar is a dark chocolate, and between it and the angle of the first bar is placed a light-coloured triangular mark; near the tips is placed a small black eye, partly surrounded by a blue iris; along the external margins of all the wings runs a dark buff edge, through the middle of which runs a small narrow line; the space between this margin and the waved bar is of a dark red, finely powdered next the bar with grey. Posterior wings, within the waved bar, dark brown chocolate; the hairs along the abdominal edges greyish; and on the middle of the chocolate ground is a light-coloured triangular mark; several submarginal red spots of different sizes, with a small narrow irregular line running between them and the cilia; the space between this margin and the waved bar is dark red, that next the bar is powdered as it were very thickly with small grey spots like dust.

Under Side. Breast, legs, and abdomen dark red, the sides streaked with white. Anterior wings having only two divisions, separated by the waved bar mentioned above: the inner division of a fine bright chocolate, whereon the small triangular marks are faintly seen; the external division as on the upper side, but with the markings more distinct. Posterior wings with the part answering to the dark brown chocolate being of a fine dark red, verged with black and white, and surrounded entirely, except the abdominal edges, by the grey powdered field. Margins entire.

The transformations to which Lepidopterous insects are subject are amongst the most remarkable phenomena of insect life. In the different states to which each is liable, a series of changes is exhibited which has been compared, by an admired writer, to what might be supposed to be undergone by an animal which for the first five years of its life, exhibited the form of a serpent, which then penetrated into the earth, spun for itself a silken coffin, contracting itself into a limbless form resembling, more than any thing else, an Egyptian mummy; and which, lastly, after remaining in this state for a length of time, burst into the air a winged bird. Of these states, it may well be conceived, that the second requires, from its inactivity and helplessness, a secure retreat, where, removed and secure from the attack of its enemies, it can rest its appointed period during which the organs of flight acquire their full development. We accordingly find that the varied manner in which the caterpillars of the different species prepare their retreats, affords one of the most interesting branches of investigation in the natural history of the Lepidoptera. And in this respect, the species now under consideration certainly exhibits one of the most interesting manœuvres hitherto recorded amongst the insect tribes, and which is described by Mr. Peale in his beautiful "*Lepidoptera Americana*."* This moth is very abundant in the vicinity of Philadelphia, at least, judging from the number of cocoons seen hanging from the branches of the Sassafras (*Laurus Sassafras*), and Spice-wood (*L. Benzoin*); and which, by an ordinary observer, would be readily mistaken for withered leaves which had withstood the blasts of winter. After the caterpillar has attained its full size, and lost the voracious

* Quoted in the British Cyclopædia of Natural History, Vol. 1. p. 748.

appetite which had hitherto been its predominant character, it begins its preparation for the great transformation it has to undergo, by selecting a perfect leaf, the upper surface of which it covers with a fine light yellowish brown silk, extending this coating with great skill and foresight, *over the footstalk of the leaf*, and attaching it firmly to the branch, so as to secure the leaf from being separated by any accident. This preliminary operation having been accomplished, the caterpillar next draws the edges of the leaf together, thus forming a perfect external covering or mantle, in which it spins a fine strong and durable cocoon of fine silk. In this habitation the little architect passes the winter secure from birds and other enemies. As soon as the cocoon has been completed, the caterpillar sheds its skin, and is transformed into a chrysalis. At first the leaf enveloping the cocoon remains green, but soon changes to a red or brown, when it becomes brittle, and is gradually carried away by the winds and storms of winter, until, finally, nothing remains except the cocoon itself, which is firmly suspended by the silk which once covered the footstalk of the leaf.

Mr. Abbot states that the caterpillar also feeds upon the Snowdrop-tree (*Halesia tetraptera*, Linn.) Poplar, Bay, &c. Some individuals spin up in May, and the moth appears in June; others, as above described, pass the winter in the chrysalis state.

CALLIMORPHA? FAMULA.

Plate XI. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* *Zygæna* p. *Fabr.* *Phalæna* (Bombyx), *Drury.*

CALLIMORPHA FAMULA. *Alis albis, dimidio apicali margineque externo nigris, anticarum maculâ ovali obliquâ albâ, collo fulvo.* (Expans. Alar. 2 unc.)

SYN. *Phalæna* (Bombyx spiriling.) *Famula*, *Drury, App. vol. 2.*

HABITAT: Calabar, in the Bight of Benin, Africa.

Upper Side. Antennæ long and pectinated. Thorax spiral. Neck orange-coloured. Thorax and abdomen dusky grey. Anterior wings about half way from the tips black, but at the base are of a pellucid white; being surrounded along the anterior edge and part of the posterior with black; an oblong white spot is placed near the tips on the black part. Posterior wings black and white; the white entirely surrounded by the black, which on the anterior and abdominal edges is very narrow.

Under Side. Palpi orange-coloured, black at the tips. Neck, breast, and sides orange. Feet black. Thighs white. Abdomen white, annulated with dusky grey. Anterior wings as on the upper side, the black parts being of a russet hue. Posterior wings differ a little, the white part running down to the middle of the external edges, with a white spot at the upper corners. Margins of the wings entire.

ODONESTIS? SERVULA.

Plate XI. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, *Steph.*

GENUS. ODONESTIS? *Germar.* Phalæna (Noctua), *Drury.*

ODONESTIS? SERVULA. Alis luteis, maculâ parva discoidali marginibusque externis tenuè fuscis. (Expans. Alar. 4 unc.)

SYN. Phalæna (Noctua) Servula. *Drury, Append. vol. 2.*

HABITAT: Madras.

Upper Side. Antennæ slightly pectinated. Tongue short. Head, thorax, and abdomen light yellowish sand-coloured. Wings yellow buff-coloured; the anterior having a small brown spot in the middle of each, and the external edges margined with brown. Posterior wings having a brown patch in the middle of each, with the external edges of the same colour.

Under Side. Breast, legs, abdomen, and wings buff-coloured, immaculate. Margins of the wings entire.

NOCTUA ANILIS.

Plate XII. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. NOCTUA, *Auct.* SUBGENUS. —?

NOCTUA ANILIS. Alis badio-fuscis; strigis duabus obliquis, externâ abbreviatâ, albis. (Expans. Alar. 1 unc. 6 lin.)

SYN. Phalæna (Noctua) Anilis, *Drury, App. vol. 2.*

HABITAT: Virginia.

Upper Side. Antennæ small, filiform. Head, thorax, and abdomen dark hair-coloured. Wings dark hair-coloured. Anterior having a narrow white line crossing them, about the middle, from the anterior to the posterior edges; between this and the tips is another short white streak placed on the anterior edge. Posterior wings immaculate. Cilia ash-coloured.

Under Side. Palpi, breast, legs, and abdomen russet-coloured. Wings also russet-coloured, with some faint marks, occasioned by the white lines on the upper side appearing through. Margins of the wings entire.

NEMEOPHILA FIGURATA.

Plate XII. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. NEMEOPHILA, *Stephens.* Eyprepia p. *Ochs.* Chelonia p. *God.*

NEMEOPHILA FIGURATA. Alis anticis nigris, fasciâ longitudinali duabus alteris convergentibus connexâ, albis, posticis sanguineis margine maculâque externâ nigris. (Expans. Alar. 1 unc. 6 lin.)

SYN. Phalæna (Bombyx) figurata, *Drury, App. vol. 2.* *Pal. Bauv. Ins. d'Afr. et d'Amer. Lep. pl. 24. f. 4. ♀.*
(Alis posticis nigris puncto rufo.)

HABITAT: Virginia.

Upper Side. Antennæ dark brown and pectinated. Thorax cream-coloured and black. Abdomen black, the sides red. Anterior wings black; having a cream-coloured line running from the shoulders,

parallel to and at a small distance from the posterior edge, towards the lower corner; stopping at about one-third from the external edge, from whence near the end of this line arises two others, which run almost to the anterior edges. Posterior wings red in the middle; surrounded, except on the abdominal edges, by a broad black margin.

Under Side. Palpi hairy and black. Breast, legs, and abdomen black. Wings as on the other side; but the colours are not so bright and distinct. Margins of the wings entire.

SATURNIA EPIMETHEA.

Plate XIII. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, Steph.

GENUS. SATURNIA, Schrank. Attacus, Germar. Phalæna (Attacus), Linn.

SATURNIA EPIMETHEA. Alis subfuscis strigâ communi subapicali albâ, posticis acutè angulatis, ocello disci fulvo margine nigro.

SYN. Phalæna (Attacus) Epimethea, Drury, *Append. vol. 2. Fab. Ent. Syst.* 111. 1. 414. No. 23. Gmel. *Linn. S. N.* 2404. 472. Cramer, *Ins.* 15. tab. 176. f. A. Oliv. *Enc. Méth.* 5. 29. 21.

HABITAT: New Calabar, Coast of Guinea.

Upper Side. Antennæ strongly pectinated; the extremities appearing like threads. Thorax light brown, tinged with red. Abdomen grey brown. Anterior wings light grey brown, tinged with red at the base; having a narrow dark-coloured bar verged with grey running from the anterior to the posterior edges, parallel and at a little distance from the external margin. Posterior wings grey brown, terminating behind in points like acute angles; a dark narrow bar, edged with white, crosses these wings from the upper corners to the abdominal edges, dividing them into two compartments; in the uppermost of which are placed two eyes, whose centres are yellow, surrounded with black irides edged with red, and which also are encircled with ash-coloured rings. Above these eyes the wings are dark-coloured, almost black; but next the body are of a reddish hue.

Under Side. Legs black. Thorax and abdomen same colour as on the upper side. Wings nearly the same colour as on the upper side; the bars being plain and distinct, but the eyes are not observable here.

DRYOCAMPA VIRGINIENSIS.

Plate XIII. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, Steph.

GENUS. DRYOCAMPA, Harris in Hitchcock's *Report on the Geology, &c. of Massachusetts (Amherst Mass.* 1834. roy. 8vo.)

DRYOCAMPA VIRGINIENSIS. Alis cervinis, anticis puncto parvo discoidali albo, fasciâque obliquâ pallidiori. (Expans. Alar. 2 unc. 7 lin.)

SYN. Phalæna (Bombyx) Virginiensis, Drury, *Append. vol. 2.*

Phalæna pellucida, Abbot & Smith *Ins. Georg. t.* 58?

Phalæna Astynome? Oliv. *Enc. Méth.* 5. 43. 73.

HABITAT: Virginia.

Upper Side. Antennæ setaceous. Head, thorax, and abdomen dark orange. Wings faint fox-coloured; immaculate, except the anterior ones, which have a faint light spot on each, about a third of

an inch from the shoulders, and a faint line which runs from the tips to the middle of the posterior edges.

Under Side. Legs, sides, thorax, and abdomen dark orange. Wings with a faint narrow bar crossing them near their external edges, dividing the wings into two partitions; the lower ones being of the same colour as on the upper side, but those above the bar are of a yellowish fox-colour. Margins of the wings entire.

It is questionable whether this figure represents the *Phalæna senatoria* or *pellucida* of Abbot and Smith, by whom the transformations of both species have been illustrated; Smith citing Drury's figure with doubt, as belonging to *pellucida*. I have much pleasure in adopting the present well-marked genus proposed by Dr. Thaddeus W. Harris, one of the most distinguished American entomologists, in the appendix to the work above referred to; and respecting which I am indebted to that gentleman for the following communications:—"The male of *Dryocampa senatoria*, of Abbot and Smith, has the basal half of the antennæ pectinated on both sides, and the apex simple, as in *Bombyx* (*Cerocampa*, Kirby; *Ceratocampa*, Harris's Cat.) *regalis* and *imperialis*; and as they are described to be in the genus *Zeuzera*. The larvæ are naked, striped, rigid, with acute tubercles, and two thread-like horns on the second segment. They devour the leaves of forest trees, particularly oaks, and enter the earth to become pupæ. The edges of the segments of the pupæ are denticulated. On account of these peculiar characters, I have ventured to assign to this a new generical name; under which will be included also *Bombyces pellucida*, and *Stigma*, Fabr., figured in Abbot and Smith's Lepidopterous insects of Georgia; together with *B. rubicunda*, F. all of which are now found to inhabit Massachusetts."

In addition to the characters mentioned by Dr. Harris, the peculiar form of the posterior wings of the males of these moths may also be noticed, and which are of a triangular form, somewhat like those of *Erycina menetas* (see vol. 3. pl. 8. fig. 3.), but extending to the extremity of the abdomen. This genus is not far removed, in its natural affinities, from that of *Ceratocampa*, (see vol. 1. pl. 9.)

ÆGOCERA AMABILIS.

Plate XIII. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Sesiidæ, *Steph.*

GENUS. ÆGOCERA, *Latr. Boisduval.*

ÆGOCERA AMABILIS. Alis anticis rufis, maculis (nigro marginatis) margineque interno, albidis; posticis fulvis maculâ discoidali margineque postico nigris. (Expans. Alar. 1 unc. 6 lin.)

SYN. *Phalæna* (Noctua) *Amabilis*, *Drury, App. vol. 2.*

Ægocera Amabilis, *Boisduval Hist. Nat. Lepid. pl. 10. B. f. 6.*

HABITAT: Coast of Guinea.

Upper Side. Head brown. Antennæ filiform. Thorax and abdomen yellow brown. Superior wings fine darkish red, with several yellow spots thereon of different shapes, each encircled with black; the posterior and external edges having yellow margins. Posterior wings deep yellow, inclining to

orange, with a black oval spot near the middle of each. Along the external edges is a black margin, reaching from the upper to the abdominal corners; the upper edge being scalloped.

Under Side. Legs, sides, thorax, and abdomen pale orange. Anterior wings entirely pale orange and dusky black, without any mixture of red, &c. Posterior wings as on the upper side; the colours being less distinct. Margins of the wings entire.

TRIPHÆNA MATERNA.

Plate XIII. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Stephens*.

GENUS. *TRIPHÆNA*, *Ochs. Treit. Steph.* *Phalæna* (Noctua), *Linn. Drury*.

TRIPHÆNA MATERNA. Alis anticis grisescentibus aut luteis, fusco irroratis et undulatis, posticis fulvis, maculâ margineque (albo punctato) atris.

SYN. *Phalæna* (Noctua) *Materna*, *Linn. Syst. Nat.* 11. 840. 117. *Drury, App. vol. 2.*

Noctua Materna, *Fabr. Ent. Syst.* 111. 2. p. 16. No. 27. *Gmel. Linn. S. N.* 2533. 117. *Oliv. Enc. Méth.* 8. 259. 39.

Noctua hybrida, *Fabr. Ent. Syst.* 593. 11.

HABITAT: Bengal.

Upper Side. Antennæ setaceous. Tongue spiral. Palpi yellow, blue at the tips. Head tinged with blue. Thorax olive. Abdomen yellow. Anterior wings light brown and shining; appearing of several colours according to the position they are held in. Posterior wings yellow, with a round black central spot. Margins black, beginning at the middle of the anterior edges, and ending at the abdominal corners where the margin is narrowest; having eight small white spots thereon, placed on the external edges.

Under Side. Thorax, abdomen, and sides yellowish ash-coloured. Anterior wings yellow; tips brown, and separated from the yellow by a black streak running from the lower corner to the anterior edge. Posterior wings coloured as on the upper side; the black margin being rather fainter. Margins of the wings dentated.

EREBUS FLUCTUOSUS.

Plate XIV. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. *EREBUS*, *Latr.* *Thysania*, *Dalm.* *Noctua*, *Fabr.*

EREBUS FLUCTUOSUS. Alis fuscis, fasciâ communi pallidâ, marginibus latè nigris internè dentatis, anticis oculo magno auriformi. (Expans. Alar. 3 unc. 1½ lin.)

SYN. *Phalæna* (Noctua) *fluctuosa*, *Drury, App. vol. 2.*

HABITAT: Sierra Leone.

Upper Side. Antennæ setaceous. Head and thorax brown. Tongue spiral. Wings dark hair-coloured, or russet brown; divided into two compartments by a clay-coloured line, which beginning at the anterior edges of the anterior near the middle, and crossing them and the posterior, meets at the extremity of the body: the inner compartment being brown, the outward one clay; which is again separated by an irregular waved line, beginning at the tips and ending at the abdominal corners. All the outward part is brown. Two black spots are placed on the anterior wings next the anterior edges, and near the middle.

Under Side. Palpi distinct, and like bristles at their extremities. Breast, legs, and wings light brown. A row of cream spots, angularly shaped, are placed along the wings; the outward part being furnished with about twenty-eight small cream spots irregularly placed. Margins of the posterior wings dentated, of the anterior entire.

According to Mr. Smeathman this species is easily disturbed during the day. It flies exceedingly rapid, and has a method of striking a leaf or bough at two or three feet distance from the place where it really settles. Whether this be done to break the violence of its motion, and enable it to settle without injury to its body; or for the purpose of deceiving its pursuers, is not easily ascertained; it has, however, the latter, and probably both effects; most of the locusts do this, for they certainly strike some branch with a good deal of violence just before they alight, the motion of which deceives the eyes and baffles the pursuer.

GEOMETRA ARGENTATA.

Plate XIV. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Geometridæ, *Steph.*

GENUS. GEOMETRA, *Auct.* SUBGENUS. — ?

GEOMETRA ARGENTATA. Alis pallidè griseis, anticis fasciis duabus, posticis unicà flavis, utrinque argenteo-marginatis his ocello marginali obscuro. (Expans. Alar. 1 unc. 9 lin.)

SYN. Phalæna (Geometra) Argentata, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ filiform. Body grey. Wings pale yellowish grey. A narrow yellow bar rises near the middle of the anterior wings, which, crossing them and the posterior, ends a little below the body on the abdominal edges; another small bar crosses the anterior wings near the shoulders, both of them being verged with silver. A small dark spot, surrounded with silver, is also placed close to the external edges of the posterior wings; and above it is a yellowish patch reaching to the upper corners.

Under Side. Wings pale light-coloured, almost white, immaculate. Margins of the wings entire.

PETASIA? MINISTRA.

Plate XIV. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Nolodontidæ, *Steph.*

GENUS. PETASIA? *Stephens.* Phalæna (Noctua), *Drury.*

PETASIA? MINISTRA. Alis anticis rufescenti-fulvis, strigis quinque transversis, posticis pallidioribus ♀. (Expans. Alar. 2 unc.)

SYN. Phalæna Noctua Ministra, *Drury, App. vol. 2.*

Phalæna Ministra, *Abbot & Smith Ins. Georg. t. 81. Oliv. Enc. Méth. 5. 69. 155.*

HABITAT: New York.

Upper Side. Antennæ filiform. Head and thorax reddish brown. Abdomen clay-coloured. Anterior wings brown orange, with five small dark lines crossing from the anterior to the posterior edges. Posterior wings clay-coloured, fringed with orange brown.

Under Side. Tongue indistinct. Breast and legs red brown. Abdomen and posterior wings clay-coloured. Anterior ones brown orange, without any marks or lines thereon. Wings a little dentated; especially in the anterior wings.

The larva of this insect is long, smooth, and shining, of a black colour, with eight longitudinal continuous yellow lines, with the base of the legs and a spot on the neck red. When alarmed it throws up its head and tail into the air. From the structure of the larva it is therefore nearly allied to *Ptilophora* and *Petasia*, Steph., and not to the buff tip-moth (*Pygæra bucephala*). Its food, according to Abbot, consists of the *Andromeda mariana*, vulgarly called the male hackleberry, which grows round ponds and on the margins of running streams; it eats also several species of walnut and oak. One went into the ground on the 31st of July, and the moth came out the 23rd of August; another went in the 8th of June, and came forth the 3rd of July. They likewise sometimes go into the ground in autumn, and come out in the spring. The whole brood of caterpillars feed together in society. Abbot also states, that when they eat walnut leaves they are always black, with white hairs;* when their food is the oak, they are more yellow.

HYDROCAMPA? NIVALIS.

Plate XIV. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Pyralidæ, *Leach*.

GENUS. HYDROCAMPA? *Latr.* Cataclysta, *Hübner*. Steph. Phalæna (Pylalis), *Drury*.

HYDROCAMPA? NIVALIS. Alis margaritaceo-albis, ciliâ anticarum fuscâ.

SYN. Phalæna (Pylalis) Nivalis, *Drury*, *App. vol. 2.*

HABITAT: New England.

Upper Side. Antennæ filiform and brown. Head, thorax, abdomen, and wings white. The latter of a fine glossy hue, and immaculate. Cilia of the anterior wings brown.

Under Side. Tongue spiral. All the parts on this side are of the same white glossy colour as on the upper.

LIPARIS? RIVULOSA.

Plate XIV. fig. 5.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidæ, *Steph.*

GENUS. LIPARIS? *Ochs.* Phalæna (Bombyx), *Drury*.

LIPARIS? RIVULOSA. Alis fuscis, strigis transversis undulatis pallidioribus et obscurioribus, anticis fasciâ latâ centrali alterâque basali badiis. (Expans. Alar. 3 unc.)

SYN. Phalæna (Bombyx) rivulosa, *Drury*, *App. vol. 2.* *Oliv. Enc. Méth.* 5. 38. 54. (Bombyx r.)

HABITAT: Surinam.

Upper Side. Antennæ pectinated. Head, thorax, abdomen, and wings pale reddish brown, or

* Neither in Abbot's figure, nor in my specimens of this larva, is there any appearance of hair upon the body, and it cannot be supposed that a variation in the nature of the food could have the effect of clothing some specimens with hair whilst the rest are naked.

fawn-coloured. The latter with several indented and waved lines, some being darker and some lighter than the general colour of the wings. On the anterior is a large chocolate patch, situated on the middle of the wings, and joining to the anterior edge: between which and the shoulders is another that is much smaller.

Under Side. Tongue obsolete. Palpi, breast, abdomen, and wings brown, as on the upper side; the latter immaculate, except a dark patch on each wing near the shoulders. Margins of the wings slightly dentated.

NYMPHALIS ERITHONIUS.

Plate XV. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sicains*.

GENUS. NYMPHALIS, *Latr. God.* Papilio (Dan. Festivi), *Linn. Drury*.

NYMPHALIS MEDON. Alis dentatis, supra fuscis; anticis utrinque fasciâ obliquâ luteâ, apice albo; posticis fasciâ violaceo-cærulescenti, singulis subtus punctis tribus, (Expans. Alar. 3 unc. 7 lin.)

SYN. Papilio (Nymph.) Erithonius, *Fabr. Ent. Syst.* 111. 1. p. 82. No. 255. *Latr. & God. Enc. Méth.* ix. p. 390. No. 142. (Nymphalis Er.)

Papilio (Dan. Festivi) Eupalus, *Fabr. Ent. Syst.* 111. 1. p. 48. No. 148.

Papilio Harpalyce, *Cram. pl.* 145. fig. D. E.

Papilio (Equ. Archiv.) Medon, *Drury, App. vol.* 2. (Exclus. Syn. *Linn. & Fabr.*)

HABITAT: Sierra Leone.

Upper Side. Antennæ black, lighter at the tips. Head black. Thorax and abdomen dark brown. Anterior wings dark red brown, tipped with white; but next the shoulders of a purplish hue, with a dark yellow streak near the tips, extending obliquely from the anterior towards the external edge. Posterior wings also red brown; but towards the middle and shoulders of a purplish blue, which they reflect more or less according to the position they are held in.

Under Side. Palpi and breast yellow. Anterior wings olive brown, tipped with white; but along the external edges of a hazel colour, and near the shoulders having three round black spots on each. Posterior wings similar to the anterior, being of a brown olive, variegated, and clouded, with three small spots placed near the shoulders, as in the superior ones. All the wings are a little dentated.

There are several African species closely allied to the present insect, which was regarded by Drury as the Medon of Linnæus. I have followed the Encyclopédie Méthodique in rejecting this reference; although it will be seen that the Linnæan description of that insect, “alis supra nigris primoribus fascia lutea apiceque albo; posticis disco cærulescentibus,” does not disagree with the character of this insect.

According to Mr. Smcathman this species was taken at some distance inland upon the continent of Africa; adding, “there are several Papiliones nearly of this colour, that is to say, with the upper sides of the wings having a changeable purple, and the under sides being inclinable to green, sometimes with marks of the most beautiful crimson. The differences between them arise so gradually, that he thinks them varieties of the same species, some, apparently very different, being found coupled together. They are all found congregating in the paths, and in the thick shade of a forest, ten or a dozen in a circle round a little puddle or moist spot, and seem to like the most gloomy places.”

HESPERIA IPHIS.

Plate XV. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Hesperiidæ, *Steph.*

GENUS. HESPERIA, *Latr. God.* Papilio (Pleb. Urbic.) *Linn. ꝯc.*

HESPERIA IPHIS. Alis supra viridi-atris; infra aureo-virescentibus venis margineque postico nigris, capite sanguineo. (Expans. Alar. 4 unc.)

SYN. Papilio (Pleb. Urb.) Iphis, *Drury, App. vol. 2.*

Hesperia (Urb.) Jupiter, *Fabr. Ent. Syst.* 111. 1. p. 336. No. 279. *Enc. Méth.* ix. p. 733. (Hesperia J.)

Papilio Phidias, *Cram. pl.* 244. A. B.

HABITAT: Senegal, Gambia, Sierra Leone, Anamaboe, and the Bight of Benin, on the Coast of Africa.

Upper Side. Antennæ thickest in the middle. Head scarlet. Thorax and abdomen black. All the wings green brassy-coloured, the nerves black, those parts that surround the body being of a raven black. The tips of the anterior wings orange-coloured.

Under Side. Palpi scarlet and hairy, the extremities being small and black. Breast, legs, sides, and abdomen black. Anus scarlet. Wings of a yellower brassy hue than on the upper side. Superior wings tipped with orange, but next the body greenish black; the same colour occupying the external edges of the posterior wings.

The male differs in having the upper side entirely of a fine raven black without the orange tips; the under side is also darker, and less brassy than the female.

Drury states, that when this insect is at rest it sits with its wings erect; and Mr. Smeathman considers it "very remarkable that this insect, which seems an intermediate species between Papilio and Phalæna, associates with the little assemblages of *Nymphalis Erithonius*, and is frequently seen sipping water with them."

NYMPHALIS (LIMENITIS) SIBILLA.

Plate XLV. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymph. Phal.), *Linn. Drury.* SUBGENUS: Limenitis, *Fabr. Steph. Naiades, Hübn.*

NYMPHALIS (LIMENITIS) SIBILLA. Alis subdentatis supra atro-cæruleis; fasciâ maculari albâ; posticis subtus basi cinereo-cærulescente immaculatis. (Expans. Alar. 1 unc. 9 lin.)

SYN. Papilio Sibilla, *Linn. Syst. Nat.* ii. 781.

N. Camilla, *Enc. Méth.* ix. p. 408. and of the German Lepidopterists.

Papilio (Nymph.) Sibilla var. *Drury.*

HABITAT: Smyrna (*Drury*).

Upper Side. Antennæ black. Head, thorax, and abdomen black. Between the eyes are four small white spots. Wings raven black, tinged with green. Anterior with ten white spots, of different sizes, placed in various parts; four being next the anterior edge, near the middle of the wings, and divided only by the nerves. Posterior with a row of long white spots, placed together, running from the middle of the anterior edges, and ending a little above the abdominal corners, divided by the nerves. A range of small black spots, edged with grey, runs parallel with the external edges of the wings, from the tips to the abdominal corners, where the last spot is encircled with orange.

Under Side. Palpi, legs, breast, and abdomen grey. Anterior wings, next the body, grey; the remaining parts being dusky olive, with some dark red streaks placed on various parts; the white spots being very distinct on this side. Posterior wings, at the base, light grey; extending almost to the row of white spots, which are seen on this side as well as on the upper. The remaining parts are dusky olive, with two rows of faint dark red spots running along the external edges. A range of small black spots runs parallel with the external edges of all the wings. All the wings are dentated.

There is a diversity of opinion amongst the German and English Lepidopterists, relative to the names of this species and the English White Admiral, to which latter Haworth, Stephens, &c. give the name of Camilla, but which Illiger, Hubner, &c. term Sibilla. I have adopted the former nomenclature, although it will be seen that the figure of Drury, which is the Sibilla of the English nomenclature, exhibits a red spot at the anal angle, which Curtis considers as the most satisfactory mark of distinction between the two species. (Brit. Ent. p. 124.)

PAMPHILA METIS.

Plate XVI. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna, *Latr.* FAMILY: Hesperiidæ, *Steph.*

GENUS. PAMPHILA, *Fabr.* Hesperia p. *Latr.* & *God.* Papilio (Pleb. rur.), *Linn.*

PAMPHILA METIS. Alis anticis utrinquè posticisque supra nigro-fuscis, maculis fulvis, plurisque punctiformibus; alis posticis subtùs brunneo-fuscis immaculatis. (Expans. Alar. 1 unc. 1 lin.)

SYN. Papilio (Pleb. rur.) Metis, *Linn. Syst. Nat.* 2. 792. 245. *Fabr. Ent. Syst.* 111. 1. p. 329. No. 249. (Hesperia Th.)

Pap. Metis, *Cramer, pl.* 162. f. G.

HABITAT: Cape of Good Hope.

Upper Side. Antennæ brown, yellow beneath. Head hairy. Thorax and abdomen brown; the extremity of the latter yellow. Wings dark brown. Anterior having four orange spots, two of which next the body are double. Posterior with a row of six orange marginal, and two discoidal spots.

Under Side. Tongue black. Palpi orange. Legs, breast, and abdomen brown. Wings coloured as on the upper side. The anterior having five orange spots, that next the body being long and double. The posterior immaculate. Margins of the wings entire.

NYMPHALIS OPIS, VAR. γ .

Plate XVI. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sw.*

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis), *Linn.*

NYMPHALIS OPIS. Alis supra fuscis, fasciâ communi caracteribusque ochraceis; anticis strigâ punctorum alborum. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Nymph. Phal.) Crithea, *Drury, App. vol.* 2. *Fabr. Ent. Syst.* 111. 1. p. 132. No. 406. *Cramer, pl.* 16. f. 5. 6.

Nymphalis Opis, *Enc. Méth.* ix. p. 381. No. 104. *Fabr. Ent. Syst.* 111. 1. p. 131. No. 405.

HABITAT: Sierra Leone.

Upper Side. Antennæ brown. Thorax and abdomen dark brown, with four yellowish lines crossing them. Anterior wings dark purplish brown, having many marks and spots of different shapes and sizes placed thereon of a deeper shade; four being round, and gradually diminishing in size, and placed along the external edges; two others also, that are small, are situated at the shoulders. Posterior wings dark brown; the upper parts along the anterior edges dull yellow, reaching almost to the thorax. Two indented ash-coloured lines cross these wings; one beginning at the upper corners running circularly, and meeting below the body; the other running in a straight line above the first, and meeting a little above the extremity of it.

Under Side. Palpi, breast, and abdomen ash-coloured. Legs yellowish. Anterior wings dull yellow, but next the tips brown, where there are some greyish spots and marks; in the centre are two small round spots, almost black; and along the anterior edges, next the shoulders, are some other brown spots variously and irregularly shaped. Posterior wings entirely dull yellow, immaculate; the margins of these being a little dentated, the anterior ones entire.

The authors of the *Encyclopédie Méthodique* consider the insect here figured, and that represented in Pl. XVII. fig. 5, 6, as varieties of the same species. Mr. Smeathman states, that this species is found in the same gloomy recesses, and often congregated together in the same manner as *Nymphalis Erithonius*, figured in Pl. XV.

BIBLIS ILITHYIA.

Plate XVII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. BIBLIS, *Fabricius, Latr. & God.* Papilio (Nymph. Phal.), *Drury.*

BIBLIS ILITHYIA. Alis rotundatis denticulatis fulvis fasciâ baseos margineque fulvo maculato nigris; posticis subtus fasciis duabus albis transversis nigro-punctatis. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Ilithyia, *Drury, App. vol. 2. Fabricius Ent. Syst. 111. 1. p. 131. No. 403.*

Cramer, pl. 213. fig. A. B. ♂.—214. C. D. ♀.

Pap. Polinice, *Cramer, pl. 375. fig. G. H. (var.)*

Biblis Ilithyia, Enc. Méth. ix. p. 327.

HABITAT: Senegal, and Coast of Africa.

Upper Side. Antennæ brown. Thorax and abdomen dark brown. Wings fine deep or brown orange. The anterior deeply verged with black along the external and anterior edges; the former having a row of oblong orange spots running parallel with them, which is continued, together with the deep black margin, along the posterior wings to the abdominal corners; the spots being larger along these wings than on the anterior. A black, irregular, and indented line rises near the middle of the anterior wings, and ends at the posterior edges.

Under Side. Palpi and breast orange. Legs brown. Anterior wings orange; the external edges with a small, narrow, white indented margin. Four small white spots are placed near the tips, that next the anterior edge being least; and along the same edge are several other long black spots, margined with white. Posterior wings with a row of white crescents placed along the external edges; over this is an orange bar, next is a row of cream-coloured spots almost round, being seven in number, with a row of very small ones above them, consisting of fourteen; above this is an orange bar, with a cream one

over it, being divided by a narrow black line. Above these are two other bars; the first orange, the next cream colour, separated by long narrow black spots; the colour of these wings, next the body, being orange. All the wings are dentated.

PIERIS CALYPSO.

Plate XVII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. *PIERIS*, *Schrank. Latr. God. Papilio* (Dan. Cand.), *Linn. Drury*.

PIERIS CALYPSO. Alis rotundatis subintegris albis extimo nigro; posticis subtus flavis seu nitenti-grisescens, limbo punctorum nigrorum serie duplici, maculis flavis interjectis. (Expans. Alar. 2 unc. 6 lin.)

SYN. *Papilio* (Dan. Cand.) *Calypso*, *Drury, App. vol. 2. Fabr. Ent. Syst. 111. 1. p. 191. No. 592. Cramer, pl. 154. C. D. (♂.) E. F. (♀.) Enc. Méthod. ix. p. 130. (Pieris C.) Boisduval Hist. Nat. Lep. 1. 504.*

HABITAT: Sierra Leone.

Upper Side. Antennæ brown. Thorax and abdomen nearly black. Wings white; margined externally with dusky black. The anterior edges of the anterior ones are also margined with black, from the middle of which runs a black line to a round spot placed on the middle of the wings; the mixture of the colours on these wings somewhat resembles the profile of a human face. Posterior wings having a round spot placed near the middle of each, with several fainter ones along the external edges, and two stronger ones near the upper corners.

Under Side. Palpi and legs black. Breast ash-coloured. Anterior wings as on the upper side; three oblong yellow spots being placed at the tips, and four round white ones along the external edges. Posterior wings much tinged with yellow, having a yellow margin running from the abdominal to the upper corners along the external edges, appearing like crescents placed on a row; above this is a row of seven square black spots placed circularly with the margin, and in the centre is a conspicuous round black spot.

Mr. Smeathman states that this insect loves chiefly to sport in the sunshine. It is therefore very difficult to catch at that time of the day when the sun is powerful; but towards sunset it is more easily caught, when it congregates in great numbers, in particular spots most sheltered from the breeze.

NYMPHALIS LAURE.

Plate XVIII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. *Nymphalis*, *Latr. God. Papilio* (Nymph. Phal.), *Drury*.

NYMPHALIS LAURE. Alis suprâ nigris; fasciâ mediâ anticarum fulvâ interruptâ; posticarum albâ, et a latere cœruleo nitidâ. (Expans. Alar. 2 unc. 6 lin.)

SYN. *Papilio* (Nymph. Phal.) *Laure, Drury, App. vol. 2.*

Papilio (Nymph.) *Laura, Fabr. Ent. Syst. 111. 1. p. 134. No. 415.*

Nymphalis Laure, Enc. Méth. ix. p. 376.

HABITAT: The Bay of Honduras, *Drury*.

Upper Side. Antennæ brown. Thorax and abdomen brown. Anterior wings fine ochre brown; having two faint, dark, indented lines running along the external edges. An oblong yellow spot is placed on the anterior margins near the tips. Three others, one being small, are situated near the middle of the wings; beginning at the anterior edges and reaching almost to the posterior, where it becomes white. Posterior wings ochre brown; but when held in a certain position exhibiting a fine purplish blue. A white bar crosses these wings obliquely from the middle of the anterior edges, and meets a little below the body. Two indented black lines are placed on the external edges, running from the upper to the abdominal corners, where are placed two small crescent-like blue spots or lines, one double, the other single.

Under Side. Palpi, breast, and legs white. Anterior wings having some short black irregular lines placed cross-ways, and some brown orange marks near the shoulders. Three small triangular black spots are placed at a little distance from the external edges, near the lower corners; above which is a brownish patch resembling polished metal. Posterior wings entirely of the colour of polished metal, except the external edges which are ash colour; and a white bar running from the middle of the anterior edges to the abdominal corners. All the wings are deeply angulated.

Latreille and Godart question whether this be not the female of *Nymphalis Laurentia*, of which they had only seen the males.

NYMPHALIS CADMA.

Plate XVIII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Leach.*

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymph. Phal.), *Drury.*

NYMPHALIS CADMA. Alis denticulatis luteis, anticis utrinque areâ apicis nigrâ, maculis duabus flavescentibus; posticis subtus ocellis duobus cœruleis. (Expans. Alar. 2 unc.)

SYN. Papilio (Nymph. Gemm.) Cadma, *Drury, App. vol. 2. Fabricius Ent. Syst. 111. 1. p. 241. No. 751.*
(Papilio Sat. C.) *Enc. Méth. ix. p. 421.* (Nymphalis C.)

HABITAT: Jamaica.

Upper Side. Antennæ black. Head, thorax, and abdomen dark brown. Wings tawny yellow. The anterior having the extreme parts, near the tips, black; with two yellowish spots thereon, joining the anterior edges; also a round black spot situated at the lower corners on the posterior edges. Posterior wings immaculate, except a black streak placed on the anterior edges next the upper corners.

Under Side. Tongue black. Breast, legs, and abdomen ash-coloured. The superior wings marked and coloured as on the upper side, but less distinctly. Posterior wings tawny orange, having a broad ash-coloured bar crossing them from the anterior to the abdominal edges. On this bar are placed two eyes, with double pupils; the lower one being of a fine blue with a yellow iris; the upper one, next the anterior edges, blue and black, with a brown iris. Margins of the wings dentated.

VANESSA TEREA.

Plate XVIII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. VANESSA, *Fabr. Latr. God. Steph. &c.* Papilio (Nymph. Gemm.), *Drury, &c.*

VANESSA TEREA. Alis dentatis supra fuscis, fasciâ communi fulvâ lineâ nigrâ divisâ; anticis subfalcatis punctis apicalibus albis, posticis intus subcaudatis, ocello anali gemino. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Gemm.) Terea, *Drury, App. vol. 1, 2. Fab. Ent. Syst. 111. 1. p. 92. No. 288. Cramer, pl. 138. fig. E. F. Encycl. Méth. ix. p. 314. (Vanessa T.)*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Thorax and abdomen greenish brown. The shoulders of all the wings surrounded by a broad patch of a yellowish brown; joining to this is a yellow clay-coloured bar, rising near the anterior edges. The remaining part of the wings is occupied by a dusky black border, situated along the external edges; having some very small white spots thereon, whereof four are placed near the tips.

Under Side. Palpi, legs, breast, and sides pale clay-coloured. Anterior wings pale clay-coloured; having three irregular indented bars crossing them, from the anterior to the posterior edges. Along the external edges is a dark cloud, whereon are four or five exceeding small white eyes, and a small white spot like an arrow's point near the tips. Posterior wings pale clay-coloured, clouded along the external edges, where there are three exceeding small white eyes. A small reddish line crosses these wings from the abdominal corners to the middle of the anterior edges. All the wings are dentated; the anterior being a little angulated.

This butterfly, according to Mr. Smeathman, delights to sport in the sunshine, and is frequently found in company with *Pieris Calypso* about cultivated spots, as old rice plantations and cassava grounds.

NYMPHALIS OPIS.

Plate XVII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sw.*

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis), *Linn.*

NYMPHALIS OPIS. Alis supra fuscis, fasciâ communi caracteribusque ochraceis; anticis strigâ punctorum alborum. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Nymph. Phal.) Opis. *Drury, App. vol. 2. Cramer, pl. 138. fig. A. B. Encycl. Méth. ix. p. 381. No. 104. (Nymphalis O.)*

HABITAT: Sierra Leone.

Upper Side. Antennæ brown. Head, thorax, and abdomen brown. Wings dark brown, or chocolate colour, formed into divisions by lines of a yellowish colour crossing and intersecting them in various directions. A yellow bar rises on the anterior wings, near the middle, and crossing them and the posterior, meets at the extremity of the body. Close to where the bar rises on the anterior wings are six very small white spots, placed between the nerves, reaching to the anterior edges.

Under Side. Palpi, breast, and sides greyish brown. Anterior wings greyish, clouded with red brown, particularly at the tips; on the middle of the external edges is a patch of yellow, and on the

middle of the posterior edges is a patch of a pale clay colour, with six small white spots. Posterior wings having a third part, next the shoulders, greyish and dark brown; the remainder pale clay, with a reddish brown patch next the upper corners; from whence runs an undulated brown line to the abdominal edges at the extremity of the body, and another fainter along the external edges. The wings are dentated.

NYMPHALIS CÆNIS ♂.

Plate XIX. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Schränk. Latr. God. Boisd.* Papilio (Dan. Cand.), *Linn. §c.*

NYMPHALIS CÆNIS. Alis subrotundatis albis, margine postico et ante hunc marginem lineâ angulatâ maculisque nigris; subtus omnibus strigâ communi brunneâ. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (Dan. Cand.) Cænis, *Drury, App. vol. 2. Encycl. Méth. ix. p. 142. No. 85.* (Pieris C.)

Nymphalis amphiceda, *Fabr. Ent. Syst. 111. 1. 113. No. 348. ♀. Cramer, pl. 146. D. E. Enc. Méth. ix. 384. 113.*

HABITAT: Calabar, Africa.

Upper Side. Antennæ black. Eyes red brown. Thorax greenish. Abdomen sooty brown. Wings white, having a narrow border running along the external edges of a soot brown; over which is an indented, angulated, black line, appearing in some places like two points of arrows united. Along the anterior edges of the anterior wings also runs an exceeding narrow black line.

Under Side. Palpi, breast, sides, and legs white. Wings white; being divided as it were by a brown line, which, beginning near the middle of the anterior edges of the anterior wings, and crossing them and the posterior, meets near the abdominal corners. The inner part of the division having many brown lines thereon, shaped like angles, circles, &c. A faint angulated brown line runs along the external edges of all the wings; whereon are some short faint brown streaks placed on the upper angles. The wings are a little dentated.

NYMPHALIS MELICERTA.

Plate XIX. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymph. Phal.), *Linn. Drury.*

NYMPHALIS MELICERTA. Alis denticulatis utrinque fusco-nigris, fasciâ latâ strigisque albis, anticarum basi maculâ cuneiformi albâ. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Melicerta, *Drury, App. vol. 2. Herbst. Pap. tab. 238. f. 5. 6.*

Nymphalis Melinoe, *Enc. Méth. ix. p. 432. No. 261.*

Papilio Blandina, *Cramer, pl. 237. fig. E. F.*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Thorax and abdomen dark brown. Anterior wings sooty brown, with two white narrow lines running along the external edges. From the shoulders runs a long white streak to the middle of the wing, and a small one at the end of it; where are also six other white streaks placed transversely, one of which is very small. Posterior wings sooty brown, having the two narrow lines continued along the external edges from the anterior wings. A broad straight white bar crosses these

wings, being a little indented on the lower side ; beginning at the anterior edges near the upper corners, and meeting at the body on the abdominal edges.

Under Side. Palpi, breast, sides, and legs ash-coloured ; all the white parts appearing broader and larger on this side than on the upper ; the lines along the external edges are broader, and the dark parts of the wings have a few whitish marks on them that are not seen on the other side. The wings are a little dentated.

The *Melicerta* of Fabricius and the *Encyclopédie Méthodique* appears to be a distinct species, having the base of the anterior wings spotted with white. I have restored Drury's name to the present insect, as it has the priority.

ANTHOCARIS ARETHUSA.

Plate XIX. fig. 5, 6.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Papilionidæ, *Leach*.

GENUS. ANTHOCARIS, *Boisduval*. *Pieris*, *Latr.* & *God.* Papilio (Dan. Cand.) *Drury*.

ANTHOCARIS ARETHUSA. Alis rotundatis integerrimis albidis ; supra anticis apice maculâque, posticis strigâ incurvâ punctisque marginalibus fuscis ; anticarum subtus apice fulvo. (Expans. Alar. 1 unc. 10 lin.)

SYN. Papilio (Dan. Cand.) *Arethusa*, *Drury*, *Append. vol. 2.* *Boisduval Hist. Nat. Lepidopt.* 1. p. 582. (*Anthocaris* A.)

Pieris Amytis, *Enc. Méth.* ix. p. 123. (Exclus. Syn. *Crameri*.)

Pieris Evippe, ♀. *Enc. Méth. Sup.* p. 805.

HABITAT : Sierra Leone.

Upper Side. Antennæ brown. Head, thorax, and abdomen dark brown. Anterior wings white, brown at the base ; having a small black round spot near the centre of each ; the tips are dark brown, occupying a third of the wings ; near the middle of the posterior edges is a brown patch, and a small round spot at the lower corners. Posterior wings white, but clouded a little near the body. Along the external edges are placed five brown spots, that next the upper corners being double : also a brown line, like an obtuse angle, begins on the anterior edges, and ends just below the body.

Under Side. Palpi, breast, and legs ash-coloured. Anterior wings white, whereof the tips are orange-coloured, verged with yellow ; on each wing are two black spots, one being very small and answering to that on the upper side ; the other larger, and placed near the posterior edges. Posterior wings pale yellow, with an exceeding small spot, surrounded with orange colour, placed near the middle of each ; the brown obtuse angle appears faintly on this side, but of an orange colour. All the wings are entire.

CALLIMORPHA? SANGUIFLUA.

Plate XX. fig. 1, 2.

ORDER : Lepidoptera. SECTION : Nocturna. FAMILY : Aretiidæ, *Stephens*.

GENUS. CALLIMORPHA? *Latr.* SUBGENUS : — ? *Phalæna* (— ?), *Drury*.

CALLIMORPHA? SANGUIFLUA. Alis nigris, anticis albo et flavo punctatis nervisque posticis sanguineis ; posticis nigris margine cœruleo 4 albo-punctatis. (Expans. Alar. 4 unc. 1½ lin.)

SYN. *Phalæna* (—) *Sanguiflua*, *Drury*, *App. vol. 2.*

HABITAT : Surinam.

Upper Side. The head is wanting. Thorax blueish black. Abdomen very dark blue, with five small white spots on each side. Anterior wings black, with a number of small spots dispersed all over them, whereof five next the body are yellow, the rest white. The nerves, from the middle to the extremities of the wings of a dark red, or crimson colour. Posterior wings at the base of a blueish black, but along the external parts deep mazarine blue; whereon are placed twelve faintish white spots.

Under Side. Nearly corresponds with the upper, except in the number of spots, which are more numerous; some being surrounded with blue, those next the external edges being double. The crimson colour on the ribs of the superior wings is wanting on this side. All the wings are entire.

Notwithstanding the imperfect state of this insect, it is evident that it is nearly allied to many other species figured by Drury (including those represented in Pl. 11. fig. 4., Pl. 6. fig. 4., Pl. 11. fig. 3.), and which appear to form the connecting links between the aberrant Sphingidæ (Zygænidæ) and the Arctiidæ. The singular neuration of the upper wings of this insect is nearly similar to that of a remarkable Indian species, which I have described and figured in Mr. Royle's work on the Natural History of the Himalaya.

SPILOSOMA EGLE.

Plate XX. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidæ, *Steph.*

GENUS. SPILOSOMA, *Steph.* Arctia, *Latr.* Eyprepia p. *Ochs.* Phalæna (Noctua), *Drury.*

SPILOSOMA EGLE. Alis griseis immaculatis; abdomine luteo, maculis dorsalibus nigris. (Expans. Alar. 1 unc. 10 lin.)

SYN. Phalæna (Bombyx) Egle, *Drury, App. vol. 2.*

HABITAT: New York.

Upper Side. Antennæ grey, slightly pectinated. Head grey. Neck cream-coloured. Thorax grey. Abdomen yellow, with seven small black spots placed along the middle. Wings grey ash-coloured, immaculate.

Under Side. Palpi small. Tongue spiral. Abdomen pale yellow. Wings grey-coloured on this side, immaculate. Margins of the wings entire.

NOCTUA CHERA.

Plate XX. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. NOCTUA SUBGENUS. —

NOCTUA CHERA. Alis griseo-badiis, anticis fasciâ irregulari longitudinali (cum marginibus externis et posticis) parallelâ fusca. (Expans. Alar. 2 unc. 5 lin.)

SYN. Phalæna (Noctua) Chera, *Drury, App. vol. 2.*

HABITAT: Surinam.

Upper Side. Antennæ setaceous. Head, thorax, and abdomen greyish russet. Wings coloured nearly as the preceding insect. The anterior having a dark brown irregular line running near the posterior and external edges to the anterior near the tips. Posterior wings immaculate.

Under Side. All the parts on this side are of the same colour as the upper, without any marks whatever on them. Margins of the wings entire.

I have placed this insect in the family Noctuidæ with doubt, as it seems to have some resemblance with *Galleria Mellonella*.

NYMPHALIS JACINTHA.

Plate XXI. fig. 1, 2.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis Phal.), *Drury*.

NYMPHALIS JACINTHA. Alis dentatis fuscis, anticis maculis albo-cæruleis omnibusque strigâ punctorum, fasciâ intus crenatâ, lunulisque apicalibus albidis. (Expans. Alar. 4 unc. 6 lin.)

SYN. Papilio (Nymph. Phal.) Jacintha, *Drury, App. vol. 2. Fabr. Ent. Syst. 111. 1. p. 111. No. 342. ♀ ?*

Papilio N. Liria, *Fabr. Ent. Syst. 111. 1. p. 126. 385. ♂ ? Enc. Méth. ix. p. 395. (Nymphalis Liria).*

Papilio Perimale, *Cramer, pl. 65. fig. C. D. pl. 67. fig. B.*

HABITAT : Bombay (*Drury*).

Upper Side. Antennæ black; having two small white spots placed at the base, and three others behind them. Thorax and abdomen blackish brown. Anterior wings, at the base, very dark brown, tintured with liver colour, but at the external edges lighter, and of an orange tinge; having six small white spots placed parallel with the edge, but at a small distance from it. Near the middle of these wings are four small blue spots, when the insect is held in a particular direction. Posterior wings darkest at the base, but the other parts are of an olive brown; the external edges are fringed with white, having a row of cream-coloured crescents above, and another row of cream spots above that, placed two and two, with seven small white spots placed above the whole. All the wings are dentated.

Under Side. Legs brown. Thighs white. Breast and abdomen whitish. Wings brown olive, darkest next the body, with the same cream-coloured spots as on the upper side, but a little fainter.

NYMPHALIS PERSEIS.

Plate XXI. fig. 3, 4.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis Phal.), *Drury*.

NYMPHALIS PERSEIS. Alis dentatis, utrinque nigris disco communi testaceo; anticis maculis duabus fasciâque, posticis punctis marginalibus ochraceis. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (Nymphalis Phal.) Perseis, *Drury, App. vol. 2. Herbst. tab. 137. fig. 5. 6.*

Papilio (Nymph.) Persea, *Fabr. Ent. Syst. 111. 1. p. 137. No. 423. Enc. Méth. ix. p. 391.*

HABITAT : Sierra Leone.

Upper Side. Antennæ black. Thorax and abdomen black, spotted with white. Anterior wings black, the tips edged with white; two pale lemon-coloured spots are situated in the centre of the wings, one being long, the other round; between which and the tips is a long lemon streak, extending from the anterior almost to the external edges; a large patch of a dull red is also placed on the hinder part of the wings, extending along the posterior edges from the shoulders almost to the lower corners. Posterior

wings dull red-coloured, bordered with black, whereon are seven small white spots placed along the external edges, and reaching from the upper to the abdominal corners. All the wings are dentated.

Under Side. Palpi yellow. Breast white. Legs brown. Thighs white. Anterior wings marked as on the upper side, but the colours are much duller. Posterior wings dirty red, bordered with black, whereon are eight white spots, larger than those on the upper side; the colours of the whole being much duller and fainter than on that side.

ALCIS SCOLOPACEA.

Plate XXII. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Geometridæ, *Steph.*

GENUS. ALCIS, *Curtis.* Boarmia, *Treit.* Phalæna (Noctua), *Drury.*

ALCIS SCOLOPACEA. Alis dentatis griseis, fusco atomosis, strigisque dentatis et undulatis communibus albidis et fuscis. (Expans. Alar. 3 unc. 5 lin.)

SYN. Phalæna (Noctua) Scolopacea, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ filiform. Thorax, abdomen, and wings brownish grey; the latter varied with dark indented brown streaks and lines, contrasted with white and ash colour, crossing them from the anterior to the posterior and abdominal edges.

Under Side. Legs, sides, abdomen, and wings yellow wainscot-coloured. About half the anterior ones, from the tips towards the shoulders, are marked with faint dark brown lines and streaks. Posterior wings having a faintish dark brown cloud, situated near the upper corners. All the wings are deeply dentated.

CALLIMORPHA? MARGINATA.

Plate XXII. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* Phalæna (Bombyx), *Drury.*

CALLIMORPHA? MARGINATA. Alis anticis fusco-nigris, margine antico baseos luteo, posticis atris basi maculâ discoidali, punctisque marginalibus, cærulescenti albis. (Expans. Alar. 2 unc. 5 lin.)

SYN. Phalæna (Bombyx) marginata, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ pectinated. Head black. Neck yellow. Tongue distinct. Thorax and abdomen black; the latter having two rows of grey spots placed along the upper side of it, and reaching towards the anus, which is yellow. Anterior wings deep black, the anterior edges next the shoulders being yellow. Posterior wings sooty black, with a whitish cloud next the shoulders, and a white spot near the centre of each; a row of whitish spots are also placed along the external edges, which become fainter as they approach the upper corners.

Under Side. Breast, sides, legs, and abdomen black. All the wings are the same; the anterior ones being edged with yellow next the shoulders, and two faint grey spots near the middle; a small whitish streak is also placed on the posterior ones, next the abdominal edges, about a quarter of an inch from the shoulders, where is a small yellow spot on each wing. Margins of the wings entire.

VENILIA? SOSPETA.

Plate XXII. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Geometridæ, *Steph.*

GENUS. VENILIA? *Duponchel, Stephens.* *Macaria* p., *Curtis.*

VENILIA? SOSPETA. Alis flavis; anticis punctis duobus parvis discoidalibus maculisque tribus marginalibus; posticis maculâ unicâ versus angulum ani, brunneis. (Expans. Alar. 2 unc. 5 lin.)

SYN. *Phalæna* (Noctua) *Sospeta*, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ filiform. Head pale yellow. Eyes dark brown. Tongue spiral. Thorax, abdomen, and wings pale yellow. On the posterior edges of the anterior wings are placed two faint brown streaks; one, which is smallest, being about a quarter of an inch from the shoulders, the other the same distance from the lower corners; about the same distance from the tips, on the anterior edges, is placed another very small one. Posterior wings having likewise two of these faint spots, one on the anterior, the other on the abdominal edges.

Under Side. Sides, breast, and abdomen pale yellow. Legs brown and yellow. Wings pale yellow, with the same spots and marks as on the upper side, but more distinct. The wings are a little angulated.

EREBUS? OPIGENA.

Plate XXII. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. EREBUS? *Latr.* *Phalæna* (Noctua), *Drury.*

EREBUS? OPIGENA. Alis angulatis badio-fuscis, strigis nonnullis undulatis et dentatis communibus obscurioribus. (Expans. Alar. 3 unc. 6 lin.)

SYN. *Phalæna* (Noctua) *Opigena*, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ filiform. Head dark brown. Neck ash colour. Palpi long and greyish, the extremities being black. Tongue spiral. Thorax, abdomen, and wings dark russet or grey brown: the latter having some faint dark indented lines crossing the middle of them, from the anterior to the posterior and abdominal edges. The tips of the anterior wings terminate in an obtuse angle.

Under Side. Breast, sides, abdomen, legs, and wings very dark brown. A dark narrow line begins at the anterior edge of the superior wings, about a quarter of an inch from the tips, and crossing them and the posterior ones ends at the abdominal edges, just below the body; dividing each wing into two compartments, that above the line being a degree darker than that below it; in the centre of each of these divisions is placed a faint black spot, and along the external edges are several of a smaller size, and equally faint. Margins of the wings entire.

URANIA RHIPHEUS.

Plate XXIII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Uraniidæ.

GENUS. URANIA, *Fabr.* (Syst. Gloss.) *Latr.* *Cydimon*, *Dalm.* (Prodr. Mon. Castniæ.) *Leilus* & *Rhipheus*, *Swainson Zool. Illustr.*

URANIA RHIPHEUS. *Alis nigris, anticis utrinque lineolis transversis fasciâque mediâ bifidâ aureo viridibus, posticis areâ anali cupreâ violaceo micanti nigroque maculatâ.* (Expans. Alar. 4 unc. 9 lin.)

SYN. *Papilio* (Eq. Troj.) *Rhipheus*, *Drury, App. vol. 2. Esper. Pap. Exot. t. 21. f. 1. 2.*
Rhipheus dasycephalus, *Swainson Zool. Illustr. N. Ser. pl. 131.*

HABITAT: China (*Drury*). Bengal (*Cramer*). Coromandel (*Fabricius*). Madagascar (*Enc. Méth.*).

Upper Side. “The antennæ are black, and knobbed at their extremities.” Eyes dark brown. Thorax and abdomen black. The ground of the anterior wings is a lovely deep green, marked or striped all over with irregular streaks of a deep black, almost all of which run in a direction from the anterior to the posterior edges. Posterior wings, next the body, black; but towards the anterior edges are of a fine light blue green, clouded with black. The other parts, next the abdominal and external edges, are of a curious, deep, blood-red, shining with gold, and spotted with black.

Under Side. Palpi grey. Breast and abdomen ash-coloured. Wings light sea-green, clouded or marked as on the upper side with black. Posterior wings, next the body, of a most brilliant golden green, with small spots of black, which green softens into a fine purple, from that into a crimson, then into a blood-red, and lastly to an orange; which colours occupy the greater part of these wings: that part which lies next the upper corners being of a fine blue green, clouded with black; all the colours on this side have a rich glow of gold, and appear changeable, according to the position in which the light strikes on them; from the abdominal corner runs a narrow black border along the external edge, the width of three membranes, stopping at the angle, and communicating with a large black spot situated near the abdominal edge. “The whole exhibiting the most beautiful colours I ever saw united in one insect.”

The splendid insect, from which these figures were taken, has been considered by most Lepidopterists to have been in a mutilated and mended state; having the head, concealed palpi, and clavate antennæ of a true *Papilio*, and the posterior wings nearly truncated at the lower part. These authors have supposed that the insect was a specimen of the *Papilio Rhipheus* of *Cramer* (pl. 385. fig. A. B. *Leilus orientalis*, *Swainson Zool. Illustr. N. Ser. pl. 130.*), in which the head and antennæ are similar to those of *Nyctalemon Orontes*, figured in the first volume of this work, and the posterior wings are terminated by three tails. Mr. *Swainson* has however adopted a different opinion, figuring *Drury's* insect under the name of *Rhipheus Dasycephalus*, and *Cramer's* under that of *Leilus Orientalis*; considering that this view of the subject “will clear up one of the most intricate and perplexing questions that has hitherto impeded the natural arrangement of the Linnæan Papiliones and even the entire Lepidoptera.” *Drury's* insect exhibiting the nervures of *Urania*, and the head, &c. of *Papilio*, is thus considered as establishing as close an affinity as can possibly be imagined between *Papilio* and *Leilus* (i. e. the *Rhipheus* of *Cramer*). It is true that there are many Lepidopterous insects which, on a

casual glance, appear identical, but which belong to distinct groups, especially distinguished by the neurulation of their wings, but when we consider the almost perfect identity, in the very peculiar markings and colours, of these two supposed distinct insects, the identity in the nerves of their wings;* the slight scruple which the old collectors had in patching up their insects, and the truncation of the hind wings in Drury's figure, which may be exactly imitated by placing a slip of paper over the tails of perfect tailed specimens of *Rhipheus*, I think we are authorised in rejecting, without hesitation, the views of Mr. Swainson.

That this group of insects is one of the most interesting amongst the *Lepidoptera*, and at the same time exceedingly difficult, with respect to its natural relations, cannot be denied. Modern authors, Mr. Swainson observes, have been unfortunate in their location of this group, of course alluding to its being placed by Latrielle in the family *Hesperiidæ*. Mr. Swainson, however, is not less unfortunate in his introduction of it into the family *Papilionidæ*, with which the structure of the fore legs is said peculiarly to rank it. This character, nevertheless, together with its day-flying habits and brilliant colours, are the only points in which an affinity can be traced between the *Papilionidæ* and *Uraniidæ*. But the structure of the hind legs (having spurs in the middle, as well as at the tips of the tibiæ), and of the nerves of the wings, antennæ, and palpi, all exhibit a very slight degree of relationship with *Papilio*. Mr. Swainson has, indeed, endeavoured to make the affinity more evident by introducing *Papilio Curius*, Fabr. as a subgenus (*Leptocircus*) in the genus *Leilus* (or *Urania*), but the relationship between these is of the slightest and most unsatisfactory kind. Mr. Newman has suggested another view of the affinities of this group. In his sketch of the circular distribution of the *Lepidoptera*,† he has introduced into the Butterfly circle, the genera *Coronis* and *Urania*, the last forming the connecting link with the *Geometridæ*, by Leach's genus *Ourapteryx*, or the Swallow-tail Moth. The whole structure of the latter insect indicates, however, most clearly that the relation is but an analogical one. Had, indeed, the observations of M. Sganzin,‡ relative to the transformations of *Urania Rhipheus* been confirmed, this would certainly have been its more appropriate locality, its caterpillar being said by him to be a semi-looper, and its chrysalis to be naked, suspended by the tail, and girt round the centre. But the elaborate memoir of Mr. MacLeay,§ upon the habits and changes of *Urania Fernandina*, prove most clearly that the larva closely resembles that of *Agarista*;|| and that the pupa, as in that genus, is inclosed in a cocoon. Now this latter character exists in some species of *Hesperia*. In these, however, the chrysalis is still attached by its tail. Mr. MacLeay does not mention whether such is the case in *Urania*; but since his return from Cuba he has had the kindness to shew me the cocoon, and to inform me that the chrysalis is loose. This character,

* Mr. Swainson's figure of *Leilus orientalis* is incorrect in this respect.

† *Sphinx Vespiformis*, an Essay, table opposite p. 31.

‡ *Anomalie du Genre Urania* par M. Boisduval Ann. Soc. Ent. France, 1834, p. 248.

§ Trans. Zool. Soc. Lond. vol. i.

|| Figured by Lewin in his *Lepidopt. of New Holland*, and republished by Guérin Icon. Règne. An. Ins. pl. 83. fig. 2.

therefore, with the entire structure of the imago, removes it from the Diurnal Lepidoptera, and associates it most satisfactorily with the Hesperis-sphinges of Latrielle, especially *Agarista* and *Coronis*, which last is very near *Urania Lunus*. Thus the situation proposed for these insects by Latreille, between *Hesperia* and *Agarista*, &c. is found to be most fortunate; Mr. Swainson himself admitting a relationship with the *Hesperiidæ*, by calling them the “*Hesperian*” type of the *Papilionidæ*. They also appear to have some relation with *Erebus*. The original specimen here figured is stated by Mr. Drury to have been in the possession of Captain May, of Hammersmith, when the drawing was made. It is now in all probability destroyed, and cannot be traced.

THECLA PAN.

Plate XXIII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: *Lycænidæ*, *Leach*.

GENUS. *THECLA*, *Fabr.* (Syst. Gloss.) *Polyommatus* p. *Latr.* *Papilio* (Pleb. rural.), *Linn.* &c.

THECLA PAN. Alis fuscis bicaudatis; subtus fusciscentibus, ocellis duobus anguli ani, externo nigro iride rufâ.
(Expans. Alar. 1 unc. 3 lin.)

SYN. *Papilio* (Pleb. rur.) *Pan*, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ black. Thorax, abdomen, and wings dark brown, or dark hair-coloured: the latter being furnished with two small tails like hairs, the extremities being white.

Under Side. Palpi white. Breast greyish. Wings nearly the same colour as on the upper side. The posterior having two eyes on each at the abdominal corners; one being black with a red iris, the other grey and faint; above them is a small indented white line, pointing to a spot of the same colour placed at the middle of the anterior edge.

Fabricius, without referring to this figure of Drury, described an Indian species of the same genus from Drury's collection, under the same specific name, which must of course be rejected. The French encyclopedists consider the latter as identical with the Fabrician *Hesperia Isocrates*.

EREBUS HERCYNÆ.

Plate XXIV. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: *Noctuidæ*, *Steph.*

GENUS. *EREBUS*, *Latr.* *Thysania*, *Dalm.* *Phalæna* (Noctua), *Drury.*

EREBUS HERCYNÆ. Alis dentatis fuscis obscure undulatis, anticarum disco (puncto nigro) posticarum strigâ mediâ undulatâ pallidè cinereis. (Expans. Alar. 4 unc. 3 lin.)

SYN. *Phalæna* (Noctua) *Hercynæ*, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Upper Side. Antennæ filiform, brown, and thread-like. Head, thorax, abdomen, and wings greyish brown. The anterior wings having about two-thirds, next the shoulders, of a lighter brown, being

separated from the darker part by a narrow, black, undulated line, similar to one which runs along the external edges from the tips to the lower corners; near the shoulders are placed two brown spots on each wing, one round, the other squarish. Posterior wings having two narrow, black, undulated lines crossing them, one next the external edges, the other about a quarter of an inch above them: the latter being edged with white.

Under Side. Palpi, breast, and sides greyish brown. Tongue spiral. Anterior wings rather lighter than on the upper side; having a dark undulated line crossing them, near the middle, from the anterior to the posterior edges; near the shoulders are two brown spots, one exactly like a comma, the other round and smaller; a white streak, edged at the top with brown, is placed near the lower corners; and along the external edges is a row of faint angulated brown spots placed over each scollop. Posterior wings greyish brown; having a small, square, brown spot near the shoulders, and a patch of a whitish colour at the upper corners. A dark brown undulated line, edged with white, begins near the middle of the anterior edges, which crossing the wings ends at the extremity of the body; and along the external edges runs a series of brown spots, placed over each scollop. All the wings are dentated.

SATURNIA MAIA.

Plate XXIV. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidae, *Leach*.

GENUS. *Saturnia*, *Schrank*. *Attacus*, *Germar*. *Phalæna* (*Attacus*), *Drury*.

SATURNIA MAIA. *Alis rotundatis nigris; fasciâ albâ, maculâ subocellari nigrâ, ano rufescenti.* (Expans. Alar. 2 unc. 3 lin.)

SYN. *Phalæna* (*Bombyx*) *Maia*, *Drury*, *App.* vol. 2. *Cramer*, *Ins.* 2. tab. 98. fig. A.

Bombyx Proserpina, *Fabr. Ent. Syst.* 111. 1. p. 419. No. 40. *Gmel. Linn. S. N.* 2407. 480. *Abbot & Smith Ins. Georg.* pl. 50. *Oliv. Enc. Méth.* 5. 37. 48. *Pal. Bauv. Ins. d'Afr. et d'Amer. Lep.* pl. 24. f. 2. 3.

HABITAT: New York (*Drury*). Georgia (*Abbot*).

Upper Side. Antennæ black, and strongly pectinated. Neck ash-coloured. Thorax and abdomen black, the extremity being orange. Wings pellucid. The anterior being black, with a white bar crossing them from the anterior to the posterior edges; whereon is a semi-eye placed near the former. Posterior wings black, with a broader white bar crossing them from the anterior to the abdominal edges: having near the former a black triangular spot thereon.

Under Side. Palpi and tongue indistinct. Legs and thorax black. Thighs orange. Abdomen grey, having its sides spotted with white; the extremity orange. Wings coloured as on the upper side, but rather more distinct. The thinness of the wings occasions the colours to be less distinct and clear than in most others of this kind. Margins of the wings entire.

The caterpillar of this very conspicuous moth feeds upon the red oak (*Quercus rubra*, Linn.), and other species of the same genus. The caterpillars represented by Abbot are considerably different in colour; one being dark-coloured, but covered over with minute yellow spots; and the other yellow, with a slender, dorsal, and two broader lateral black lines. The head is red, and each segment is furnished with a transverse series of tubercles,

emitting spinose setæ. It is, I presume, by the assistance of these setæ that “the caterpillar stings very sharply,” as stated by Abbot. When small the whole brood lives together, but they disperse as they grow larger. One of these larvæ, in Virginia, went into the ground on the 1st of July, and the moth came out on the 20th of October; whilst in Georgia another buried itself on the 14th of June, and the fly did not appear until the 8th of December; after which other individuals kept coming out from time to time until the 16th of February. The male appears by day, and flies very swiftly, mounting and descending. The moth is called in America the Buck-fly, from an erroneous idea that its caterpillars are bred in the heads of the buck, which blow them out of their nostrils. This opinion originates from the fly coming out in the rutting season whilst the bucks are pursuing the does; the hunters therefore take notice of the insect in order to know the proper season for their sport, which is later in Georgia than in Virginia, as is also the appearance of the moth. They are much more plentiful in the last-mentioned country. (Abbot, loc. cit.)

The specific name of Drury having the priority, I have retained it; although that subsequently proposed by Fabricius is far more expressive, recalling, as Sir J. E. Smith observes, the idea of a fair flower which had

“by gloomy Dis been gathered,”

now become as grizly as the grim monarch of the infernal regions himself.

EREBUS EDUSA.

Plate XXIV. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Leach*.

GENUS. EREBUS, *Latr.* Thysania, *Dalm.* Phalæna (Noctua), *Drury*.

EREBUS EDUSA. Alis castaneis fusco irroratis, anticis maculis nonnullis baseos alterisque duabus majoribus apicalibus; apiceque posticarum (nigro punctato) albis. (Expans. Alar. 2 unc. 2 lin.)

SYN. Phalæna (Noctua) Edusa, *Drury, App. vol. 2.*

HABITAT: New York.

Upper Side. Antennæ brown and filiform. Thorax, abdomen, and wings of a fine red sandy brown colour; the first ring of the abdomen with an ash-coloured spot. Anterior wings with two whitish oblong spots on the external edges of each; one near the tips, the other at the lower corners. A small whitish bar crosses these wings about a quarter of an inch from the body; and next the shoulders is a spot of the same whitish colour. Posterior wings brown, with an oblong whitish spot placed along the external edges, reaching from the abdominal almost to the upper corners. Cilia brown.

Under Side. Palpi brown. Tongue short. Breast, sides, and legs paler than on the upper side. Wings pale sandy-coloured, except a few small, round, dark spots dispersed over them, but scarcely discernible. Margins of all the wings dentated.

SPHINX ANTÆUS.

Plate XXV. fig. 1.

ORDER : Lepidoptera. SECTION : Crepuscularia. FAMILY : Sphingidæ, *Leach*.

GENUS. SPHINX, *Auct.*

SPHINX ANTÆUS. Alis anticis cinereis nigro undatis, posticis nigris basi rufis fasciâque fenestratâ, capite bicorni. (Expans. Alar. ♂ . 6 unc.— ♀ . 7 unc. 3 lin.)

SYN. Sphinx Antæus, *Drury, App. vol. 2.*

Sphinx Hydaspes, *Cram. Ins. tab. 118. fig. A.*

Sphinx Jatrophæ, *Fabr. Ent. Syst. 111. 1. 362. No. 22. Gmel. Linn. S. N. 2376. 63. Merian Ins. Surinam, tab. 38.*

HABITAT : Jamaica (*Drury*). “ In Americæ Jatropa gossypifolia.” *Fabr.*

Upper Side. Antennæ white underneath, and brown above. Head and thorax dark rusty brown. Abdomen the same on the upper part, but on each side of the second, third, and fourth rings are three yellow spots. Anterior wings dark rusty brown, with several black, waved, and indented lines placed in different parts; and in the middle, near the anterior edges, are two small, round, white spots placed on each wing. The middle of the posterior wings transparent like glass; with a deep brown or black border running along the external edges from the abdominal to the upper corners; the part next the body being yellow.

Under Side. Breast and abdomen cream-coloured. Legs white and brown. Anterior wings, next the body, with two yellow longitudinal streaks; the remaining parts being red brown (differing from the colour on the upper side) without any other marks or clouds on them. Posterior wings coloured as on the upper side, except in the black border, which on this side is red brown.

SMERINTHUS JAMAICENSIS.

Plate XXV. fig. 2.

ORDER : Lepidoptera. SECTION : Crepuscularia. FAMILY : Sphingidæ, *Leach*.

GENUS. SMERINTHUS, *Latr.* Laothoë, *Fabr. (Syst. Gloss.)* Sphinx, *Linn.*

SMERINTHUS JAMAICENSIS. Alis anticis fusco, griseo, olivaceoque variis, posticis roseis ocello cœruleo nigro marginato. (Expans. Alar. 2 unc. 5 lin.)

SYN. Sphinx ocellatus Jamaicensis, *Drury, App. vol. 2.*

Sphinx ocellatus, *Fabr. Ent. Syst. 111. 1. 355. No. 1. Gmel. Linn. Syst. N. 2371. 1.*

HABITAT : Jamaica (*Drury*). “ In Europæ Americæ Spiræâ, Salice, Pomonâ.” *Fabr.*

Upper Side. Antennæ pectinated and brown. Head and thorax soft dun-coloured, but dark brown above. Abdomen dun. Anterior wings delicate fine greyish, light brown next the shoulders and tips; the remaining parts being clouded with dark olive brown colours. Posterior wings red in the middle, but along the external edges dun-coloured; having a large black spot placed near the abdominal corners, the middle of which is blue, and imperfectly resembling an eye. All the wings are angulated.

Under Side. Breast and abdomen dun. Anterior wings red in the middle; but along the anterior edges ash-coloured, which runs to the tips where it forms a crescent, the inner part being dark olive brown; the external edges are olive brown, but lighter than the crescent. Posterior wings clouded with olive brown and ash-colour; having a double ash-coloured bar crossing them, which rises at the anterior edges of the anterior wings, and, running circularly, ends at the abdominal edges of the posterior.

Fabricius cites the present figure amongst his synonyms of the common English Eyed-hawk moth (*Smerinthus ocellatus*), notwithstanding its very different habitat. It is evident, however, from the diversity in the outline of the wings of this insect and other English species, and from the circumstance of several species very closely allied to this being found in America (two of which are figured by Abbot and Smith in "the Insects of Georgia," pl. 25. and 26.), that Fabricius overlooked the minute characters which distinguish these species, and confounded them under the name of *Ocellatus*. Drury's insect very nearly approaches *Sphinx Myops* of Smith, but differs in the markings, especially of the posterior edge of the wings, and the colour of the posterior pair.

Sir J. E. Smith notices the very slight difference which exists between the caterpillars of nearly allied species of *Sphingidæ*, compared with the diversity in the larvæ of the genus *Papilio* of *Limæus*.

SPHINX FICUS.

Plate XXVI. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: *Sphingidæ*, *Leach*.

GENUS. *SPHINX*, *Auct.*

SPHINX FICUS. Alis anticis cinereo fuscoque nebulosis, maculâ apicali albidâ; posticis nigris basi fasciâque mediâ luteis angulo ani albo. (Expans. Alar. ♂. 5 unc.—♀. 6 unc.)

SYN. *Linn. Syst. Nat.* 2. 800. 15. *Cramer, tab.* 246. fig. E. *Merian Ins. Surin. t.* 33. *Fabr. Ent. Syst.* 111. 1. 366. No. 31. *Gmel. Linn. S. N.* 2380. 15.

HABITAT: Jamaica.

Upper Side. Antennæ ash-coloured. Head, thorax, abdomen, and anterior wings dark olive; the extremities of the latter ending in a point, where is situated a cream-coloured spot, close to the anterior edges, whose extremity runs to the tips; a patch of a dark cream colour is also placed on the external edges, joining to the lower corners. Posterior wings, next the body, dark cream-coloured; below this is a black bar, and another at the external edges, with a dark cream bar between them. The abdominal corners terminate in a point, which is of a fine white silvery hue.

Under Side. Breast, abdomen, legs, and wings pale olive brown, with three faint indistinct lines crossing them from the anterior to the abdominal edges. The anterior wings having a faint whitish streak placed at the tips.

SMERINTHUS ASTYLUS.

Plate XXVI. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: *Sphingidæ*, *Leach*.

GENUS. *SMERINTHUS*, *Latr.* *Laothoë*, *Fabr.* (*Syst. Gloss.*) *Sphinx*, *Linn.*

SMERINTHUS ASTYLUS. Alis subangulatis cinnamoneo-roseis, anticarum apice strigisque subapicalibus fuscis, posticarum oculo cærulescenti. (Expans. Alar. 2 unc. 10 lin.)

SYN. *Sphinx Astylus*, *Drury, App. vol.* 2.

HABITAT: New York.

Upper Side. Antennæ reddish. Thorax and abdomen reddish cinnamon; having a dark line running from the head along the back to the tail. Anterior wings reddish cinnamon; having a dark apical margin, and a paler streak running circularly from the tips to the lower corners; where, at each of those places, is a yellowish indistinct mark. Posterior wings reddish cinnamon, paler at the base; near the abdominal corners is a round black spot, with an indistinct centre.

Under Side. Breast, thighs, and abdomen cinnamon. Legs black. Wings nearly coloured as on the upper side; the pale streaks and yellow marks, at the tips and lower corners, being more distinct and plain on this side; the black spots on the posterior wings being wanting. Drury considered it as a distinct species from that in the foregoing plate.

SPHINX HYLÆUS.

Plate XXVI. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ.

GENUS. SPHINX, *Auct.*

SPHINX HYLÆUS. Alis anticis fuscis margine interno apiceque variegatis; posticis nigris maculâ basali fasciâque mediâ transversâ cinereis. (Expans. Alar. 2 unc. 6 lin.)

SYN. Sphinx Hylæus, *Drury, App. vol. 2. Cramer Ins. pl. 107. fig. C.?* *Fabr. Ent. Syst. 111. 1. 373. No. 53. Gmel. Linn. S. N. 2383. 81.*

Sphinx Prini, *Abbott & Smith Ins. Georg. tab. 35.*

HABITAT: New York.

Upper Side. Antennæ white within, brown without. Head, thorax, and abdomen rusty grey brown; the latter having on the sides of each ring a narrow white streak, and two small white spots on the upper part. Anterior wings rusty grey brown; having several dappled white marks dispersed on different parts, particularly at the shoulders and external edges; a narrow black line rises near the lower corners, running from thence to the anterior edges, and ending near the tips; cilia brown, spotted with white. Posterior wings black; cilia white, having some whitish marks thereon, particularly near the abdominal corners.

Under Side. Breast and abdomen white. Legs brown. Wings brown; having two faint indented lines crossing them, near the tips and lower corners. Posterior wings brown, with some faint undulated dark lines crossing them from the anterior edges to the abdominal corners.

The caterpillar of this insect, observed by Abbot, feeds upon the evergreen winter-berry, or gall-berry (*Prinos glaber*, Linn.), whence Sir J. E. Smith altered the name of the species from Hylæus to Prini. It is of a pale green colour, with six lateral oblique pink lines, the last of which extends to the base of the nearly straight tail, which is of the same colour; the chrysalis is chesnut, without any porrected tongue-case. One of these caterpillars, observed by Abbot, went into the ground on the 17th of May, and appeared as a moth on the 19th of June; whilst another buried itself on the 25th of August, and remained in the earth until the 26th of April. The caterpillar is subject to the attacks of a small Ichneumon, the larvæ of which, when full grown, eat their way out of its body and spin themselves up on the outside. The moth is occasionally seen sucking the blossoms of gourds in the twilight, but is not common.

DEILEPHILA NESSUS.

Plate XXVII. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidae, *Leach*.

GENUS. DEILEPHILA, *Ochs*. Spectrum p. *Scop*. Sphinx p. *Linn*.

DEILEPHILA NESSUS. Alis anticis cinerascensibus apice externo albido, posticis nigris fasciâ fulvâ, abdominis lateribus fulvis. (Expans. Alar. fere 5 unc.)

SYN. Sphinx Nessus, *Drury*, *App. vol. 2.* *Cramer Ins. tab. 226. fig. D.*
Sphinx equestris, *Fabr. Ent. Syst.* 111. 1. 365. No. 29.

HABITAT: Madras.

Upper Side. Antennæ white above, and brown beneath. Head, neck, and thorax olive brown, with an ash-coloured streak running on each side thereof. Abdomen, next the thorax, very dark, from whence a brown list runs along the upper part to the extremity; the sides being of a golden yellow. Anterior wings dark green next the shoulders, softening to a nut brown as it runs along the anterior edges; the tips cream-coloured, from whence run two faint lines to the middle of the posterior edges; and also a lightish bar running in the same direction. Along the external edges they are of a delicate, soft, nut brown colour, and near the middle of each is a small black spot, placed near the anterior edge. Posterior wings black next the body, but nut brown along the external edges (about half way); the abdominal corners and adjoining parts being cream colour, as are the cilia and anterior edges.

Under Side. Breast, sides, and abdomen deep golden yellow; the middle of which and the legs are ash-coloured. Wings deep yellow. The anterior, next the body, greenish black, and cream-coloured next the tips. The posterior having several faint, dark, and undulated lines crossing them from the anterior to the abdominal edges.

GLAUCOPIS COARCTATA ♀.

Plate XXVII. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Egeriidae, *Steph*.

GENUS. GLAUCOPIS, *Fabricius*. (Syst. Gloss.) Zygæna, *Fabr. olim*. Sphinx p. *Drury*.

GLAUCOPIS COARCTATA. Alis flavo-hyalinis, marginibus maculâque anticarum fuscis, abdomine basi coarctato, maculis aureo-cærulescentibus. (Expans. Alar. 1 unc. 9 lin.)

SYN. Sphinx coarctata, *Drury*, *App. vol. 2.* *Cramer Ins. tab. 4. f. F. G.*

Zygæna caudata, *Fabr. Ent. Syst.* 111. 1. p. 403. No. 58. *Gmel. Linn. S. N.* 2398. 147. *Pallas Spicel. Zool.* 1. tab. 2. fig. 8. ♂.

HABITAT: Bay of Honduras (*Drury*). "In America meridionali" (*Fabr.*).

Upper Side. Antennæ pectinated, and thickest in the middle. Head black, with a blue spot in front. Neck blue. Thorax black, with an orange spot on each shoulder. Abdomen black; smallest next the thorax, with a row of golden blue spots on each side, and another at top; at the extremity is placed a hairy bristle, about a quarter the length of the abdomen. Wings yellowish, and transparent. The anterior having a black narrow border running round all their edges, except the anterior ones; and in the middle of each is an oblong black spot, joining to the anterior edge, which reaches almost half across the wing. Posterior wings with a black border along the abdominal edges and the upper corners; the anterior and external edges having none.

Under Side. Palpi externally white, but internally black. Tongue curled up. Breast black, the sides being blue. Legs black. Thighs white within, and blue without. Abdomen, next the thorax,

white; the remainder being black, with four white spots on each side; that next the anus being the smallest. Wings as on the upper side; except the anterior, which have a yellowish border running along the posterior edges.

The extremity of the body of the male is furnished with a villose tail, as long as the body.

AGLAOPE PLUMIPES.

Plate XXVII. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: *Ægeriidae*, *Steph.*

GENUS. AGLAOPE, *Latr.* Sphinx, *Drury.*

AGLAOPE PLUMIPES. Nigricans, thorace maculis abdomineque fasciis albis, alis immaculatis, tibiis posticis plumosis. (Expans. Alar. 1 unc. 9 lin.)

SYN. Sphinx plumipes, *Drury, App. vol. 2.*

HABITAT: Bay of Honduras.

Upper Side. Antennæ black, but whitish at the tips; being thickest in the middle. Head black, with a white spot in front between the antennæ. Neck black, with three white spots on it. Thorax black, with several white spots thereon. Abdomen black, with several narrow white rings. Wings dark brown, immaculate.

Under Side. Palpi white. Tongue spiral. Breast black, spotted with white on its sides. Abdomen black, having one broad white ring on it, and several narrow ones. Legs long and black. Thighs white. Hinder legs furnished with tufts of hairs of a black colour, placed in such manner as to resemble the shaft of an arrow; the legs, above and below these tufts, being white. Wings coloured as on the upper side.

DEILEPHILA ALECTO.

Plate XXVII. fig. 4.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: *Sphingidae*, *Leach.*

GENUS. DEILEPHILA, *Ochs.* Spectrum p. *Scop.* Sphinx p. *Linn.*

DEILEPHILA ALECTO. Alis anticis griseis, strigis nonnullis obliquis apicalibus obscurioribus; posticis rubris basi margineque atris. (Expans. Alar. 3 unc. 9 lin.)

SYN. Sphinx Alecto, *Linn. Syst. Nat. 2. 802. No. 20.* *Cramer, tab. 137. fig. D.* *Fabr. Ent. Syst. 111. 1. 376. No. 59.* *Gmel. Linn. S. N. 2384. 20.*

HABITAT: Madras.

Upper Side. Antennæ white above, brown underneath; hooked at the extremities. Head and thorax olive brown, with a white stripe running on each side from the front to the shoulders. Abdomen greyish brown; having a black spot on each side, near the thorax. Anterior wings soft olive brown; having a dark line running from the tips to the posterior edges, near the middle. Posterior wings, next the shoulders, black; the remainder being red, except the abdominal edges and corners, which are cream-coloured; and a brown margin running along the external edges.

Under Side. Breast, sides, legs, and abdomen yellowish clay-coloured. Wings dark orange, margined with faint brown.

DEILEPHILA CLOTHO.

Plate XXVIII. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. DEILEPHILA, *Ochs*. Spectrum p. *Scop*. Sphinx p. *Linn*.

DEILEPHILA CLOTHO. Alis cinereo-olivaceis, lineâ rectâ e margine postico ad apicem ductâ nigrâ; posticis nigris externè fuscis, angulo ani pallidiori. (Expans. Alar. 4 unc.)

SYN. Sphinx Clotho. *Drury, App. vol. 2*.

Sphinx Butus, *Cram. tab. 152. A*.

Sphinx Gnoma, *Fabr. Ent. Syst. 111. 1. 376. No. 61.* (nec Clotho, *Fabr. loc. cit. No. 60.*)

HABITAT: Madras.

Upper Side. Antennæ cream-coloured. Head brown olive, with a cream-coloured stripe running on each side to the abdomen. Thorax brown olive. Abdomen paler, having a black spot on each side near the thorax. Anterior wings light olive brown, with a line running from the tips to the middle of the posterior edges, and a small black spot next the shoulders. Posterior wings, next the body, black; but along the external edges brown, and palest at the abdominal corners.

Under Side. Tongue curled up. Breast and sides cream-coloured. Abdomen darker. Wings yellowish clay-coloured and freckled. The anterior having a dark cloud in the middle of each, near the shoulders; and the posterior having a faint indented line crossing them from the anterior to the abdominal edges.

ÆGERIA TIBIALIS.

Plate XXVIII. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Ægeriidæ, *Steph*.

GENUS. ÆGERIA, *Fabr*. Sesia, *Latr*. Sphinx, *Drury*. Zygæna, *Fabr*.

ÆGERIA TIBIALIS. Alis anticis fuscis immaculatis, posticis hyalinis; tibiis posticis plumosis testaceis. (Expans. Alar. 1 unc. $1\frac{1}{2}$ lin.)

SYN. Sphinx tibialis, *Drury, App. vol. 2*.

Zygæna tibialis, *Fabr. Ent. Syst. 111. 1. 404. No. 62.* *Gmel. Linn. S. N. 2399. 151.*

HABITAT: Sierra Leone.

Upper Side. Antennæ black, slightly pectinated; being thickest towards the extremities, and ending in a point; where, by the assistance of a microscope, may be observed a small tuft of hairs. Head ash-coloured. Thorax and abdomen dark hair colour; the latter being encircled with small white rings. Anterior wings narrow, and of a dark hair colour, without any marks or spots. Posterior hyaline. Cilia dark brown.

Under Side. Palpi yellowish. Tongue curled up. Breast and abdomen yellowish, having some grey hairs placed between them. Fore and middle legs dark brown. Hinder legs remarkably hairy; being scarlet on the out sides, and black on the inner and under sides, with some white tufts intermixed. Wings as on the upper side.

GLAUCOPIS PHOLUS.

Plate XXVIII. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Zygænidæ.

GENUS. GLAUCOPIS, *Fabr. Ent. Syst.* (Zygæna, *Fabr. olim.*)

GLAUCOPIS PHOLUS. Atræ, alis omnibus basi fulvis. (Expans. Alar. 1 unc. 3 lin.)

SYN. Sphinx Pholus, *Drury, App. vol. 2.*

Zygæna Pholus, *Fabr. Ent. Syst.* 111. 1. 406. No. 27. *Gmel. Linn. S. N.* 2399. 155. (Sphinx).

HABITAT: New England, New York, Maryland, Virginia, Carolina.

Upper Side. Antennæ black, and thickest in the middle. Head, eyes, thorax, and abdomen black. Shoulders and half the superior wings deep orange yellow; the apical half black. Posterior wings, next the body, paler yellow; the remaining two-thirds black.

Under Side. Tongue curled up. Breast, sides, abdomen, and legs black. Wings coloured as on the upper side, but not quite so brilliant.

GLAUCOPIS? ASTREAS.

Plate XXVIII. fig. 4.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Zygænidæ.

GENUS. GLAUCOPIS, *Fabr. Ent. Syst.* (Zygæna, *Fabr. olim.*)

GLAUCOPIS? ASTREAS. Alis subhyalinis albidis, maculâ mediâ apiceque fascis, thorace nigro maculato, abdomine roseo. (Expans. Alar. 3 unc.)

SYN. Sphinx Astreas, *Drury, App. vol. 2.*

Noctua Astrea, *Fabr. Ent. Syst.* 111. 2. p. 19. No. 35. *Gmel. Linn. S. N.* 2534. 593.

HABITAT: Bengal (*Drury*). New Holland (*Fabricius*).

Upper Side. Antennæ filiform, light brown, being thickest in the middle. Head cream-coloured, spotted with black. Neck the same, with a red cleft in the middle, and a black spot on each side. Thorax cream-coloured, spotted with black. Abdomen scarlet. Anterior wings transparent, whereof a third next the tips is opaque and of a light hair colour, running about half way up the anterior edge of each wing; where is a streak of the same colour running half way across the wing. Anterior and posterior edges dark cream-coloured. Posterior wings transparent, the anterior edges and upper corners being dark cream-coloured.

Under Side. Palpi white externally, but red within; the extremities being black. Tongue curled up. Breast white, with a black spot on each side. Legs red. Under sides of the thighs white. Abdomen cream colour; having a narrow white streak on each side, whereon are several black spots. Wings coloured as on the upper side.

This insect is evidently the type of a subgenus, sufficiently distinct from any of the preceding.

SYNTOMIS FENESTRATA.

Plate XXVIII. fig. 5.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Zygænidæ.

GENUS. SYNTOMIS, *Illig. Latr.* Zygæna, *Fabr.* Sphinx, *Drury.*

SYNTOMIS FENESTRATA. Alis fuscis, anticarum maculis quatuor, posticarum unicâ hyalinis, abdomine fulvo nigroque annulato. (Expans. Alar. 1 unc. 2 lin.)

SYN. Sphinx fenestrata, *Drury, App. vol. 2.*

Zygæna fenestrata, *Fabr. Ent. Syst.* 111. 1. p. 392. No. 21. *Gmel. Linn. S. N.* 2394. 119. (Sphinx).

HABITAT: China.

Upper Side. Antennæ filiform, black, white at the tips, and thickest in the middle. Head tawny yellow. Neck black. Thorax and abdomen tawny yellow; the former having three black spots thereon, and the latter encircled with six black rings. Anterior wings having four transparent spots in each; the two next the shoulders being divided only by the nerves, in one of which appears two dark spots, one next the shoulders, and the other a quarter of an inch from it, crossing the transparent part. All the edges of these wings are very dark brown, the external and posterior ones being broadest. Posterior wings also having one large transparent spot in each; all the edges of these wings brown, the external and anterior ones being broadest, nerves yellow.

Under Side. Tongue curled up. Sides, breast, and abdomen yellow, with black rings. Legs dark brown and yellow. Wings as on the upper side.

GLAUCOPIS? PHALÆNOIDES.

Plate XXVIII. fig. 6.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Zygænidæ.

GENUS. GLAUCOPIS, *Fabr. Ent. Syst.* (Zygæna, *Fabr. olim.*)

GLAUCOPIS? PHALÆNOIDES. Alis anticis cinereis apicem versus subpellucidis, posticis parvis truncatis maculâ basali obscurâ. (Expans. Alar. 1 unc. 9 lin.)

SYN. Sphinx Phalænoides, *Drury, App. vol. 2.*

HABITAT: Bay of Honduras.

Upper Side. Antennæ pectinated and grey, being smallest at the extremity, which is white. Head grey. Neck white. Thorax ash-coloured. Abdomen pale yellow. Anterior wings ash-coloured next the shoulders, and along the anterior and posterior edges; the remaining parts being nearly transparent. Posterior wings singularly shaped; ash-coloured next the body, but the anterior parts are subpellucid. On these parts is placed a small triangular spot, of different colours when held in different directions, in some being yellow, in others ash-coloured.

Under Side. Tongue curled up. Breast yellow. Sides and abdomen white. Anterior wings appearing more pellucid than above. Anterior and external edges white; and near the shoulders is placed a white oval spot on each. Posterior wings ash-coloured, but round the edges are white; appearing to be less pellucid than on the upper side. The triangular spot is scarcely discernible on this side.

SPHINX ACHEMON.

Plate XXIX. fig. 1.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ.

GENUS. SPHINX, *Auct.*

SPHINX ACHEMON. Alis anticis griseo-fuscis maculis tribus marginalibus et apicalibus brunneis, posticis roseis externe fuscis, maculis nigris submarginalibus. (Expans. Alar. 4 unc. 3 lin.)

SYN. Sphinx Achemon, *Drury, Append. vol. 2.*

Sphinx Crantor? *Cramer, tab. 104. fig. A. Fabr. Ent. Syst. 375. 58.*

HABITAT: Jamaica.

Upper Side. Antennæ reddish ash-coloured. Head and thorax greyish brown, with a large patch of a deep chocolate on each shoulder. Abdomen grey brown, but lighter on the sides. Anterior wings, next the shoulders, grey brown; but of a dark olive brown towards the tips and external edges. Near the middle of the posterior edges is placed a large square spot, of a deep chocolate colour: at the lower corners is a small triangular one; and a third somewhat larger than the last at the tips. Posterior wings rose-coloured next the shoulders and anterior edges, but grey-brown along the external edges; having a short row of black spots lying parallel thereto, and rising from the abdominal corners.

Under Side. Breast and abdomen grey brown, but lighter than on the upper side. Wings rusty red, immaculate, except a dark border running along the external edges; and also a faint narrow line crossing them, from the anterior to the abdominal edges.

MACROGLOSSA PASSALUS.

Plate XXIX. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach.*

GENUS. MACROGLOSSA, *Ochs.* Sesia p. *Fabr.* Sphinx p. *Drury.*

MACROGLOSSA PASSALUS. Alis anticis badio fuscis, in medio fasciâ latâ pallidiori, posticis luteis margine lato fusco. (Expans. Alar. 2 unc.)

SYN. Sphinx Passalus, *Drury, App. vol. 2.*

Sphinx Pandora, *Fab. Ent. Syst. 111. 1. 380. No. 6.*

HABITAT: China (*Drury*). India orientalis (*Fabricius*).

Upper Side. Antennæ brown, and thickest near their extremities. Head and thorax greyish-brown, with a dark line running down the middle. Abdomen red brown, with two yellow spots on each side. Tail broad and hairy. Anterior wings, next the body, dark chocolate, occupying a third part; next to this they are of a light red brown, growing darker as it approaches the tips. Inferior wings yellow next the shoulders; the apical half being of a fine dark chocolate.

Under Side. Head white. Tongue curled up. Breast and thighs yellow clay-coloured. Legs, sides, and abdomen dark clay-coloured. Wings, next the body, yellow clay-coloured; the remaining parts being red brown, with a faint darker border along the external edges.

GLAUCOPIS? PULCHRA.

Plate XXIX. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Zygænidae.

GENUS. GLAUCOPIS, *Fabr. Latr. Sphinx, Drury.*

GLAUCOPIS PULCHRA. Alis anticis nigris, strigis sex fulvis; posticis nigris basi fulvis; abdomine fulvo annulato.
(Expans. Alar. 1 unc.)

SYN. *Sphinx Pulchra, Drury, App. vol. 2.*

HABITAT: China.

Upper Side. Antennæ black, and smallest at their extremities. Head yellow. Thorax the same, streaked longitudinally with black. Abdomen black, having one ring near the middle; the extremity of the tail being yellow. Anterior wings black, with six yellow spots and streaks on each; one streak being the longest, running parallel and near to the posterior edge; another is placed on the edge itself. The space between these streaks and the anterior edge is occupied by the remaining four spots; the foremost being much narrower than the others. Posterior wings yellow next the shoulders, with a broad black margin running along the external edges.

Under Side. Tongue curled up. Breast and sides yellow. Legs black. Thighs yellow. Abdomen yellow; the extremity black, with two yellow rings. Wings as on the upper side, but the colours less brilliant.

SPHINX BRONTES.

Plate XXIX. fig. 4.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ.

GENUS. SPHINX, *Auct.*

SPHINX BRONTES. Alis griseis puncto discoidali albido, strigisque transversis undatis fuscis, posticis nigricantibus margine interno et ad angulum ani pallidioribus. (Expans. Alar. 4 unc.)

SYN. *Sphinx Brontes, Drury, App. vol. 2.*

HABITAT: New York.

Upper Side. Antennæ white within, brown outside. Head and neck dark brown. Thorax and abdomen grey; on the hinder part of the former are two black spots, and on each ring of the latter are two small black streaks, placed on its sides, down to the tail. Anterior wings grey, with a white spot in the middle of each near the anterior edges, and a small white cloud next the tips; having several curved and indented black lines crossing them from the anterior to the posterior edges, some being faint, others very distinct; cilia brown, spotted with white. Posterior wings very dark brown; but along the abdominal edges and corners grey; cilia white and brown.

Under Side. Breast white. Legs mottled. Abdomen white, with four reddish spots placed along the middle. Anterior wings dark grey brown, without any marks on them, except at the tips, where is placed a narrow white streak joining to the anterior edges. Posterior wings dark grey brown; but next the abdominal edges white, without any marks on them, except two faint lines crossing them from the anterior edges to the abdominal corners.

TRICHIUS (ARCHIMEDIUS) DELTA.

Plate XXX. fig. 1, natural size—fig. 2, magnified.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Cetoniidæ, *Mac Leay*.

GENUS. TRICHIUS, *Fabr.* Scarabæus p. *Drury*. SUBGENUS : Archimediæ, *Kirby in Zool. Journ. No. 10.*

TRICHIUS (ARCHIMEDIUS) DELTA. Thorace nigro, triangulo albo, elytris testaceis puncto fusco. (Long. Corp. 5 lin.)

SYN. Scarabæus Delta, *Drury, App. vol. 2. Fabr. Syst. Ent. p. 41. 7. Syst. El. 11. p. 133. 14.* (Trichius D.)
Oliv. Ent. 1. 6. p. 64. t. 11. fig. 107.

HABITAT : Virginia, North America.

Head rather large and quadrangular; black and cream-coloured on the upper part, red brown near the mouth. Eyes large, black, and prominent. Antennæ red brown. Thorax margined with cream colour, the extreme edge being black; having a black circular patch thereon, and a cream-coloured triangular mark within it. Scutellum cream, surrounded or edged with black; having a black streak down its middle, and just below it the suture is cream colour. Elytra dull orange, with a black spot near the middle of each. Body and abdomen ash-coloured. Thighs and tibiæ tawny orange. Tarsi 5-jointed; the hinder ones being remarkably long.

CHASMEDIA? VIRENS.

Plate XXX. fig. 3.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Rutelidæ, *Mac Leay*.

GENUS. CHASMEDIA? *Mac Leay*. Cetonia p. *Fabr.* Scarabæus p. *Drury*.

CHASMEDIA? VIRENS. Ferrugineo-flavescens, elytris virescentibus, sterno cornuto. (Long. Corp. 1 unc. 3 lin.)

SYN. Scarabæus virens, *Drury, App. vol. 2. Herbst. Col. 111. p. 162. t. 27. f. 2.* (Melolontha v.)
Cetonia smaragdula, *Fabr. Syst. Eleuth. 11. p. 143. 44. Syst. Ent. p. 45. No. 11. Schon. Syn. Ins. 3.*
157. (Hoplia sm.)

HABITAT : South America, *Schönherr*. "America, Mus. Dr. Hunter" (*Fabr.*).

Head and thorax brown olive, the former margined. Elytra olive, not covering the abdomen. Anus yellowish brown. Abdomen dark brown, the sides and middle being lighter. Legs dirty olive. Sternum long, extending beyond the fore legs. Tarsi short.

CETONIA (GNATHOCERA) AFRICANA.

Plate XXX. fig. 4.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Cetoniidæ.

GENUS. CETONIA, *Fabricius*. Scarabæus p. *Drury*. SUBGENUS : Gnathocera, *Kirby, Gory & Percheron*,
(Mon. Ceton.).

CETONIA (GNATHOCERA) AFRICANA. Ænea nitens, capitis spinâ incumbente, sterno porrecto, elytris punctis
nigris, striatis. (Long. Corp. 9 lin.)

SYN. Scarabæus Africanus, *Drury, App. vol. 2. Fabr. Syst. Ent. p. 48. 25. Syst. El. 2. p. 149. 73.*
(Cetonia Afr.) *Oliv. Ent. 1. 6. p. 31. t. 8. f. 70.*

Cetonia Smaragdina, *Herbst. Col. 111. p. 258. 47. t. 32. f. 5.*

HABITAT : Sierra Leone.

Entirely of a fine green colour, except the tarsi, which are black. The colour, which is very brilliant, appears not to be reflected from the surface, but seems as if covered with a fine transparent

varnish. Head quadrangular, margined and furrowed. Thorax smooth and finely polished. Scutellum large and triangular. Elytra slightly striated, with punctures, and margined. Sternum long and slender. Tibiæ with two spurs.

This species, according to Mr. Smeathman, frequents flowers; thus resembling in its habits the British species of the family to which it belongs.

DYNASTES ÆGEON.

Plate XXX. fig. 5.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ, *Mac Leay*.

GENUS. DYNASTES, *Mac Leay*. Geotrupes, *Fabr.* Scarabæus p. *Linn.* Scarabæus, *Latreille*.

DYNASTES ÆGEON. Rufus, thoracis cornu brevi incurvo subtus barbato, capitis recurvo subulato. (Long. Corp. 1 unc. 6 lin.)

SYN. Scarabæus Ægeon, *Drury, App. vol. 2. Fabr. Ent. Syst. p. 4. No. 4. Syst. Eleuth. 1. p. 5. No. 8.*
(Geotrupes Æg.) *Oliv. Ent. 1. 3. p. 26. No. 26. t. 1. f. 4. Jabl. Nat. Syst. 1. p. 228. No. 6. t. 1. f. 4.*
Sch. Syn. Ins. 1. p. 4. No. 13.

HABITAT: "In Indiis" (*Fabricius*). Peruvia (*Dejean.*).

Head small and black, from whence springs a horn that bends towards the body. Eyes red brown. Thorax red brown, with a black margin; having a short thick horn issuing from it, that inclines towards the head: it has also a faint black spot on each side. Scutellum black and triangular. Elytra red brown; the margins and suture being black. Abdomen black, covered with olive brown hairs. Legs black. Hinder and fore tibiæ with three short spines, placed on the external part of each; and with two spurs, those of the middle ones being shortest. Ungues having a single hair issuing from between the hooks, forked at the end.

DYNASTES GERYON.

Plate XXX. fig. 6.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ.

GENUS. DYNASTES, *Mac Leay*. Geotrupes, *Fabr.* Scarabæus p. *Linn.*

DYNASTES GERYON. Thorace excavato tricorni; lateralibus compressis unidentatis; capitis recurvo sumplici. (Long. Corp. 1 unc. 7½ lin.)

SYN. Scarabæus Geryon, *Drury, App. vol. 2. Fabr. Syst. Ent. 1. p. 9. No. 21. Syst. Eleuth. 1. p. 11. No. 31.*
(Geotrupes G.) *Schönh. Syn. Ins. 1. p. 10. 41. Oliv. Ent. 1. 3. p. 30. t. 24. No. 208.*

HABITAT: "In Indiis" (*Fabr.*).

Head small, and margined in front; being furnished with a single horn that bends towards the thorax. Thorax margined, and dark brown (the general colour of the insect); being armed with three remarkable horns, whereof two are placed in front, one on each side; being very strong and broad one way, but thin the other, and branched at their extremities. The other horn is placed on the hinder part of the thorax, being short and thick at bottom, but sharp and pointed at top; springing from a protuberance that almost covers the escutcheon, which is small and triangular. All these horns are immoveable, and their situations occasion a most remarkable hollowness or cavity in the thorax, which

is smooth and shining; but the protuberance, next the scutellum, is full of punctures, and the edge notched. Elytra shining, punctured, and slightly striated. Abdomen and legs red brown, and hairy; the hinder ones being remarkably thick and strong, with two broad tibial spurs. The middle and fore tibiae are strongly dentated, each being furnished with a thick spur. Anterior tibiae with the first joint long and slender, but in the middle and hinder tibiae, exceeding thick and strong.

LAMIA (STERNOTOMIS) MIRABILIS.

Plate XXXI. fig. 1.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidae.

GENUS. LAMIA, *Fabr.* Cerambyx p. *Linn.* (SUBGENUS: Sternotomis, *Perch.*)

LAMIA (STERNOTOMIS) MIRABILIS. Nigra, thorace spinoso, antice fasciis, elytris punctis viridibus, his basi mucronatis. (Long. Corp. 10½ lin.)

SYN. Cerambyx Mirabilis, *Drury, App. vol. 2.*

Lamia pulchra, *Fabr. Syst. Eleuth. 2. 285. 25. Syst. Ent. 171. 6. (nec C. pulchra, Drury, vol. 1. t. 32. f. 6.) Oliv. Ent. 488. 115. t. 22. f. 167.*

HABITAT: Sierra Leone.

Varied with beautiful green and black colours, the former exceedingly bright. Head green, with two others running downwards from the eyes. Jaws with the upper part green, the extremities black, with four green palpi. Antennae black, ten-jointed, the basal joint being thickest. Thorax green, with black streaks running round it, the sides terminating in an obtuse point. Scutellum very small, black, and triangular. Elytra black and margined, beautifully streaked and spotted with green: the former running across the anterior part, the latter placed near the extremities. Abdomen green, with black rings. Legs green, streaked with black. Tarsi green at top, brown beneath.

LAMIA (AGAPHANTIA) BIPUNCTATA.

Plate XXXI. fig. 2.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidae.

GENUS. LAMIA, *Fabr.* Cerambyx p. *Linn.* (SUBGENUS: Agaphantia, *Serv.*)

LAMIA (AGAPHANTIA) BIPUNCTATA. Grisea; thorace spinoso, frontis cornu porrecto apice emarginato incurvo, elytris puncto nigro posticé flavo. (Long. Corp. fere 1 unc. 3 lin.)

SYN. Cerambyx bipunctatus. *Drury, App. vol. 2.*

Lamia fronticornis, *Fabr. Sp. Ins. 1. 216. 2. Syst. Eleuth. 2. 281. 3. Oliv. Ent. 4. 67. 79. 163. t. 8. f. 54.*

Cerambyx notatus, *Voet. Col. Ed. Panz. 3. 32. 46. t. 11. f. 46.*

HABITAT: Sierra Leone.

General colour brownish grey. Head deep and grey; one of the sexes having a remarkable thick and strong tubercle issuing from the middle of the face, terminating in two black acute angles, like horns. Mouth armed with two strong black jaws, and four grey palpi. Antennae grey, and longer than the insect. Thorax grey, the sides terminating in a thick spine; having a broad, white streak crossing it on each side, and extending along the abdomen, beyond the middle legs, narrowing to its extremity. Scutellum small and triangular. Elytra grey and margined, having two round black spots on each, the

largest placed about the middle near the suture; the other (a small one) is on this side joined to the margin. A cream-coloured spot is situated just below the former, which extends from thence to the lateral margin. Legs grey, without any spines or marks.

LAMIA (ACANTHOCINUS) SPINOSA.

Plate XXXI. fig. 3.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* Cerambyx p. *Linn.* (SUBGENUS: Acanthocinus, *Meg.*)

LAMIA (ACANTHOCINUS) SPINOSA. Fusca, griseo-variegata; thorace spinis quatuor, elytrisque seriebus quatuor longitudinalibus spinarum. (Long. Corp. 1 unc. 1½ lin.)

SYN. Cerambyx spinosus, *Drury, App. vol. 2. Sch. Syn. Ins. 3. 381.* (Lamia s.)

HABITAT: (— ? *Drury*). South America?

Head and antennæ brown, the latter about the length of the insect. Thorax lighter brown and rough, terminating on the sides in two very long and sharp spines, bending upwards; on the middle are two others that are more obtuse and thick, with a small bump or rising behind them. Scutellum black. Elytra brown on the middle and sides, but at their extremities grey, terminating in two long spines. A row of small but sharp spines runs on each side the suture, from the middle almost to the scutellum; and along the sides runs another row from the anterior corners almost to the extremities. Six others are placed on each side the scutellum, running towards the middle in regular order; and on the remaining parts of the wing cases are placed a great number of small pustules, that are to be discerned only by the help of a microscope. Legs brown. Tibiæ marked with grey.

LAMIA PUNCTATOR.

Plate XXXI. fig. 4.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* Cerambyx p. *Linn.*

LAMIA PUNCTATOR. Atra; elytris albo punctatis, antennis longis, thorace spinoso. (Long. Corp. 1 unc. 3 lin.)

SYN. Lamia punctator, *Fabr. Sp. Ins. 1. 221. 30. Syst. Eleuth. 2. 298. 95. Oliv. Ent. 4. 69. 88. t. 8. 50. a. b.*
Cerambyx chinensis, *Forster Cent. Ins. 39.*

Cerambyx farinosus, *Drury, App. vol. 2. (nec Linn. S. Nat. 1. 2. 626.)*

HABITAT: China.

General colour black. Head and antennæ black, the latter longer than the insect; the seven last articulations being black and white. Thorax rough and uneven at the top; the sides terminating in a thick, strong spine. Scutellum small and grey. Elytra shining black; the anterior part being rough with small pustules, having a number of small white spots sprinkled all over them. Abdomen greyish. Legs black. Tarsi grey, the under-part being brown.

CERAMBYX (ROSALIA) ALPINA.

Plate XXXI. fig. 5.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae, *Leach*.

GENUS. CERAMBYX, *Linn. Drury*. (SUBGENUS: Rosalia, *Serville*.)

CERAMBYX (ROSALIA) ALPINA. Subcærulescens, elytris fasciâ mediâ maculisque quatuor atris. (Long. Corp. 1 unc. 3 lin.)

SYN. *Cerambyx alpinus*, *Linn. Fn. Su.* 654. *Syst. N.* 1. 2. p. 628. 35. *Fabr. Syst. Eleuth.* 2. 272. 30. *Panzer F. I. G.* 2. 22. *Serville Ann. Soc. Ent. de France*, 2. 561. (Rosalia a.)

HABITAT: Hungary (*Drury*). The mountainous districts of Continental Europe.

General colour beautiful blueish grey, partaking much of a lead colour. Head grey. Eyes black. Antennæ longer than the insect, grey; the ends of the first four joints having tufts of black hair surrounding them. Thorax grey and cylindrical, with a small black spot at the top; the sides having a short spine, and a little swelling beneath it. Scutellum small and triangular. Elytra grey and margined, with three beautiful black spots, like velvet, on each; the middle one being largest, and crossing the wing cases entirely, the smaller one being placed near the anus. Legs blueish grey, but at the tips of the femora and tibiæ black. Tarsi ash grey at top, underneath brown.

CETONIA MARGINATA.

Plate XXXII. fig. 1.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ, *Mac Leay*.

GENUS. CETONIA, *Fabricius*. Scarabæus p. *Drury*.

CETONIA MARGINATA. Glabra, atra, thoracis elytrorumque marginibus rufis. (Long. Corp. 1 unc. 1½ lin.)

SYN. *Scarabæus marginatus*, *Drury, App. vol. 2.* *Fabr. Syst. Ent. p.* 46. 15. *Syst. El.* 11. p. 145. 50. (*Cetonia m.*) *Oliv. Ent.* 1. 6. p. 26. t. 5. f. 34. *Palisot de Beauvois Ins. d'Afr. & d'Amer.* 1. 11. p. 27. t. 5. f. 1. & 2 var. *De Geer Ins. iv. t.* 19. f. 10.

HABITAT: Sierra Leone.

Head small, squarish, and margined in front and the sides; shining black. Thorax and elytra soot-coloured and velvety, being surrounded along the sides with an orange border. Scutellum triangular, and rather large. Abdomen and breast black. Sternum small. Abdominal scales small, but distinct. Anterior tibiæ with three spurs, the others with two. Tarsal joints spined within, excepting those belonging to the fore legs, which are unarmed.

According to Mr. Smeathman, this beetle frequently settles on the thatch of houses, whence he is of opinion, that it is fond of dried palm leaves, "where it deposits its eggs." Afzelius however, who subsequently studied the Entomology and Botany of Sierra Leone with great attention, says, "Inveni hanc speciem in Sierra Leona mensibus Aprilis et præcipue Majo copiose in Cassia rugosa, mihi, et in foliis Ficus oblongæ, mihi. Eam in Jatropha Curcas (non autem Gorcas, ut ait Fabricius) nunquam observare licuit. Mas abdomine subtus medio sulcato, femina medio convexo." (*Schönh. Syn. Ins. iii. p.* 128.)

MELOLONTHA OCCIDENTALIS.

Plate XXXII. fig. 2.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Melonthidæ, *Mac Leay*.

GENUS. MELOLONTHA, *Fabricius*, §c. Scarabæus p. *Linnæus*.

MELOLONTHA OCCIDENTALIS. Testaceus, thorace pubescente, elytris lineis quatuor parallelis, albis. (Long. Corp. 1 unc. 1½ lin.)

SYN. Scarabæus occidentalis, *Linn. Syst. Nat.* 1. 11. p. 555. 62. *Herbst. Col.* 111. p. 72. 19. t. 23. f. 8. *Sch. Syn. Ins.* 3. 169. 16. (Melolontha occ.) (Excl. Syn. *Fabricius*.) *De Jean Cat. Col. Ed.* 2. p. 159.

HABITAT : Jamaica (*Drury*). Carolina (*Linn.*).

Head red brown, squarish, and margined, covered with short grey hairs. Thorax red brown, covered with short grey hairs, and with a white streak crossing it in the middle. Scutellum small, white, and triangular. Elytra red brown and margined, each being marked with three longitudinal white lines ; one placed near the lateral margin, the other two in the middle. Suture white. Anus extending beyond the wing cases. Abdomen red brown, with grey rings. Legs red brown. The anterior tibiæ are furnished with three spurs, one sharp and small, the others thick and blunt. The other tibiæ are furnished with two sharp spurs. Ungues having an immoveable smaller one between them, and also two small spines, like hairs, springing from its root or base.

GOLIATHUS MICANS.

Plate XXXII. fig. 3.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Cetoniidæ.

GENUS. GOLIATHUS, *De Lamarck*. Cetonia p. *Fabr.* Scarabæus p. *Drury*.

GOLIATHUS MICANS. Viridis nitens, clypeo porrecto recurvo bifido, tibiis anticis internè serratis. (Long. Corp. 1 unc. 9 lin.)

SYN. Scarabæus Micans, *Drury, App. vol.* 2. *Fabr. Syst. Ent.* p. 42. No. 1. (Cetonia m.) *Syst. El.* 11. p. 136. 6. *Oliv. Ent.* 1. 6. t. 1. f. 2. a. b. *Herbst. Col.* 111. p. 201. 3. t. 28. f. 3. *Guérin. Icon. R. An. Ins.* pl. 26. f. 5. *Gory & Percheron Mon. Ceton. pl.* 25. f. 1.

HABITAT : Calabar, on the West Coast of Africa, about 5 or 6° North Lat. (*Drury*). Senegal (*Gory*).

Head green and nearly square ; the surface irregular and uneven. The corners are pointed, forming two black obtuse angles. From the front of the head issues a small black and thick protuberance, like a horn, that divides into two branches, each of which terminates in a sharp point. All the remaining parts, except the tarsi, are of a fine lively green, differing in shades according to the manner in which it is held to the light ; and appearing to be so highly polished, that the colour seems reflected from a part beneath the surface. Scutellum large and triangular. Sternum small. Abdominal scales small and close. The fore legs are very long and slender, the tibiæ being dentated. Elytra having two small swellings near their extremities, and furnished at the suture with two short thick spines ; the anus extending beyond them. Anterior tarsi having a small tuft of brown hair placed on the last joints, next the ungues.

HOPLIA CÆRULEA.

Plate XXXII. fig. 4.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Melolonthidæ, *Mac Leay*.

GENUS. HOPLIA, *Illiger*. Melolontha p. *Fabricius*. Scarabæus p. *Drury*.

HOPLIA CÆRULEA. Supra cæruleo, subtus argenteo-squamosa nitens, clypeo integro. (Long. Corp. circ. 5 lin.)

SYN. Scarabæus cæruleus, *Drury, App. vol. 2. Herbst. Col. 111. p. 121. 73.*

Scarabæus farinosus, *Linn. Syst. Nat. 1. 2. 555.*

Melolontha farinosa, *Fabr. Ent. Syst. p. 38. 31. Syst. Eleuth. 11. 177. 29. Panzer Faun. Ins. Germ.*

28. 16. *Gutrin Icon. R. An. Ins. t. 25. (Hopl. far.)*

Melolontha squamosa, *Olivier Ent. 1. 5. p. 66. 90. t. 2. f. 14. a. c. (nec. Fabr.)*

Hopl. formosa, *Latr. Gen. Cr. & Ins. 2. p. 116. 2. Schon. Syn. Ins. 3. 158. (errore typic. pro farinosa.)*

HABITAT: South of Europe, France (*Drury*).

All the upper parts of this insect are of a beautiful brilliant sky blue. The under parts are of a silvery pale green. Head somewhat quadrangular, and margined. Thorax and upper parts covered with a short fine down or hair. Scutellum triangular. Elytra margined, and at their extremities having two tubercles, the anus extending beyond them. All the under parts are covered with short hair, like down, of a silvery green colour. Abdominal scales large and distinct. Sternum not produced. Tarsi red brown, the posterior having only a single unguis.

Taken in the greatest profusion near Sevres by M. A. Gory.

CETONIA CORDATA.

Plate XXXII. fig. 5.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. CETONIA, *Fabricius, &c.* Scarabæus p. *Linn. &c.*

CETONIA CORDATA. Testacea, thorace lineis punctisque duobus, elytris maculis quatuor transversis nigris. (Long. Corp. 9 lin.)

SYN. Scarabæus cordatus, *Drury, App. vol. 2. (1773).*

Cetonia olivacea, *Fabr. Syst. Ent. p. 47. 26. Syst. El. 11. p. 147. 59. Oliv. Ent. 16. p. 37. 41. t. 8. f. 69. a.*

Cetonia Tigris, *Herbst. Col. 111. p. 243. 30. t. 30. f. 8.*

HABITAT: New York.

Head sooty black, having a cordate mark of a dark orange brown colour. Thorax orange brown, with two black marks crossing it, and a black lateral spot. Scutellum triangular and orange brown. Elytra orange brown, with four black bars, of different shapes, crossing them, and reaching almost from side to side; the first being situated next the thorax, and interrupted by the escutcheon, the margin and suture being black. Anus extending beyond the wing cases. Abdomen orange brown, with small black rings. Sternum short and yellow. Abdominal scales small and close. Legs orange brown.

Mr. Smeathman informed Mr. Drury that this insect, in its natural state, is black and yellow, and not black and orange-brown, as described above; its yellow colour soon fading after death, so that it seldom arrives in Europe in its natural colours.

BARIDIUS ? OVALIS.

Plate XXXIII. fig. 1. natural size—2. magnified.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Cholidæ.

GENUS. BARIDIUS? *Schönherr*. Baris, *Germa*, *Dejean*. Curculio p. *Drury*.

BARIDIUS ? OVALIS. Fuscus, thoracis marginibus, elytrorumque basi et maculis quatuor lateralibus transversis albidis. (Long, Corp. lin. 5.)

SYN. Curculio ovalis, *Drury*, *App. vol. 2.* (Exclus. Syn. *Linn.*)

HABITAT: Jamaica (*Drury*).

Head small, round, and black, being furnished with a beak as long as the thorax. Antennæ inserted near the end of the beak, consisting apparently of nine articulations, that next the beak being longest. Thorax dark brown, the sides cream-coloured. Elytra dark brown, with three large cream spots on each, placed lengthways. Legs black, with cream spots and hairs on them. Each of the femora is furnished with a single spine.

Drury has incorrectly given this West Indian insect as identical with the northern European species, *Curculio ovalis* of *Linnæus*. Not having seen the insect I place it in the genus *Baridius* with doubt; it seems also somewhat allied to *Ameris Pavo*.

CALANDRA SERRIROSTRIS ♀ ?

Plate XXXIII. fig. 3.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Calandridæ.

GENUS. CALANDRA, *Fabr.* Rhyncophorus, *Herbst.* Curculio p. *Linn.*

CALANDRA SERRIROSTRIS ♀ ? Obscura rufa; thorace lineis duabus magnis dorsalibus, elytris substriatis. (Long. Corp. rostro incl. 2 unc. 6 lin.)

SYN. Calandra serrirostris ♂ ? *Fabr. Syst. Eleuth.* 2. 429. *Oliv. Ins.* 83. tab. 17. f. 211.

Curculio longipes, *Drury*, *Append. vol. 2.* (nec. *Fabr. Syst. Ent.* 2. 395.)

HABITAT: Island of Johanna, near Madagascar.

General colour dark red brown. Head as long as the thorax, terminating in a slender beak, three-fourths of an inch long. Antennæ apparently 8-jointed, that next the head being nearly as long as all the rest. Thorax marked longitudinally, with four black stripes or bars. Scutellum very narrow and triangular. Elytra marked longitudinally with several black narrow striæ, and are shorter than the abdomen. Legs very long, especially the anterior pair. Tibiæ with sharp hook-like spurs, those of the fore-legs being longer than the rest.

The insect described by *Fabricius* under the name adopted above is distinguished from that here figured, by having the “Rostrum porrectum, rectum, dorso apice serratum, dente elevato compresso.” Its habitat is also distinct, being from Java. It may possibly be a male, and that figured by *Drury* a female.

PREPODES? CAMELEON VAR.

Plate XXXIII. fig. 4.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Brachyderides.

GENUS. PREPODES, *Sch.*? *Chlorima*, *Dej.* *Curculio* p. *Drury*.

PREPODES? CAMELEON, VAR. Obscure aureo-cupreus, elytris striatis. (Long. Corp. 1 unc. 1½ lin.)

SYN. Prepodes? Cameleon, *Sch. Syn. Ins. Curc.* 2. 18. 4. var. β . *Fabr. Syst. El.* 2. 532. 147. (*Curcul. c.*)
Herbst. Col. vi. p. 115. No. 77. t. 67. f. 8.

Curculio rufescens, *Drury, App. vol. 2. Herbst. Col. t. 67. f. 9.*

HABITAT: Jamaica.

General colour dull golden copper. Head as long as the thorax, resembling a beak. Scutellum very small. Elytra slightly striated, terminating at their extremities like the end of a boat. Tibiæ slightly hairy.

PREPODES? CAMELEON VAR.

Plate XXXIII. fig. 5.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Brachyderides.

GENUS. PREPODES, *Sch.*? *Chlorima*, *Dej.* *Curculio* p. *Drury*.

PREPODES? CAMELEON VAR. Capite thoraceque nigris, hoc subtus aureo-viridi, elytris nigris suturâ punctisque aureo-viridibus. (Long. Corp. 1 unc. 1 lin.)

SYN. Prepodes? Cameleon, *Schon. loc. cit. supr.* var. γ . *Fabr. Syst. El.* 2. 532. 147. (*Curcul. c.*) *Herbst. Col.* vi. p. 115. No. 77. t. 67. f. 8.

Curculio similis, *Drury, App. vol. 2. Herbst. Col. t. 67. f. 10.*

HABITAT: Jamaica.

Head black, and long, resembling a beak. Thorax black at top, but underneath of a fine golden green. Scutellum very small. Elytra black, speckled with golden green. Suture golden green. Abdomen black, the sides golden green. Legs black. Thighs plain and smooth.

ENTIMUS IMPERIALIS (THE DIAMOND BEETLE).

Plate XXXIV. fig. 1.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Entimides.

GENUS. ENTIMUS, *Germar.* *Curculio*, *Linn. Latr. &c.*

ENTIMUS IMPERIALIS. Oblongo ovatus; niger, thorace lineâ dorsali viridi-argenteâ impresso; elytris regulariter sat rude punctato-striatis, punctis squamulis viridi-aureis repletis, interstitiis angustis, subcostatis denudatis. (Long. Corp. 1 unc. 3 lin.)

SYN. *Curculio imperialis*, *Forster Cent. Ins. p. 34. Drury, App. vol. 2. Fabr. Syst. El. 2 p. 508. 3. Oliv. Ent. 5. 83. p. 293. t. 1. f. a. b. c. Schon. Syn. Ins. Curcul. 1. 455. 2.*

HABITAT: Brazil.

Head black, and covered with minute scales, of a beautiful golden green colour, forming two longitudinal black streaks, and three green ones. From this part proceeds a thick short beak, streaked with black and green. Antennæ black. Thorax golden green, with two broad longitudinal black lines on the

top, and a narrow green one between them; the green colour being thickly beset with small black spots. Scutellum very small and green. Elytra next the thorax, almost quadrangular, narrowing to their extremities, the ground colour being black and shining, and ornamented with a great number of small round hollow punctures, or dents, of a golden green, which are smaller on the sides and extremities than the top, being regularly placed in grooves, so as to compose not less than eleven striæ (including the suture) on each elytron. Abdomen green, with silvery rings. Legs black, and covered with green hairs; the thighs being plain. Tarsi brown underneath.

RHINA BARBIROSTRIS ♀.

Plate XXXIV. fig. 2.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Rhyncophorides, *Sch.*

GENUS. RHINA, *Latrielle*. Curculio, *Drury*.

RHINA BARBIROSTRIS. Nigricans; thorace rotundato tuberculato, elytris striatis et punctatis; tibiis anticis subtus 4-dentatis. (Long. Corp. 1 unc. 3 lin.)

SYN. Curculio barbirostris, *Fabr. Ent. Syst.* 2. 418. 105. *Latrielle Gen. Crust.* §c. 2. 269. (Rhina barb.) ♂.

Curculio niger, *Drury, App. vol. 2.* ♀.

Rhina verrirostris, *Illiger*, ♀

HABITAT: The Island of Johanna, near Madagascar.

General colour black. Head short and round, terminating in a small narrow beak, almost the length of the thorax; in the middle of which are placed the antennæ. Eyes entirely surrounding the head, meeting at top and underneath. Thorax round and rough, being full of small tubercles; having a posterior margin. Scutellum small and triangular. Elytra striated, full of small punctures or holes, and covering the anus. Femora smooth. Anterior tibiæ furnished with four teeth, the hinder ones with three. Tarsi brown beneath.

The male has the rostrum more elongated and furnished with long hairs, somewhat like a bottle brush. It is figured by Olivier, *Entomol. Vol. 5. Charans*, pl. 4. f. 37. a. b.

BRACHYCERUS ORNATUS.

Plate XXXIV. fig. 3.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Brachycerides.

GENUS. BRACHYCERUS, *Fabr.* Curculio, *Linn.* §c.

BRACHYCERUS ORNATUS. Ovatus, niger thoracis dorso valde inæquali sculpturato, spinâ laterali obtusâ tuberculatâ, elytris seriatim tuberculatis, interjectis maculis subimpressis rotundatis ferrugineo squamosis, femoribus puncto rufo-squamoso. (Long. Corp. 1 unc. 9 lin.)

SYN. Curculio ornatus, *Drury, App. vol. 2.*

Brachycerus apterus, *Herbst. Col. 7. p. 75. No. 1. t. 101. f. 1.*

Brachycerus granosus, *Schönherr Syn. Ins. Curcul. 1. p. 387. No. 2. ?*

HABITAT: (— ? *Drury*). Cape of Good Hope (*Schönherr*).

Head very short and entirely occupied by the eyes, which are black and meet underneath. From this part issues a strong thick beak, black and rough, with the antennæ placed in the middle; the upper part being full of small holes or punctures. Thorax dark red, with a number of black excrescences on

the middle and sides; the latter ending in two thick pointed tubercles. Scutellum obsolete. Elytra dark red, and full of black round tubercles, some very small, others larger, placed longitudinally in striæ, extending so low along the sides, as nearly to meet underneath. Legs black and full of punctures. Thighs streaked with red. Tarsi brown underneath.

HIPPORHINUS? MURICATUS.

Plate XXXIV. fig. 4.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ, SUBFAMILY: Entimides?

GENUS. HIPPORHINUS, *Schonherr*. Curculio p. *Drury*.

HIPPORHINUS? MURICATUS. Fuscus; thorace cylindrico nigro-pustulato; elytris marginatis, striatis, interstitiis tuberculis elevatis rotundatis seriatim dispositis; femoribus ad apicem dente magno obtuso armatis. (Long. Corp. 9 lin.)

SYN. Curculio muricatus, *Drury*, *App.* vol. 2.

HABITAT: Bay of Honduras, America (*Drury*).

Head small. Eyes entirely surrounding the head, meeting underneath and at top. Beak long, black, and slender, the antennæ being placed near the extremity. Thorax brown, cylindrical, and covered with a great number of small black pustules. Scutellum triangular. Elytra brown, margined, and striated or furrowed; being thick beset with a great number of high, round pustules, regularly placed in rows from the thorax to the anus; some being large, others very small. Femora furnished near the tips with a thick obtuse spine. Tibiæ with a single smaller spur.

SAGRA FEMORATA.

Plate XXXIV. fig. 5.

ORDER: Coleoptera. SECTION: Eupoda. FAMILY: Crioceridæ, *Leach*.

GENUS. SAGRA, *Fabricius*. Tenebrio p. *Drury*.

SAGRA FEMORATA. Viridi-ænea, femoribus tibiisque posticis dentatis. (Long. Corp. 1 unc.)

SYN. Tenebrio femoratus, *Drury*, *App.* vol. 2. *Fabr. Mant.* 1. p. 66. (Alurnus f.) *Syst. Eleuth.* 2. 26. 1. (Sagra f.) *Herbst. Col.* 7. 266. t. 112. f. 6. *Weber Obs. Ent.* p. 60. 1.

Tenebrio viridis, *Sulzer Gesch. der Ins.* t. 7. f. 8.

HABITAT: (—? *Drury*). India (*Fabricius*).

General colour golden, blueish, green. Head small, flat, and square, with four palpi. Antennæ black, the two terminal joints being larger and longer than the rest. Thorax about twice the breadth of the head, and a third part longer, not cylindrical, but flattish and smooth. Scutellum small and triangular. Elytra twice the breadth of the thorax, smooth and margined. Thighs thick and strong, the hinder ones having a short thick obtuse spine placed near the tips. Posterior tibiæ long, thin, and grooved underneath, thickest next the tips, where are placed three short and strong spines, one in the middle, the others on the sides. Tarsi very flat and brown underneath.

LAMIA (POLYRHAPHIS) CANCRIFORMIS.

Plate XXXV. fig. 1. (or the upper figure).

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* Cerambyx, *Linn.* (SUBGENUS: Polyrhaphis, *Serv.*)

LAMIA (POLYRHAPHIS) CANCRIFORMIS. Thorace multidentato; dorso plano, elytris pustulatis, tibiisque anticis unidentatis. (Long. Corp. fere 1 unc.)

SYN. Cerambyx cancriformis, *Fabr. Sp. Ins.* 1. 209. 4. *Syst. Ent.* 165. 4. *Syst. Eleuth.* 2. 289. 40. (Lamia c.)
Cerambyx pustulatus, *Drury, App. vol. 2.*

HABITAT: Jamaica.

General colour grey brown. Head furnished with strong mandibles. Antennæ (with the basal joint very thick) much longer than the insect. Thorax rough, gibbous, and full of small pustules, two of which form an obtuse spine on the sides. Scutellum small and triangular. Elytra margined, and full of small pustules, having two spines fixed at their extremity, near the suture. Fore-legs long. Tibiæ with a single spur. Femora clavate.

LAMIA (MONOCHAMUS) DENTATOR ?

Plate XXXV. fig. 2. (or the left-hand figure).

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* Cerambyx, *Linn.* §c. (SUBGENUS: Monochamus, *Meg.*)

LAMIA (MONOCHAMUS) DENTATOR. Thorace spinoso, fusco cinereoque varia. (Long. Corp. 1 unc. 1½ lin.)

SYN. Lamia dentator, *Fabr. Syst. El.* 2. p. 294. 70. *Haworth in Ent. Trans.* 1. t. 1?
Cerambyx carolinensis, *Oliv. Ent.* 4. 67. p. 85. t. 12. f. 88.?
Cerambyx notatus, *Drury, App. vol. 2.*

HABITAT: See Observation below.

Head grey brown. Antennæ grey brown, and about the length of the insect. Palpi four, and just above the mouth are placed, on each side the head, two protuberances. Thorax grey brown, dappled with black; having on each side a short thick spine. Scutellum small and triangular. Elytra grey brown, dappled with small black streaks, and extending beyond the anus. Abdomen, breast and legs grey brown, like the rest of the insect.

The insect figured by Drury is stated to have been received from Norway. No Longicorn beetle, corresponding with Drury's insect has been ascertained to be a native of that country, or indeed of Europe. Hence, as this figure very nearly corresponds with the American *Lamia dentator* of Fabricius, I am inclined to believe that Drury's specimen had been imported from North America, in the same manner as the specimen described and figured by Mr. Haworth in the Transactions of the former Entomological Society, and which was taken near London. I have, however, marked the synonyms with doubt, this figure having been overlooked by all subsequent authors.

ELATER AURATUS.

Plate XXXV. fig. 3.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Elateridæ, *Leach*.

GENUS. ELATER, *Linn. &c.*

ELATER AURATUS. Cyaneo aut viridi-nitidus subtus cupreus, elytris acuminatis. (Long. Corp. 1 unc. 9 lin.)

SYN. Elater auratus, *Drury, App. vol. 2. (1773). Linn. Syst. Nat. (Gmel.) 1. iv. 19. 14.*

Elater fulgens, *Fabr. Ent. Syst. 1. 11. p. 220. 22. 17. (1792.) Syst. Eleuth. 11. 226. Oliv. Ent. 2. 31. 12. t. 4. f. 43. Herbst. Col. ix. p. 343. t. 158. f. 12.*

HABITAT: China.

Head green. Antennæ black, and shorter than the thorax; having at each joint some short hairs. Thorax green, and margined, appearing as if finely polished; the hinder corners being pointed, and forming obtuse angles. Scutellum round and shining. Elytra likewise green, shining, and margined; their extremities terminating in two sharp points. Under side shining green, except the tarsi, which are black.

This beautiful insect may be regarded as the most brilliant species belonging to the family, Elateridæ, the majority of which are of dull and uniform colours, thus affording a strong contrast to the splendid family of Buprestidæ, to which they are very nearly allied. The family Elateridæ are all, as Drury observes, provided with an instrument which extends along the breast, about the thickness of the thighs, to the abdomen, where the end of it is received into a groove, forming a spring, by which the creature, when laid on its back, can jump to a considerable height, from which circumstance it has received the name of Elater.

LAMIA (ACANTHODERES) ARANEIFORMIS.

Plate XXXV. fig. 4. (or the bottom figure).

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. LAMIA, *Fabr.* Cerambyx p. *Linn.* (SUBGENUS: Acanthoderes, *Serv.*)

LAMIA (ACANTHODERES) ARANEIFORMIS. Thorace spinoso tuberculatoque elytris porosis, maculâ marginali fuscâ, antennis longis. (Long. Corp. fere 1 unc.)

SYN. Cerambyx araneiformis, *Linn. Syst. Nat. 1. 2. 625. Oliv. Ent. 4. 67. 64. t. 5. f. 34. Fabricius Syst. Eleuth. 2. 288. 37. (Lamia a.) Sloane Hist. Jamaica, 2. 209. 19. 2. t. 237. f. 24. Serville Ann. Soc. Ent. Fr. 1835. 30. (Acanthoderes a.)*

HABITAT: Antigua (*Drury*). "In America Meridionali" (*Fabr.*).

Head dark brown. Antennæ longer than the insect; the sixth joint being furnished with a small tuft of hairs. Thorax brown, very rough and uneven, occasioned by the many bumps or swellings on it; two of which, like thick spines, are situated on the sides. Scutellum small. Elytra brown, and full of small pustules. In the middle are two oblong black streaks, placed next the suture. Legs brown, femora very thick. Tarsi yellow underneath, and pilose; those of the fore-legs being very hairy.

BLATTA NIVEA.

Plate XXXVI. fig. 1.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Blattidæ, *Leach*.

GENUS. BLATTA, *Linn.* §c.

BLATTA NIVEA. Alba, capite antennisque flavis thoracis dorso margineque interno elytrorum flavescens.
(*Long. Corp. lin.* 12.)

SYN. *Blatta Nivea*, *Linn. Syst. Nat.* 1. 2. *De Geer Ins.* 3. t. 44. f. 10. *Herbst. Arch.* t. 49. f. 8. *Fabr. Ent. Syst.* 2. p. 8.

HABITAT: New York (*Drury*). "In America insulis" (*Fabr.*).

Head and antennæ yellow. Thorax and abdomen pale green. Wings and wing-cases of a transparent white; the latter having a yellow streak on the anterior margin, which seems to extend along the margin of the thorax. Legs, and the under side of the abdomen, pale yellowish green.

The family Blattidæ, corresponding with the Linnæan genus *Blatta*, may be regarded as containing one of the most obnoxious assemblages of our insect enemies. Of this family, this and the two following figures represent different species. The observations upon the economy of this family, published by our author in the preface to this work, present the most complete account of the ravages and obnoxious qualities of this tribe which has hitherto been published. They are as follows:—

"The *cock-roaches* are another race of pestiferous beings, equally noisome and mischievous to natives or strangers, but particularly to collectors. These nasty and voracious insects fly out in the evenings, and commit monstrous depredations; they plunder and erode all kinds of victuals, drest and undrest, and damage all sorts of clothing, especially those which are touched with powder, pomatum, and similar substances; every thing made of leather, books, paper, and various other articles, which, if they do not destroy, at least they soil, as they frequently deposit a drop of their excrement where they settle, and some way or other, by that means damage what they cannot devour. They fly into the flame of candles, and sometimes into the dishes; are very fond of ink and of oil, into which they are apt to fall and perish. In this case they soon turn most offensively putrid, so that a man might as well sit over the cadaverous body of a large animal, as write with the ink in which they have died. They often fly into persons' faces or bosoms, and their legs being armed with sharp spines, the pricking excites a sudden horror not easily described. In old houses they swarm by myriads, making every part filthy beyond description wherever they harbour, which in the day time is in dark corners, behind all sorts of clothes, in trunks, boxes, and, in short, every place where they can lie concealed. In old timber and deal houses, when the family is retired at night to sleep, this insect, among other disagreeable properties, has the power of making a noise which very much resembles a pretty smart knocking with the knuckle upon the wainscotting. The *Blatta Gigantea* of Linnæus in the West Indies are therefore frequently known by the name of Drummers. Three or four of these noisy creatures will sometimes be impelled to answer one another, and cause

such a drumming noise, that none but those who are very good sleepers can rest for them. What is most disagreeable, those who have not gauze curtains are sometimes attacked by them in their sleep. The sick and dying have their extremities attacked, and the ends of the toes and fingers of the dead are frequently stripped of both skin and flesh."

BLATTA (BLABERUS) GIGANTEA.

Plate XXXVI. fig. 2.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Blattidæ.

GENUS. BLATTA, *Linn. &c.* (SUBGENUS: Blaberus, *Serville.*)

BLATTA (BLABERUS) GIGANTEA? *Livida, thoracis clypeo maculâ quadratâ fuscâ, capite ferrugineo, elytris vittâ fuscâ longitudinali.* (Long. Corp. cum elytris 2 unc. 3 lin.)

SYN. *Blatta Gigantea?* *Linn. Syst. Nat.* 1. 2. p. 687. 1. *Fabr. Ent. Syst.* 2. 6. 1. *Serville Revis. Orthopt.* p. 11. 1. *Oliv. Encyl.* No. 1.

HABITAT: Jamaica (*Drury*). America, Asia (*Fabricius*). Cayenne (*Serville*).

Head red brown, and withdrawn under the thorax, which covers it like a hood. Antennæ brown, and shorter than the body. Thorax thin like a scale, and of a dusky livid colour, the middle being brown, almost black. Wings and wing-cases livid and thin; the latter having a brown streak, half an inch long, running from the shoulders along the middle. Abdomen brown, with two points at the extremity. Legs brown, the shins being full of spines.

Fabricius, Serville, &c. have referred this figure to the Linnæan *Blatta gigantea*, with the description of which it indeed corresponds; although, as Drury observed, it is considerably smaller than that species. Drury states that this is one of the species which is very frequent in houses in the West Indies, and is called the Drummer, from the noise it makes by beating against the wainscot.

BLATTA (POLYPHAGA) ÆGYPTIACA?

Plate XXXVI. fig. 3.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Blattidæ.

GENUS. BLATTA, *Linn. &c.* (SUBGENUS: Polyphaga, *Brullé.*)

BLATTA (POLYPHAGA) ÆGYPTIACA? *Obscurè fusca, thoracis margine antico elytrorumque margine externo basali albidis.* (Expans. Alar. 1 unc. 9 lin. fere.)

SYN. *Blatta Ægyptiaca?* *Linn. Syst. Nat.* 1. 2. 687. 2. *Gronov. Zooph.* 637. t. 15. f. 3. *Ahrens Fauna Ins. Eur.* f. 1. tab. 13. *Fabr. Ent. Syst.* 2. p. 6.

HABITAT: Jamaica (*Drury*). Egypt (*Linnaeus*).

Head and antennæ dark brown. Thorax dark brown, and surrounded, except on the hinder side, with a cream-coloured margin. Wings and wing-cases brown and thin, the latter having a cream-coloured streak along the anterior margin, about a quarter of an inch long. Abdomen and legs brown. The thighs and tibiæ being furnished with many spines.

I have added a mark of doubt to the specific denomination of this insect on account of the different habitats given by Drury and Linnæus, although it agrees with the description of *Blatta Ægyptiaca* given by the latter author.

PENTATOMA FLAVICOLLIS.

Plate XXXVI. fig. 4.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorisæ, *Latr.* FAMILY: Scutati, *Burm.*
Pentatomidæ, *Leach.*

GENUS. PENTATOMA, *Latr.* *Cimex*, *Fabr.* *Burm.*

PENTATOMA FLAVICOLLIS. Thorace spinoso dentatoque, supra viridis, capite thoracisque antico scutelloque basi flavis. (Long. Corp. $10\frac{1}{2}$ lin.)

SYN. *Cimex flavicollis*, *Drury*, *App.* vol. 2.

Cimex albicollis, *Fabr. Ent. Syst.* 4. 98. 75. *Syst. Rh.* 160. 26.

HABITAT: Jamaica.

Head and antennæ dusky livid yellow. Thorax green, the fore part being livid, and the edges serrated; the sides terminating in two spines. The fore-part of the scutellum is livid, the hinder part green. Wing cases green, next the body, the extremities being transparent. Abdomen and legs livid, the under side the same; fore-legs tinged with green. Rostrum slender, extending to the hinder legs.

RAPHIGASTER INCARNATUS.

Plate XXXVI. fig. 5.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorisæ, *Latr.* FAMILY: Scutati, *Burm.*
Pentatomidæ, *Leach.*

GENUS. RAPFIGASTER, *Laporte.* *Cimex*, *Drury.*

RAPHIGASTER INCARNATUS. Supra sanguineus; capite scutelli maculis duabus, elytris unicâ, membranâque apicali nigris. (Long. Corp. 1 unc.)

SYN. *Cimex incarnatus*, *Drury*, *App.* vol. 2.

Cimex nigripes, *Fabr. Ent. Syst.* 4. 106. 101. *Syst. Rh.* 149. 17. (Edessa n.) *Wolff. Cim.* 1. 11. 11. t. 2.
f. 11. *Stoll. Cim.* 2. 2. f. 10. *Donovan Ins. India*, pl. 14. fig. 1.

HABITAT: China.

Head small, and dark blue. Antennæ broken. Thorax deep orange, verged in front with blue. Scutellum orange, with the fore part blue. Rather more than half the wing-cases, next the body, orange, with a large blue spot in the middle of each; the extremities are of a brassy olive, and striated. Abdomen orange, with a border on its sides of cream, and blue spots; the under side of it being cream colour, with four blue spots on each side. Legs dark blue. Rostrum small and short, unless it has been broken off.

ARILUS SERRATUS.

Plate XXXVI. fig. 6.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorida. FAMILY: Reduviidæ, *Leach*.

GENUS. ARILUS, *Hahn. Burm.* Prionotus, *Laporte.* Reduvius, *Fabr.*

ARILUS SERRATUS. Fuscus, elytris subferrugineis, rostro, antennis tibiisque fulvis, scutello cristato serrato.
(Long. Corp. 1 unc. 3 lin.)

SYN. Cimex serratus, *Linn. Syst. Nat.* 2. 722. 62. *Fabr. Ent. Syst.* 4. 205. 42. *Syst. Rh.* 266. 2. (Reduvius s.)
Stoll. Cim. 2. t. 1. f. 6.

Cimex carinatus, *Drury, App. vol.* 2.

HABITAT: St. Vincent (*Drury*). America (*Fabr.*).

Head very small, and black. Neck long and slender. Eyes small. Antennæ orange-coloured; as long as the insect. Thorax very small and black in front; the hind part exceeding large, and of a rusty dark brown, the middle rising circularly and erect, with many points like teeth on its edges; the sides being extended beyond the body, and appearing like angles with their points cut off. Corium of the wing-cases dusky brown, the membrane of a brassy olive colour. Abdomen black. Legs orange, the thighs being black; from the front of the head issues a slender orange-coloured beak, which reaches to the fore legs.

This large and remarkable species of winged bug is commonly known in the West Indies under the name of the Wheel-bug, and is stated by Messrs. Kirby and Spence to possess the power of communicating an electric shock to the person whose flesh it touches. "The late Major-General Davies, of the Royal Artillery, once informed me, that when abroad, having taken up this animal and placed it upon his hand, it gave him a considerable shock, as if from an electric jar, with its legs, which he felt as high as his shoulders; and dropping the creature, he observed six marks upon his hand where the six feet had stood." (Intr. to Ent. 1. 110.)

There appear to be several species confounded under the specific name of serratus. The one figured by our author is well distinguished by the colour of its rostrum and tibiæ, which are fulvous or orange-coloured. (Fabricious calls them yellow "flavis," and Burmeister red "rufis.") I have received this species from Valparaiso. Another species having brown tibiæ, of a narrower form, rather smaller than the preceding, and having fewer teeth upon the scutellar crest, is very abundant in Pennsylvania. It may be distinguished by the following character:—

Arilus denticulatus, *Westw.* fuscus, tibiis concoloribus, rostro antennisque obscurè rufescentibus
cristâ scutellari circiter 10-denticulatâ. Long. Corp. 13 lin.

Habitat in America septentrionali (Comm. Dom. Peale).

The sting of these insects produced by the short and powerful proboscis is accompanied with very considerable pain. Mr. Smeathman informed Mr. Drury that he had been stung by the largest wasps of Africa, as well as by these bugs, and thought the pain inflicted by the latter much more severe, though the effect does not remain so long. The

pain is doubtless caused by that pungent volatile fluid which affects our smell so much when we catch those insects, with which they are abundantly supplied, and which they emit with considerable force.

CICADA MACULATA.

Plate XXXVII. fig. 1.

ORDER: Hemiptera. SUBORDER: Homoptera. FAMILY: Cicadidæ.

GENUS. CICADA, *Linn.*

CICADA MACULATA. *Atra, thorace elytris alisque flavo maculatis.* (Expans. Alar. 3 unc. 9 lin.)

SYN. *Cicada maculata, Drury, App. vol. 2. Germar in Silberm. Rev. Ent. Donovan Ins. China.*

Tettigonia maculata, Fabr. Ent. Syst. 20. 12. Syst. Rhynq. 37. 18.

HABITAT: China.

Upper Side. Head black. Eyes yellow brown, round, and projecting from the head a little; between them are two small orange spots. Antennæ small and short. Thorax black, with four orange spots in a row, placed across it, and behind them two others. Abdomen black, consisting of seven annuli or rings, besides the tail part, the last of which is edged with orange. Anus orange-coloured, and furnished with a bristle for ovipositor. Wings black, spotted, and streaked with orange; the anterior having a row of streaks along the external edges, and five distinct orange spots crossing the middle, near the shoulders: the posterior having a large orange patch on the abdominal edges, and a small round spot above it, with five small fainter ones placed along the external edges.

Under Side. Head black, terminating in a long slender beak, which extends between the legs, to the abdomen; two small orange spots are placed just below the eyes. Thorax with an orange spot on each side. Legs and abdomen black; the latter having six orange spots, three on each side. Wings as on the upper side.

The larger species of this family are often mistaken for locusts and grasshoppers, in consequence of the loud chirping noise which they make, and which is sometimes so strong that Mr. Smeathman had no doubt that it might be heard a mile. They are occasionally, he continues, very numerous in the woods, where they make the hills and vallies ring, continuing their noise for hours together; at other times, when they are more scarce, bursting forth only at intervals. This chirp or whistle is in general harsh and dissonant, though sometimes, like Thomson's Stock Dove, their note,

“Discordant heard alone, aids the full concert.”

Amongst the planters and English settlers of the West Indies they are however called the razor-grinders, their noise being by these persons likened to that made in grinding knives and razors. Kalm evidently alludes to these insects in his Tour of North America, where he says in some places they make so much noise, that unless two persons meeting together can speak louder than the insect can chirp, they cannot hear each other.

CICADA STRIDULA.

Plate XXXVII. fig. 2.

ORDER: Hemiptera. SUBORDER: Homoptera. FAMILY: Cicadidæ.

GENUS. CICADA, *Linn.*

CICADA STRIDULA. Villosa prasineo-fusca, nigro-maculata; abdomine nigro; elytris griseis, maculis ovatis ante marginem posticum 7, hyalinis; alis luteis versus apicem nigris, omnibus margine latiori hyalino. (Expans. Alar. fere 3 unc.)

SYN. Cicada stridula, *Linn. Syst. Nat.* 1. 2. 706. 12. *Stoll. Cicada, fig.* 15. *Germ. in Thons. Arch.* 11. 2. 12. 19. *Silb. Rev. Ent.* 11. 76. 54.

Cicada capensis, *Linn. Syst. N.* 1. 2. 706. 13.

Cicada Catenata, *Drury, App. vol.* 2.

HABITAT: Cape of Good Hope.

Head short, thick, and of a yellowish brown, with a black stripe down the middle. Eyes round, and projecting. Ocelli distinct. Thorax yellow brown. Abdomen nearly black. Anterior wings yellow brown next the body, but darker in the middle; the external edges being transparent; above which is a row of transparent spots, placed between the tendons of the wings. Posterior wings yellowish, having a transparent border along the external edges, and a dark cloud placed at the upper corners. Legs yellow brown; rostrum extending between them, to the middle of the abdomen.

APHANA LANATA.

Plate XXXVII. fig. 3.

ORDER: Hemiptera. SUBORDER: Homoptera. FAMILY: Fulgoridæ.

GENUS. APHANA, *Burmeister.* Aphæna, *Gutrin.* Cicada, *Drury.*

APHANA LANATA. Fusca, capitis cornu tenui, ano farinoso, elytris nigris apice rubris undique albo irroratis, alis fuscis albo latè marginatis. (Expans. Alar. 1 unc. 3 lin.)

SYN. Cicada lanata, *Drury, App. vol.* 2. (Exclus. Syn. *Linn.*)

HABITAT: Jamaica.

The colours of this insect appear to have been faded. Head red brown, having on the top a small moveable horn, like a bristle, which the insect can raise at pleasure. Eyes dark. Thorax and abdomen dark brown. Anus white. The ends of the anterior wings are red brown; from whence, to the shoulders, they appear of a dead black, spotted with small white spots; but when the insect was living, probably the black part was of a fine mazarine blue. The external edges of the posterior wings are transparent; the abdominal edges white, and the middle part black, spotted with white, like the superior. Breast, beak, and legs, red brown. Abdomen, on the under side the same, being edged with scarlet.

This insect has a white substance issuing from the anus resembling the downy part of a feather, or that which joins the quill.—Add. vol. 2.

SCOLIA? MUTILLÆFORMIS.

Plate XXXVII. fig. 4.

ORDER: Hymenoptera. SECTION: Fossores? FAMILY: Scoliidae?

GENUS. SCOLIA? *Fabr. Latr. Sphex, Linn. Drury.*

SCOLIA? MUTILLÆFORMIS. Nigra, capite thoraceque fulvo pilosis, alarum apicibus fuscis. (Long. Corp. $7\frac{1}{2}$ lin.)

SYN. *Sphex mutillæformis, Drury, App. vol. 2.*

HABITAT: Senegal.

Head and thorax red brown, and hairy. The former furnished with two jaws, and tongueless. Eyes and antennæ black, the latter shorter than the thorax. Wings transparent; the anterior being cloudy at their extremities, and along the anterior edges. Abdomen, and hinder part of the thorax, black and hairy. All the legs full of bristles; the hinder ones having two long spines at the tarsi and tibial joints. One of the sexes is much larger than the other.

Mr. Kirby (Monographia Apum Angliæ, Vol. II. p. 377.) has given this figure as a synonym of *Andrena thoracica*. This can however scarcely be correct, for not only does the locality given by Drury seem sufficiently to indicate a species distinct from our English insect, but the colour of the head is also different. Moreover, it appears to me that the description given by Drury, united to the curved antennæ which appear to be faithfully represented in the figure, and especially the character of the legs, are evidently intended for a fossorial rather than a melliferous Hymenopterous insect.

LEPISMA COLLARIS.

Plate XXXVII. fig. 5.

ORDER: Thysanura, *Leach.* Aptera, p. *Linn.* FAMILY: Lepismidæ.

GENUS. LEPISMA, *Linn.*

LEPISMA COLLARIS. Obscure plumbea, fasciâ collaris apiceque abdominis argenteo-niveis, caudâ triplici villosâ.
(Long. Corp. cum seta interm. 12 lin.)

SYN. *Lepisma collaris, Fabr. Ent. Syst. 2. 64. No. 5.*

Lepisma saccharia, Drury, App. vol. 2. (nec Linn.)

HABITAT: Antigua (*Drury*). "In Americæ meridionalis insulis" (*Fabr.*).

Head small and hairy, being concealed beneath the thorax. The upper part shines like silver. Mouth of a greyish colour, and furnished with four palpi, whereof two are long and the other two short and thick. Eyes not to be discerned. Antennæ about half the length of the insect; small, and filiform, but full of joints. Thorax and abdomen dark lead-coloured, shining like polished metal; being furnished along their sides with short hairs. The former has a cream-coloured stripe crossing it from side to side; it is also margined. In some specimens, the middle part of the abdomen, from the thorax to the tail, is of a silvery white; but in others the last ring only is so. At the extremity of the abdomen are placed three tails, of equal lengths, like bristles, but very hairy. These tails are in length about one-third of the whole insect; and, when the creature is alive, are always carried in the position repre-

sented in the figure. The middle one seems immoveable, the others are not. All the under part of the insect appears of a shining, silvery, white colour; and near the extremity of the abdomen are placed four little horny filaments, two on a side. Legs silvery. Thighs and tibiæ broad and thin.

MILESIA VIRGINIENSIS.

Plate XXXVII. fig. 6.

ORDER: Diptera. SECTION: Athericera. FAMILY: Syrphidæ, *Leach*.

GENUS. *MILESIA*, *Latrielle*. *Musca*, (*Drury*).

MILESIA VIRGINIENSIS. Fulva, thorace 2- abdomine 6- fasciato, hujus fasciis 1 et 2, 3 et 4, 5 et 6, lineæ longitudinali connexis. (Long. Corp. fere 1 unc.)

SYN. *Musca Virginiensis*, *Drury*, *App. vol. 2*.

Milesia ornata, *Fabr. Syst. Antl.* 188. *Wiedemann Ausseur. Zic. Ins.* 2. 106.

HABITAT: Virginia.

Eyes black. Front of the head cream-colour. Antennæ like short hairs. Thorax and abdomen yellow, with black rings. Wings transparent. Legs yellow, and furnished with small hooks at their extremities. Breast black, with yellow spots and patches. Ocelli distinct.

CÆLIOXYS? ANNULARIS.

Plate XXXVII. fig. 7.

ORDER: Hymenoptera. SECTION: Mellifera. FAMILY: Apidæ.

GENUS. *CÆLIOXYS?* *Latrielle*. *Apis*, *Drury*.

CÆLIOXYS? ANNULARIS. Atra, capite marginibusque posticis segmentorum abdominalium cinereis, antennis atris, pedibus fuscis. (Magn. *Apis mellific*.)

SYN. *Apis Annularis*, *Drury*, *App. vol. 2*.

HABITAT: New York.

Head ash-coloured. Eyes brown. Ocelli distinct. Tongue very distinct. Antennæ black, and the length of the thorax, which is black likewise. Abdomen black, with ash-coloured rings, both above and underneath, terminating in a sharp point. Legs brown; the fore-ones being nearly as long as the hinder.

STIZUS SPECIOSUS.

Plate XXXVIII. fig. 1.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Bembecidæ.

GENUS. *STIZUS*, *Latr. Jurine*. *Sphex*, *Drury*. *Vespa* et *Larra* p. *Fabr*.

STIZUS SPECIOSUS. Ferrugineus, abdomine atro fasciis tribus interruptis flavis. (Long. Corp. fere 1 unc. 6 lin.)

SYN. *Sphex Speciosus*, *Drury*, *App. vol. 2*. (1773.)

Vespa tricineta, *Fabr. Ent. Syst.* 2. 254. 5. (1793.) *Syst. Piez.* 254. 5.

HABITAT: North America.

Head greenish brown: on the top are three little eyes. Mouth furnished with jaws. Eyes large, oblong, and dark brown. Antennæ shorter than the thorax. It has no tongue. Thorax greenish brown.

Anterior wings extending beyond the abdomen, being thin and diaphanous. Abdomen furnished with a sting, and entirely black, except the first three rings, which are party-coloured, and mixed with yellow; the middle one being surrounded with that colour. Legs dusky orange, but when living they were probably of a yellow colour. Breast black, but covered with hairs, making it appear of a greyish hue.

This is the largest and finest species of the genus to which it belongs. Drury, contrary to his usual practice, is silent as to its habitat, and Fabricius states America generally. I have received it from Mr. Titian R. Peale of Philadelphia. That it is identical with the *Vespa tricineta* of Fabricius I am enabled to state by an examination of the individual contained in the Banksian Collection, now belonging to the Linnaean Society of London, which was described by Fabricius.

TREMEX COLUMBA.

Plate XXXVIII. fig. 2.

ORDER: Hymenoptera. SECTION: Terebrantia. FAMILY: Siricidae, *Leach*.

GENUS. TREMEX, *Jurine*. Sirex, *Linn. Drury*.

TREMEX COLUMBA. Fusca, abdomine nigro lateribus flavo-marginatis alis, nigris. (Long. Corp. 1 unc. 6 lin.)

SYN. Sirex Columba, *Linn. Syst. Nat.* 2. 929. 2. *Fabr. Ent. Syst.* 2. 105. 3. *Syst. Piez.* 49. 3.

Sirex cinctus, *Drury, App. vol. 2.*

Sirex pensylvanicus, *De Geer Mem.* 3. pl. 30. f. 13.

HABITAT: North America, New York.

Head and thorax brown orange, the former furnished with two jaws. Ocelli distinct. Antennæ 16-jointed, of the length of the thorax, which does not appear separated from the abdomen. Eyes narrow and oblong. Abdomen black, and fringed with yellow; being as broad and thick at the extremity as the middle. Wings dark brown (almost black) and narrow, but not folded. From the upper part of the abdomen, near the middle, issues a tube which covers, like a groove, a rough serrated bristle, being the instrument through which the creature ejects its eggs. Legs brown orange, having a strong tibial spur on each leg.

FORMICA RUBRIPES.

Plate XXXVIII. fig. 3.

ORDER: Hymenoptera. SECTION: Heterogyna. FAMILY: Formicidae, *Leach*.

GENUS. FORMICA, *Auct.*

FORMICA RUBRIPES. Brunnea, capite nigro pedibusque brunneo-rubris. (Long. Corp. 9 lin.)

SYN. Formica rubripes, *Latr. Hist. Nat. Fourn.* p. 112.

Formica barbara, *Drury, App. vol. 2.* (nec *Linn.*)

HABITAT: Sierra Leone.

Antennæ small, filiform, and about the length of the thorax. Head very large, flattish, but rounded at top, and of a dirty black. Eyes small, round, and placed at the back part of the head.

Thorax small and brown. Abdomen the same colour, and smaller than the head, with a small erected scale placed between it and the thorax. Legs red brown, having a long tibial spur in the four hinder legs.

Drury referred this species to the *Formica barbara* of Linnaeus, which is not only distinct in the colour of the head, which is red, but also in having two knots at the base of the abdomen, whence it belongs to the genus *Myrmica*.

The reader will find some interesting general details relative to the habits of the exotic species of the family to which this insect belongs, in the following observations which were published in the preface to the third volume, in the former edition of this work.

“ The various species of *ants*, *cock-roaches*, and other voracious vermin, are so numerous as to be one of the greatest plagues the collector abroad has to encounter, insomuch that it is barely possible to preserve dried insects, and other animals, with the utmost care and the closest boxes, much less living ones, which require light and air : for as soon as caterpillars are brought out of the woods, and placed within doors, with an intention of breeding them, they seem to be, as in fact they are, out of the order of nature, and quickly fall victims to the rapacity of those agents whose province it is to remove animal or vegetable bodies, which having arisen to maturity, or lost the principles of life, are on their progress toward a slow dissolution, a state of useless inanimation or noxious putrescence. Indeed among these none are more useful in this point of view than the *ants* ; but, considered as *noxious vermin*, and capable of destroying animals, or, in many instances, of preventing and frustrating human industry, we know perhaps of none more formidable. These insects, whether considered as the efficient servants of nature, keeping clean and wholesome the face of the creation, or as the ministers of Almighty Power preserving a due equality between animals and vegetables, perform, without exemption or reserve, his high behests. Like the angel of heaven, they walk steadily forward in the line ordained them, and spare neither magnitude nor beauty, neither the living nor the dead, but sweep away all kinds of animal substances with undeviating rigour and rapacious perseverance.

“ Sometimes they proceed, like those I have mentioned in the preface to my first volume, driving all the inhabitants out of a town in a few hours, to a scene of which Mr. Smeathman was an eye-witness ; and in other instances, as within the last twenty years, in some of the Caribbee Islands, like a slow but irresistible fire, they gradually, in two or three years, take possession of the land, and carry death and destruction to every kind of animals ; so that not only pigeons and fowls, lambs and kids, but even calves and foals, which have been brought forth in the night, have been destroyed before the rising of the sun ; and the inhabitants themselves, though they placed the posts of their beds in troughs of water, were driven out of them by these inevitable disturbers. This slow but enormous increase of ants in some of the sugar islands was unknown before the conclusion of the last peace ; since which time they seem, in conjunction with some other insects, to have taken possession of many valuable sugar estates, and, by sucking the canes, have rendered

them incapable of yielding any of that rich juice from whence this vegetable salt is extracted.

“ In consequence of this mischievous quality, estates which, by their usual produce, have cleared to the proprietors eight or ten thousand pounds a year, when overrun by these vermin, have not been able to pay the expense of cultivation, except the produce has been changed by planting cotton or indigo, which have been found to suffer much less from their depredations ; but, unhappily, most of the planters were ruined before they could submit to give up the cultivation of sugar, which is by much the most profitable.

“ It is not to be supposed, that hot countries are at all times infested to this degree. They never are, however, without an astonishing number of these insects, which no art, labour, or expense, can totally exclude from the dwellings of the inhabitants. The number of different species is not yet known, and is so great, added to the minuteness of most of them, that it probably never will be discovered with any degree of certainty. There are not less than fifteen or twenty species, which find their way into the houses. These are not only to be distinguished by their size, figure, and colour, but by their different properties. Some are near an inch long, from which, to that of being scarce visible to the naked eye, are various sizes. Some are long and slender, others short and thick ; some are elegantly shaped and highly polished ; while others are, according to vulgar apprehensions, deformed, armed with spines, and covered with bristly or coarse and rough skins. Some species also are black as the deepest jet : others of the deepest brown, or of different shades till they approach to yellow ; and not a few are variegated, having some of the prismatic colours in full glow. They vary as much in their nature and dispositions : some destroy fresh collected plants ; and, in spite of weights laid upon the books in which they are placed to dry, get in, cut the leaves and flowers in pieces, and carry them away. Others, of different species, attack all sorts of victuals, particularly sweet things, such as sugar and fruits. Mr. Smeathman has had large sugar-dishes emptied by these insects in one night, when the least opening has been left ; and it is not easy to make any tin canister, or other vessel, close enough to exclude these insidious plunderers ; so that the loss sustained in this article is often very great. Some of them will assail the side-boards, and cover every wine-glass that has had wine or punch left in it ; nay, innumerable multitudes will even attack the liquors on your table, and, if you are not attentive, drown themselves in the very bowls and bottles before you. Some stragglers frequently disturb you by creeping over your skin, and interrupt your sleep or your meditations by biting, which, however, give pain but for a moment ; while others, though of the smallest size, with a sort of malignant vengeance, creep under your clothes, and, by means of stings invisible to the unassisted eye, inject a most acrid venom, which causes a pain as sharp as a small spark of fire, lasting for some hours, and even a day or two after being stung, the pain of which is much increased by irritating the part. Some of the larger sorts also cause by their stings a pain which, for some moments, is scarcely less than that of a bee of the same size ; but it

ceases in a few minutes, without leaving any inflammation behind. The different manners of this large and sagacious tribe of insects are, according to my friend's account, exceedingly various and amusing, but much too long for this occasion; neither would it be proper for me to enter farther into an account of them, as that gentleman purposes to treat minutely on their various histories in his *Voyages and Travels*: a book which, he informs me, is in some forwardness, and will doubtless afford great entertainment and information to the curious part of mankind."

RAPHIGASTER VALIDUS.

Plate XXXVIII. fig. 4.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorisæ, *Latr.* FAMILY: Scutati, *Burm.*
Pentatomidæ, *Leach.*

GENUS. RAPHIGASTER, *Laporte.*

RAPHIGASTER VALIDUS. Pallidus, capite, pustulis duabus pronoti et dentibus lateralibus obtusis, scutello (apice excepto) elytrisque chalybeis, abdominis lateribus nigro maculatis. (Long. Corp. 1 unc.)

SYN. *Cimex variegatus*, *Drury, App. vol. 2.*

Cimex validus, *Drury, App. vol. 2. (pl. 45. fig. 6. eadem).* *Klug. Burm. vol. 2. p. 365.*

Edessa Tarandus, *Fabr. Ent. Syst. 4. 93. Syst. Rhynq. 147.*

HABITAT: Jamaica.

Head dark mazarine blue, and small. Eyes and antennæ black. Thorax cream-coloured, with two large blue spots upon it; each of its sides being armed with a strong blue spine. Scutellum triangular, and dark blue, the extremity cream-coloured. Abdomen red, with black streaks crossing its margin. Hemelytra blue half way, the other half opaque and brown. Wings membranaceous and brown. Rostrum black. Under side of the insect red (except the extremities of the legs, which are black), having four triangular black spots running down the middle, and some others placed on the sides.

This fine insect was noticed in the synoptical appendix to the second volume, under the name of *Cimex variegatus*, the same name having been also inadvertently applied to the insect figured in Vol. I. Pl. 45. Another figure of the same insect, but with the wings closed, is given in the third volume, Pl. 45. Fig. 6. in the synoptical appendix of which volume it is noticed, under the name of *Cimex validus*. It is therefore probable that our author was not aware of the specific identity of the two figures. To avoid the inconvenience arising from having two species bearing the same name, *Cimex variegatus*, I have adopted the name proposed in the third volume.

TETTIGONIA SANGUINEA.

Plate XXXVIII. fig. 5. Natural Size.—6. Magnified.

ORDER: Hemiptera. SUBORDER: Homoptera. FAMILY: Cercopidæ, *Leach.*

GENUS. TETTIGONIA, *Latr. Germ. (nec Fabr.) Cicada, Linn. Drury.*

TETTIGONIA SANGUINEA. Capite thoraceque luteo-fuscis, elytris sanguineis apice stramineis, alis fuscentibus.
(Expans. Alar. 9 lin.)

SYN. *Cicada sanguinea*, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Head yellowish brown. Antennæ small, and thread-like; being shorter than the thorax. Rostrum extending along the breast to the abdomen, exceedingly small like a hair. Thorax yellowish brown. Abdomen black. Hemelytra red, the tips being yellow. Wings blackish brown. Under side of the insect ash-coloured.

FORMICA BIHAMATA.

Plate XXXVIII. fig. 7. Natural Size.—8. Magnified.

ORDER: Hymenoptera. SECTION: Heterogyna, *Latr.* FAMILY: Formicidæ, *Leach.*

GENUS: FORMICA, *Linn.*

FORMICA BIHAMATA. Nigra, thorace ferrugineo antice quadrispinoso, squamâ altissimâ spinis duabus arcuatis. (Long. Corp. 6 lin.)

SYN. Formica bihamata, *Drury, App. vol. 2.* *Fabr. Ent. Syst. 2.* 361. 49. *Syst. Piez.* 411. 66. *Latreille Hist. Nat. Fourm.* 127. *Oliv. Enc. Méth. Ins.* 6. 499.

HABITAT: Island of Johanna, near Madagascar.

Antennæ longer than the thorax, the first joint almost equal to the remainder. Eyes small, and placed very backward. Head black and small, armed with very strong and sharp jaws. Thorax brown, having on the fore part two spines, one on each side bending outwardly; on the top are likewise two more, bending towards the abdomen. The peduncular scale is very large and erect, standing very high, and branching at top into two hooks, which bend in opposite directions. Abdomen round, and larger than the head; the fore part being brown, the hinder black. Legs black, the hinder ones being longest.

VESPA ORIENTALIS.

Plate XXXIX. fig. 1.

ORDER: Hymenoptera. SECTION: Diploptera. FAMILY: Vespidæ, *Leach.*

GENUS. VESPA, *Linn. §c.*

VESPA ORIENTALIS. Ferruginea, abdomine fasciâ flavâ ante apicem utrinque bipunctatâ. (Long. Corp. 1 unc. 3 lin.)

SYN. Vespa orientalis, *Linn. Mant.* 540. *Fabr. Syst. Piez.* 254. 4. *Vespa turcica, Drury, App. vol. 3.*

HABITAT: Smyrna (*Drury*). "In Oriente" (*Linn.*).

Front of the head yellow. Eyes brown. Antennæ the length of the thorax. Ocelli distinct. Jaws black. Tongue not to be discovered. Thorax and abdomen brown chesnut; the third and fourth rings of the latter yellow. Wings thin, but not transparent. Legs brown; the anterior with a single and the four posterior with two tibial spurs.

Drury observes of this and the next insect, that "they make nests like the mason-fly described in Vol. I. Pl. 44. Fig. 6." The correctness of this statement may however be questioned as regards both of the insects in question, which, from their evident relationship to the common English hornet (*Vespa Crabro* Linn.) must surely possess similar habits to those of that insect.

SCOLIA 4-MACULATA.

Plate XXXIX. fig. 2.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Scoliidæ.

GENUS. *SCOLIA*, *Fabr. Latr.* *Sphex*, *Linn.* *Vespa*, *Drury.*

SCOLIA 4-MACULATA. *Hirta*, nigra, fusco-pubescent, abdomine nigro maculis quatuor fulvis, alis obscuris. (Long. Corp. 1 unc.)

SYN. *Scolia 4-maculata*, *Fabr. Ent. Syst.* 2. 229. 4. *Syst. Piez.* 240. 5.
Vespa maculata, *Drury, App. vol. 2.*

HABITAT: Jamaica (*Drury*). North America (*Fabr.*).

Head brown. Antennæ the length of the thorax, which is also brown. Wings nearly transparent. Abdomen black, with four yellow spots placed on the upper side. Legs brown.

I have employed the Fabrician specific name in preference to that precedently employed by Drury, as being more appropriate, there being other species of the genus named 6-maculata and 2-maculata.

BOMBYLIUS PLUMIPES.

Plate XXXIX. fig. 3.

ORDER: Diptera. SECTION: Tanystoma. FAMILY: Bombyliidæ, *Leach.*

GENUS. *BOMBYLIUS*, *Linn. &c.*

BOMBYLIUS PLUMIPES. Flavido hirtus, alarum basi costaque brunneis, tarsis posticis basi lobatis. (Long. Corp. $5\frac{1}{2}$ lin.)

SYN. *Bombylius plumipes*, *Drury, App. vol. 2.* *Wiedemann Auss. Zw. Ins.* 1. 351.

HABITAT: Jamaica.

Head brown; and from the mouth extends a very slender proboscis, through which the insect obtains its food; being almost as long as the whole body. Antennæ short, and like hairs. Wings transparent, but along the anterior edges brown. Legs long, the hinder ones furnished at the base of the tarsi with two remarkable flaps.

PEPSIS CÆRULEANA.

Plate XXXIX. fig. 4.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Pompilidæ.

GENUS. *PEPSIS*, *Fabr. Latr.* *Sphex*, *Linn.* *Drury.*

PEPSIS CÆRULEANA. Nigra, alis cærulescenti-nitidis, pedibus aurantiis. (Long. Corp. lin. 12.)

SYN. *Sphex cæruleana*, *Drury, App. vol. 2.*

HABITAT: Bight of Benin, Coast of Africa.

Head, antennæ, and eyes black. Ocelli distinct. It is tongueless, with four palpi. Jaws strong. Wings fine deep mazarine blue, not folded, but lying flat. Thorax and abdomen black. Legs orange-coloured; the fore ones being furnished with a single tibial spur, the rest having two that are rather long.

This insect, according to Mr. Smeathman, makes a clicking noise when it flies, like a rocket, which may be heard at twenty yards distance. It is a very strong and rapacious insect, and is often seen flying from bush to bush with a grasshopper in its claws at least twice its own size, and which is evidently destined to be deposited in its nest, and to become the food of the future progeny of the Pepsis.

“There is a species like this found in the West Indies, with orange antennæ and black legs; also another that is entirely black.”—*Drury*.

MANTIS (THESPIS) PARVA.

Plate XXXIX. fig. 5.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Mantidæ.

GENUS. MANTIS, *Linn.* SUBGENUS: Thespis, *Serville*.

MANTIS (THESPIS) PARVA. Pallidè olivaceo-fusca, prothorace longo cylindrico, pedibus gracilibus simplicibus.
(Long. Corp. 1 unc. $4\frac{1}{2}$ lin.)

SYN. Mantis parva, *Drury, App. vol. 2. Oliv. Encycl. No. 48. Serville Revis. Orthopt. p. 28.* (Thespis p.)
Mantis minuta, *Fabr. Ent. Syst. 2. 24.?*

HABITAT: America.

When this insect was living it was probably of a light green colour; but it is now entirely of a dusky olive. Head small. Eyes round, and placed at a distance from each other. Antennæ small, and thread-like, and about half the length of the insect. Thorax long and slender. Tegmina thin, narrow, and diaphanous, of the same length with the wings; but narrower, and placed at a little distance from them. Wings also thin and diaphanous, and when closed extending to the anus. Abdomen slender and rounded. Legs small and long, the hinder ones being formed rather for running than jumping; the fore ones having thread-like tarsi.

PEPSIS RUBRA.

Plate XXXIX. fig. 6.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Pompilidæ.

GENUS. PEPSIS, *Fabr. Latr. Sphex, Linn. Drury.*

PEPSIS RUBRA. Corpore pedibusque nigro cyaneis, antennis nigris, alis rufis apice albis. (Long. Corp. 1 unc.)

SYN. Sphex rubra, *Drury, App. vol. 2.*

Pepsis speciosa, *Fabr. Ent. Syst. 2. 217. 83. Syst. Piez. 215. 45. Pal. Beauv. Ins. d'Afr. et d'Amer. Hym. Pl. 2. f. 5.*

HABITAT: Antigua (*Drury*). Saint Domingo (*Pal. Beauv.*).

Head and antennæ black; it has four palpi, no tongue, but strong jaws. Ocelli distinct. Thorax, abdomen, and all the legs deep mazarine blue, nearly black. Wings red; the tips being transparent. Legs furnished with spines at the tips of the tibiæ; the fore ones having only one, all the rest two.

Fabricius (*Syst. Piez. 214. 33.*) refers this figure to the *Sphex cœrulea* of Linnæus, which differs in having the wings ferruginous but black at the base (“basi nigræ,” *Linn.*) and

white at the tips, and in the antennæ, being ferruginous at the tips. It is to be observed that Linnæus has described two species under the name of *Sphex cœrulea*, the first belonging to the genus *Pelopæus*, and being the *Sphex cyanea* of Fabricius; and the second, above noticed, and being the *auripennis* of De Geer, which latter name, in order to prevent all confusion arising from the employment of the name of *cœrulea*, it would be desirable to adopt.

PELOPÆUS PETIOLATUS.

Plate XXXIX. fig. 7.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Sphegidae.

GENUS. PELOPÆUS, *Latr. Fabr. Sphex, Drury.*

PELOPÆUS PETIOLATUS. Fuscus, thorace abdomineque nitidis brunneis. (Expans. Alar. 1 unc.)

SYN. *Sphex petiolatus, Drury, App. vol. 2.*

HABITAT: Jamaica.

Head and antennæ brown. Thorax and abdomen shining dark brown, and separated by a rather long peduncle. Wings brown and thin. Legs also brown; the fore ones having a single tibial spur, the rest having two.

SPHEX PENNSYLVANICA.

Plate XXXIX. fig. 8.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Sphegidae.

GENUS. SPHEX, *Linn. Latr. &c. Pepsis, Fabr. Pal. Beauv.*

SPHEX PENNSYLVANICA. Nigra, abdomine petiolato atro, alis subviolaceis. (Expans. Alar. 1 unc. 6 lin.)

SYN. *Sphex Pennsylvania, Linn. Syst. Nat. 1. 2. 941. Fabr. Syst. Piez. 211. 15. (Pepsis v.) Paul. Beauv. Ins. d'Afr. et d'Amer. Hym. pl. 3. fig. 4.*

Sphex cœrulea, Drury, App. vol. 2. (nec Linn. Syst. N.)

HABITAT: New York.

Head and antennæ black. Ocelli distinct. Mouth furnished with jaws, but no tongue to be discerned. Thorax and abdomen dark mazarine blue, almost black; the former is hairy, and separated from the latter by a slender peduncle. Wings brown and thin. Legs dark blue; the fore ones with a single tibial spur, all the rest having two.

TRUXALIS BRASILIENSIS.

Plate XL. fig. 1.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Locustidæ.

GENUS. TRUXALIS, *Fabr. Gryllus p. Drury.*

TRUXALIS BRASILIENSIS. Elytris pallide fulvescentibus, vittâ longitudinali mediâ virescenti, nigro irregulariter marginatâ, alis hyalinis dimidio anali roseo. (Expans. Alar. 3 unc. 9 lin.)

SYN. *Gryllus brasiliensis, Drury, App. vol. 2.*

HABITAT: Rio Janeiro, Brazil.

Head long, conical; the mouth seeming placed in the breast. Eyes oblong, situated at the upper part near the extremity of the head; there is also an ocellus placed between them on the under side, which is observable in all those whose heads are shaped like this. Antennæ as long as the head, and shaped like a three-edged sword. Thorax striped with green, brown, and white. Abdomen light brown, and streaked with black at top, but on the sides white. Tegmina light sand-coloured; having in the middle a narrow longitudinal line, indented with green and black. Wings transparent, and prettily dappled; being of a beautiful red colour next the body, which becomes fainter as it approaches the disk of the wings. Hind legs long, and formed for leaping; the others are short. Tibiæ furnished with sharp spines.

Fabricius refers this figure to the *Truxalis nasutus* Linn. which is found in Africa, and Mr. Smeathman also informed Mr. Drury that the species here figured is found in Africa, in the savannahs, and that its flight is very rapid. I have considered them on the contrary as specifically distinct.

PHLŒA CORTICATA.

Plate XL. fig. 2.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Longilabres, *Latr.*
Scutati, *Burm.*

GENUS. PHLŒA, *St. Farg. & Serv., Lap.* Cimex, *Drury.* Phlœocoris, *Burmeister.*

PHLŒA CORTICATA. Supra grisea, tuberculis multis rufo-fuscis subnitidis adpersa, subtus nigra appendiculis marginalibus griseis, laciniis capitis convergentibus. (Long. Corp. 11 lin.)

SYN. Cimex corticatus, *Drury, App. vol. 2.* Laporte Hemipt. p. 56. (Phlœa c.) *Burmeister Rh. 2. 371. 1.*
(Phlœocoris c.) *Gutrin Icon. R. An. Ins. 55. f. 5.*

Phlœa cassidoides, *St. F. & Serv. Enc. Méth. 10. p. 111.*

Aradus laminatus, *Kirby & Spence Introd. to Ent. 3. 617. & 718.*

HABITAT: Brazil.

Body exceedingly thin and flat in proportion to its breadth. Head triangular. Antennæ about one-fourth the length of the insect; the extremities being a little thicker than the other parts. Eyes small and round. Rostrum extending to the middle of the abdomen. All the parts exhibited in the plate are of a sandy olive colour, and serve as a shield or covering to the thorax, abdomen, legs, &c. which are hid beneath it. Scutellum large and triangular. Hemelytra entirely opaque and small, not covering the abdomen by a considerable space. Wings membranous. Legs smooth and dappled.

SCOLIA FLAVIFRONS?

Plate XL. fig. 3.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Scoliidæ.

GENUS. SCOLIA, *Fabr. Latr. &c.*

SCOLIA FLAVIFRONS? Atra, fronte flavâ, abdomine maculis quatuor flavis. (Long. Corp. fere 2 unc.)

SYN. Scolia flavifrons, *Fabr. Syst. Piez. 229. No. 5.*

Sphex maculata, *Drury, App. vol. 2.*

HABITAT: Coast of the Morea.

Head brown orange-coloured. Eyes oblong and dark brown. Antennæ thickest towards their extremities. Ocelli distinct. Mouth black, furnished with two jaws, but having neither tongue nor palpi. Thorax black, with a brown orange spot on the top, and two others next the head. Abdomen black and hairy; the second and third segments having two orange spots on them; the fourth, fifth, and sixth being ringed with orange. Under side black, with some orange hairs near the anus. Wings plain and flat, not folded, of a yellowish colour, and almost diaphanous. Legs black and hairy. Tarsi and articulations furnished with strong hairs and spines, which entirely surround them.

PELECINUS POLITURATOR.

Plate XL. fig. 4.

ORDER: Hymenoptera. SECTION: Pupivora. FAMILY: Evaniidæ?

GENUS. PELECINUS, *Fabr. Latr.* Ichneumon, *Drury*.

PELECINUS POLITURATOR. Niger, antennis annulo medio albo, tibiis posticis sericeo-dilatatis. (Long. Corp. 2 unc. 6 lin.)

SYN. Ichneumon Polyturator (errore pro politurator), *Drury, App. vol. 2.*

Pelecinus Polycerator, *Fabr. Syst. Piez.* 111. 1. *Say American Entomology, vol. 1. pl. XV.*

HABITAT: Jamaica (*Drury*). "Not uncommon in various parts of the United States" (*Say*). India (*Fabricius*, incorrectly).

Head small and black. Eyes oblong and dark brown. Antennæ black and filiform, having two yellow spots on them near their extremities. Ocelli distinct. Mouth with two jaws, but no tongue, and furnished with four palpi, two of which are long, slender, and filiform; the others are very short. Thorax black like pitch, and shining, as if finely polished; as is every part of the insect. Abdomen exceeding long and black, consisting of six articulations; the last being very short and pointed. Legs small and black; the hinder tibiæ being remarkably thick and strong in proportion to the other parts.

The late lamented Mr. Say, who may justly be regarded as the Linnæus of America, says of this truly singular insect, that its flight is slow and awkward, and when taken it endeavours to force the point of the abdomen through the skin of the hand, but its strength is not adequate to the task. The whole abdomen resembles a much elongated pedicle, from which the abdomen itself, or dilated portion, has been accidentally removed.

LOCUSTA OBSCURA.

Plate XLI. fig. 1.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Locustidæ.

GENUS. LOCUSTA. Gryllus (Locusta) *Linn.* Gryllus, *Fabr.* SUBGENUS: Locusta proper. Œdipoda, *Serv.*

LOCUSTA OBSCURA. Thorace lævi; elytris fuscis; alis disco rubro, fasciâ nigrâ, apice hyalinâ. (Expans. Alar. 2 unc. 3 lin.)

SYN. Gryllus obscurus, *Linn. Syst. Nat.* 1. 2. 701. 50. *De Geer Ins.* 3. 492. 8. t. 41. f. 4. *Fabr. Ent. Syst.* 2. 58. 47.

HABITAT: Cape Coast, Africa.

Antennæ brown and filiform, the length of the thorax. Head clay-coloured, rounded. Thorax smooth, brown, and angulated. Tegmina clay-coloured. Wings next the body red, and surrounded with a broad black bar running up to the anterior edge, the tips being transparent. Legs clay-coloured. Hinder femora broad, and prettily chequered on the outside, the inside being black. Posterior tibiæ red and spined.

GRYLLUS (PHYLLOPTERUS) MYRTIFOLIUS.

Plate XLI. fig. 2.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Gryllidæ (Locustaires, *Latr. &c.*)

GENUS. GRYLLUS. Sect. Gryllus (Tettigonia), *Linn.* Locusta, *Latr.* SUBGENUS. Phylloptera, *Serv.*

GRYLLUS (PHYLLOPTERUS) MYRTIFOLIUS. Thorace subtetragono, lævi; alis deflexis elytris longioribus, oviductu brevissimo recurvo. (Expans. tegm. 1 unc. 6 lin. Alar. 2 unc.)

SYN. Gryllus Myrtifolius, *Linn. Syst. Nat.* 1. 2. 696. 18. *Fabr. Ent. Syst.* 2. p. 34. *De Geer Mem.* vol. 2. pl. 41. f. 2. *Stoll. Sauter. pl.* a. 5. fig. 16. *Serville Revis. Orth.* p. 45.

HABITAT: New York (*Drury*). America (*Fabr. &c.*).

Antennæ small and filiform. Head dusky yellow. Thorax and abdomen brown, but when the insect was living were probably green; the former has a yellow stripe on each side. Tegmina green, and narrowing towards the tips. Wings thin, transparent, and of a greenish hue. Legs green; the hinder ones being very long, with the tibiæ spined.

LOCUSTA (RUTIDODERES) CENTURIO.

Plate XLI. fig. 3.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Gryllidæ (Locustaires, *Latr. &c.*)

GENUS. LOCUSTA. Gryllus (Locusta), *Linn.* Acrydium, *Latr.* SUBGENUS: Rutidoderes, *Westw.*

LOCUSTA (RUTIDODERES) CENTURIO. Pallidè olivaceo-fulvescens, elytris nigro numerosè punctatis, alis sanguineis margine nigro et interno nigro tessellatis. (Expans. Alar. 3 unc. 3 lin.)

SYN. Gryllus Centurio, *Drury, App.* vol. 2.

HABITAT: The Bay of Honduras, America.

Head dusky olive brown. Antennæ yellow, the tips black. Eyes red brown. Thorax olive brown, having a sharp indented ridge on the top, and one on each side; that on the top being black. Abdomen dark brown. Tegmina pale olive, spotted all over with darker spots of various shapes. Wings scarlet; the edges, except the abdominal, black; which, at the tips, and along the external edges, forms a kind of lattice work, breaking in upon the black division. Legs yellowish brown, the hinder tibiæ being spinose; tarsi with a cup-like pulvillus between the claws.

Gryllus reticulatus (*Fabr. sp. Ins.* 1. p. 362. No. 7.) figured by Donovan in his *Insects of India*, Pl. 12. Fig. 1., and said to be from Bengal, is very closely allied to, if indeed it be not identical with, the species here figured.

LOCUSTA (PHYMATEA) PUNCTATA.

Plate XLI. fig. 4.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Gryllidæ (Locustaires, *Latr.* §c.)

GENUS. LOCUSTA. *Gryllus* (Locusta), *Linn.* *Acrydium*, *Latr.* SUBGENUS: *Phymateus*, *Thunberg.*

LOCUSTA (PHYMATEA) PUNCTATA. Thorace verrucoso atro, elytris atris flavo punctatis, alis atris, abdomine rufo annulato. (Long. Corp. cum alis claus. 2 unc. 9 lin.)

SYN. *Gryllus punctatus*, *Drury, App. vol. 2. Fabr. Ent. Syst. 2. 51. 19. Thunberg Mem. Acad. Imp. St. Petersb. p. 258. Stoll. Sauter. pl. 7. b. f. 24. A. Donovan Ins. India, pl. 12. fig. 2.*

HABITAT: East India.

Antennæ black, and longer than the thorax. Eyes small, round, and red brown. Head black at top, the middle being yellow; the lower part, with the mouth, black. Thorax rough and margined, full of spines and tubercles, both at top and on the sides; the former being black, the latter yellow. Breast black. Abdomen the same, ringed with red. Tegmina black, prettily spotted with yellow; the spots next the tips being smallest. Wings entirely black. Anus red. Legs black; the hinder thighs being marked on the outside with yellow.

LOCUSTA CÆRULEA.

Plate XLII. fig. 1.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Locustidæ.

GENUS. LOCUSTA. *Acrydium*, *Latr.* *Ædipoda*, *Serv.*

LOCUSTA CÆRULEA. Obscurè viridis, alis posticis hyalinis cæruleis, angulo externo nigro, femoribus medio flavis. (Expans. Alar. 1 unc. 3 lin.)

SYN. *Gryllus cæruleus*, *Drury, App. vol. 2.*

HABITAT: Calabar, Western Coast of Africa, 6° North L.

Head dark dirty green. Antennæ ———? Thorax dirty green and smooth, without any tubercles. Tegmina dark green, and opaque. Wings thin and blue; the tips being much darker. Abdomen dark green. Legs the same, the hinder femora striped on the outside with yellow and light green, but on the inside entirely yellow; the tips being black.

LOCUSTA (RUTIDODERES) MILES.

Plate XLII. fig. 2.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Gryllidæ (Locustaires), *Latr.* §c.

GENUS. LOCUSTA. *Gryllus* (Locusta), *Linn.* §c. *Acrydium*, *Latr.* SUBGENUS: *Rutidoderes*, *Westw.*

LOCUSTA (RUTIDODERES) MILES. Fusca, capitis lineis duabus marginalibus margineque postico thoracis flavis, elytris brunneis, alis nigris maculis duabus magnis sanguineis. (Expans. Alar. 3 unc. 9 lin.)

SYN. *Gryllus Miles*, *Drury, App. vol. 2.*

HABITAT: Bay of Honduras, America.

Head green. Face striped on each side with yellow. Antennæ black. Thorax dark green; posterior edges yellow. Abdomen black, but when the insect was living, probably green. Tegmina entirely red brown. Wings black, with a scarlet patch near the tips, running from the anterior almost

to the posterior edges; another considerable part of the wings is likewise scarlet, running from the body to the middle, and from thence to the abdominal corners; the posterior and anterior edges being black. Legs dark green, almost black, and variously spotted with yellow: the fore and middle ones having a spot on each femur and tibia, the hinder ones having three on each femur, and two on each tibia.

GRYLLUS (GRYLLACRIS) TESSELATUS.

Plate XLII. fig. 3.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Gryllidæ.

GENUS. GRYLLUS (Locusta), *Latrielle*. SUBGENUS: Gryllacris, *Serville*.

GRYLLUS (GRYLLACRIS) TESSELATUS. Fusco-fulvescens, alis diaphanis nigro undique tessellatis. (Expans. elytr. 2 unc. 6 lin. Alar. 3 unc.)

SYN. Gryllus tessellatus, *Drury, App. vol. 2.*

Gryllacris maculicollis ♂ ? *Serville Revis. Orthopt. p. 42.*

HABITAT: Island of Johanna, near Madagascar.

General colour brownish yellow. Head smooth. Eyes rather prominent and dark brown, with a whitish streak between them. Antennæ the length of the insect. Mouth furnished with four palpi, knobbed at the extremities. Thorax margined, and a little indented. Scutellum, which is not seen when the wings are closed, whiteish and triangular. Tegmina thin, and full of tendons. Wings nearly diaphanous, and prettily speckled with cross marks in a zigzag manner. Legs strong; the hinder ones formed for leaping. Tibiæ armed with spines, pointing downwards; those on the hinder ones being shortest. Abdomen very singularly formed, the last segment terminating in a kind of horny beak which curls inwards, but widens and expands at the extremity, so as to appear like a knob or club; and close above it, but on the upper part of the abdomen, are four filaments about the size of the antennæ; two of them being longer than the other, extending to the very extremity of this part. (See Fig. IV.)

The antennæ in this subgenus are of very great length, being many times longer than the whole body. The specimen, therefore, figured by Drury was evidently mutilated in these organs.

ACHETA (SCHIZODACTYLA) MONSTROSA.

Plate XLIII. fig. 1.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Achetidæ.

GENUS. ACHETA, *Fabr.* Gryllus, *Latr.* SUBGENUS: Schizodaetylus, *Brullé*.

ACHETA (SCHIZODACTYLA) MONSTROSA. Elytris alisque caudatis convolutis, corpore luteo-fusco punctis nigris. (Long. Corp. 1 unc. 9 lin.)

SYN. Gryllus monstrosus, *Drury, App. vol. 2.* *Fabr. Ent. Syst. 2. 29. 2.* (Acheta m.)

Schizodaetylus monstrosus, *Aud. & Brullé Hist. Nat. Ins. tom. ix. s. g. 24.* *Donovan Ins. India, pl. 12. fig. 3.*

HABITAT: India (*Fabricius*).

Antennæ considerably longer than the body, filiform. Mouth furnished with strong jaws, and four palpi; two of which are very long. General colour dusky olive brown. Wings and tegmina extending

as far beyond the body as its own length, and curling in a most singular manner, being very curiously folded together. Body with two short tails placed at its extremity. Legs longer than usual with insects of this kind; each of the thighs being furnished with spines, and also the tips of the tibiæ. Tarsi four-pointed, besides the claws; those of the fore and middle legs having on each side two small appendages like flaps. Hinder tarsi furnished on each side with five of these flaps, some of which appear moveable, others fixed, as represented in the plate.

ACHETA MEMBRANACEA.

Plate XLIII. fig. 2.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Achetidæ.

GENUS. ACHETA, *Fabr.* Gryllus Acheta, *Linn.* Gryllus, *Latr.*

ACHETA MEMBRANACEA. Luteo-fusca, pronoti annulis duobus nigris, alis corpore longioribus, tarsis posticis quinque spinosis. (Long. Corp. 2 unc. 3 lin.)

SYN. Gryllus membranaceus, *Drury, App. vol. 2.*

HABITAT: Bay of Honduras, Musquito Shore.

Antennæ long, filiform. General colour yellowish brown. Thorax with two rings, almost black. Wings extending beyond their cases, terminating in two tails that are folded; each representing a two-edged sword. Abdomen furnished with two bristles. At the tips of the hinder tibiæ are placed five spines, one being quite small; the middle ones have four, that are small; and the fore ones one.

From the information furnished to Mr. Drury by Mr. Smeathman we learn that the children in Africa are, at the proper season, very busily employed digging out of the ground the females, when full of eggs, of a species exactly the size and form of this, on which they make an agreeable repast, roasting generally the whole animal, but eating only the eggs, which are contained in a bag, and resemble part of the roe of a large fish, deeming it very delicate food. These, like the European crickets, make a continual and noisy chirping all day long; and the open parts of the country are never without this music, which ceases neither night nor day. Some sing only in the day, others only in the night, and others again are never silent. Of those which sing only in the night, one small species, about the size of the *Gryllus Campestris* of Linnaeus, sallies out of its retreat early in the evening, making so loud and shrill a chirping that it may be said to pierce the ear; and, as certainly as it sings within doors, it silences a whole company. It fills a large room so completely with its note, which is something like the sound caused by rubbing a tobacco-pipe round the edge of a wine-glass, that those unaccustomed to it cannot tell how to direct their search after it. When they are looking for it, the noise will sometimes cease for half a minute, and begin again, when the searchers will be as much at a loss as ever. The black people, however, who have perhaps the most accurate ears in the world, readily find them, and generally without mercy put an end to their lives and their notes together. Different species sing their wild notes among the distant banks, and are heard in the rivers through the mangroves, though those trees often form a thick wood between the navigable

parts of the river and the dry land of a quarter or half a mile deep. The mountains and the woods also echo with them all the night long, and the full concert is very distinctly heard on board the ships, during a calm night, as they lie at their usual anchorages in the bays and creeks on the sea coasts.

LOCUSTA (RUTIDODERES) DUX.

Plate XLIV.

ORDER: Orthoptera. SECTION: Saltatoria. FAMILY: Gryllidæ (*Locustaires*, *Latr. &c.*)

GENUS. LOCUSTA. *Gryllus* (*Locusta*), *Linn.* *Acrydium*, *Latr.* SUBGENUS: *Rutidoderes*, *Westw.*

LOCUSTA (RUTIDODERES) DUX. Thorace carinato scabro; elytris viridibus, alis rufis fusco-maculatis. (Expans. 7 unc. 9 lin.)

SYN. *Gryllus dux*, *Drury, App. vol. 2. Oliv. Encycl. Méth. No. 4.* (*Acrydium* D.) *Fabr. Ent. Syst. 2. 47. 4. Serville Revis. Orthopt. 92.*

HABITAT: Bay of Honduras (*Drury*). Brazil (*Serville*).

Head dusky yellowish olive. Eyes prominent. Antennæ black, and of equal thickness throughout; consisting of twenty-seven articulations, being a little longer than the thorax, which is of a dusky olive, and ending upwards in a sharp ridge, which is dentated and uneven. Tegmina dusky green, with a great many faint dark spots on them. Wings red, and edged with black; having a great number of dark spots on them of different shapes and sizes, many of which appear like beards of arrows. Abdomen large and green. Thighs reddish brown, chequered with white. Legs the same, the spines being black.

LIBELLULA LUCIA.

Plate XLV. fig. 1.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach.*

GENUS. LIBELLULA, *Auct.*

LIBELLULA LUCIA. Thorace olivaceo lineis duabus lateralibus apiceque flavis, alis hyalino-subflavis, strigâ subcostali maculâque versus basin fasciâque triangulari mediâ fuscis, stigmatibus albo, nigro terminato. (Expans. Alar, 2 unc.)

SYN. *Libellula Lucia*, *Drury, App. vol. 2.*

Libellula variegata, *Fabr. Ent. Syst. 2. 382. 40.* (nec *Linn. Syst. Nat. 904. 18. ex Indiis.*) *Pal. Beauv. Ins. d'Afr. et d'Amer. Neur. pl. 2. fig. 4.*

HABITAT: Sierra Leone.

Front of the head green. Eyes contiguous. Thorax dark green; being striped obliquely on the sides with two yellow streaks, and another on the top. Abdomen yellowish green, with two dark stripes running longitudinally on the sides. Legs dark green. Wings transparent, with a slender white streak near the tips of each, and a small black spot joining thereto, which are placed on the anterior edges; from the small edges, near the middle of each wing, a small dark cloud arises that crosses the wings, those of the superior running lowest. Near the body another small cloud is placed, being largest and strongest in the superior wings; the fore part of which is embellished with two slender black streaks running parallel, and near to the anterior edges.

AGRION CAIA.

Plate XLV. fig. 2.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*. SUBFAMILY: Agrionides.

GENUS. AGRION, *Fabr.* Calepteryx, *Leach*. Libellula p. *Drury*.

AGRION CAIA. Cuprea, abdomine nigro, alis hyalinis basi sanguineis, posticis etiam maculâ parvâ apicali sanguineâ. (Expans. Alar. 2 unc. 3 lin.)

SYN. Libellula Caia, *Drury, App. vol. 2.*

HABITAT: South America.

Front of the head blueish black. Eyes distant. Thorax copper gold-coloured. Abdomen black and slender. Legs black. Wings transparent, but next the body are of a fine lively red; the posterior having a small spot of that colour placed at their tips.

This insect is nearly allied to Agrion Brightwelli, Kirby (Linn. Trans. vol. 14. t. 3. fig. 5.) which is also an inhabitant of Brazil.

LIBELLULA MARCIA.

Plate XLV. fig. 3.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA MARCIA. Cœrulea aut ænea nitida, alis albido-flavis, anticis maculis duabus apiceque fuscis, posticis strigis duabus basalibus, fasciâ undatâ anali, maculis tribus apiceque fuscis, basi flavis. (Expans. Alar 2 unc. 9 lin.)

SYN. Libellula Marcia, *Drury, App. vol. 2.*

Libellula Murcia, *Fabr. Ent. Syst. 2. 376. 11.*

HABITAT: The Island of Johanna, near Madagascar.

Head black. Eyes contiguous. Thorax and abdomen dark blue, but now much faded. Wings transparent and of a yellowish hue, with a small dusky cloud on each tip. The anterior having two small brown spots (almost black) on each; one at the middle of the anterior edge, the other near the body. Posterior wings broad and deep; the anterior edges next the body being finely ornamented with dark brown spots and clouds, that extend along that part for about half an inch: two small dusky spots are placed near the centre of each; and at the abdominal corners is a long waved spot of a fine dark brown, extending along the posterior edges; the space between it and the anterior edges being of a deeper yellow than the other parts of the wings.

LIBELLULA DOMITIA.

Plate XLV. fig. 4.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA DOMITIA. Luteo-rufescens, abdomine maculis dorsalibus flavis, alis fulvis stigmatibus nigricanti. (Expans. Alar. 1 unc. 9 lin.)

SYN. Libellula Domitia, *Drury, App. vol. 2.*

HABITAT: Jamaica.

Front of the head yellow. Eyes contiguous. Thorax and abdomen pale reddish brown; the former striped obliquely with green on its sides, the latter spotted with yellow on the top. Legs dusky yellowish green. Wings brownish yellow, with a small dark streak (almost black) placed on the anterior edges of each, near the tips.

AGRION TITIA.

Plate XLV. fig. 5.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*. SUBFAMILY: Agrionides.

GENUS. AGRION, *Fabr.* *Calepteryx*, *Leach*. *Libellula* p. *Drury*.

AGRION TITIA. Atræ; dimidio basali alarum anticarum fusco, plagâ magnâ internâ sanguineâ, apice fusco; posticis fuscis maculâ hyalinâ subapicali. (Expans. Alar. 2 unc. 6 lin.)

SYN. *Libellula Titia*, *Drury, App. vol. 2.*

HABITAT: Bay of Honduras.

Head, thorax, and abdomen black. Eyes distant. Legs black. Anterior wings next the body red; which is surrounded, except on the posterior edges, with dark brown, occupying half the wings; the other half is transparent, with a dusky spot at the tips. When the insect is placed on a dark ground, the transparent parts of the wings appear to be surrounded with a small narrow edging of a grey colour. Posterior wings dark brown, with a transparent spot on each, situated about an eighth of an inch from the tips.

LIBELLULA VARIEGATA.

Plate XLVI. fig. 1.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Linn. &c.*

LIBELLULA VARIEGATA. Alis flavis fusco maculatis et undulatis, posticis versus apicem maculâ magnâ fuscâ, puncto flavo; apice albo. (Expans. Alar. 3 unc.)

SYN. *Libellula variegata*, *Linn. Am. Acad. 6. 412. 86. Syst. Nat. 1. 2. 904. 18.*

Libellula Histrio, *Fabr. Mant. Ins. 1. 337. 24. 10.*

Libellula Indica, *Fabr. Ent. Syst. 2. 376. Guérin Icon. R. An. Ins. pl. 60. fig. 1.*

Libellula Arria, *Drury, App. vol. 2.*

HABITAT: China, India.

Front of the head black. Eyes contiguous. Thorax and abdomen black. Anterior wings transparent for about two-fifths next the extremities, having a small black streak on the anterior edges near the tips; the remaining part of these wings dark yellow, with a broad, irregular, dark brown bar crossing the middle, and a spot of the same colour placed between that and the body. Posterior wings very deep, and of the same dark yellow with the anterior, except the tips, which are transparent; and joining thereto is a large dark brown patch, with an oval yellow spot near its centre: an irregular, waved, dark brown bar runs along the posterior edges, beginning at the abdominal corners and ending about the middle of the wings: another waved bar runs along the anterior edges, beginning at the body and ending also at the middle of the wings; the extremities of the two bars nearly meeting, or joining together.

LIBELLULA FULVIA.

Plate XLVI. fig. 2.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Linn.* §c.

LIBELLULA FULVIA. Luteo-testacea; alis fulvescentibus strigâ subcostali basali fuscâ stigmatæque fusco.
(Expans. Alar. 2 unc. $4\frac{1}{2}$ lin.)

SYN. Libellula Fulvia, *Drury, App. vol. 2.*

HABITAT: China.

Front of the head dark yellow. Eyes contiguous. Thorax and abdomen tawny orange, the former being of a pale clay colour underneath. Wings dark tawny orange; and on the anterior edges of each, next the body, runs a narrow dark brown streak, about half an inch long: on the same edges also, near the tips, is another small streak, appearing of a dark brown colour when the insect is placed on a white ground, but when placed on a dark one is of a light clay colour: the posterior edges, next the abdominal corners, are also dark brown.

LIBELLULA TULLIA.

Plate XLVI. fig. 3.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA TULLIA. Cœruleo-nigra, alarum dimidio basali fusco, apicæ cinerascenti-hyalino stigmatæ nigro.
(Expans. Alar. 1 unc. 9 lin.)

SYN. Libellula Tullia, *Drury, App. vol. 2.*

HABITAT: Bombay.

Head black. Eyes contiguous. Thorax and abdomen black; but when the insect was living, were probably mazarine blue. About three-fifths of the wings, next the body, are of a very dark brown; the remainder being grey, almost transparent, with a small streak on the anterior edges of each, near the tips.

LESTES PAULINA.

Plate XLVI. fig. 4.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*. SUBFAMILY: Agrionides.

GENUS. LESTES, *Leach*. Libellula p. *Drury*.

LESTES PAULINA. Thorace griseo, lineis nigris, abdomine nigro griseo annulato; alis hyalinis apice fuscis, stigmatæ nigro. (Expans. Alar. 2 unc. 6 lin.)

SYN. Libellula Paulina, *Drury, App. vol. 2.*

HABITAT: Bay of Honduras.

Head black. Eyes distant. Antennæ very short and thick. Thorax grey, and striped obliquely on the sides with black. Abdomen black, long, and slender; each articulation being grey. Legs grey, being striped at top with black. Wings transparent, except at the tips, where they are of a very dark brown; having a small black spot placed on the anterior edges of each near their extremities.

LIBELLULA AXILENA.

Plate XLVII. fig. 1.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA AXILENA. Capite maculis 5 albis, thoracis dorso lateribusque virescentibus, abdominè luteo dorso fusco; alis albis hyalinis strigâ parvâ subcostali basali, margineque tenui (pone medium) nigris stigmatè albo. (Expans. Alar. 3 unc. 6 lin.)

SYN. Libellula Lydia, *Drury, App. vol. 2. (nec vol. 1. pl. 47. fig. 1.)*

HABITAT: Virginia.

Mouth white. Eyes contiguous. Antennæ short and small, but distinct and plain when viewed through a microscope. On the back part of the head are situated five white spots. Thorax golden brown at top, the sides being of a pale green. Abdomen black at top, the sides being of a tawny orange; beneath pale green. Wings transparent; each having a very narrow dark brown border, beginning at the middle of the anterior edges and running round the tops, where it ends: a very narrow black streak also is placed near these edges, close to the body, from whence it seems to issue, being about a quarter of an inch in length.

Our author having inadvertently applied the same name to this handsome species which he had given to that figured in vol. 1. pl. 47. fig. 1, I have been compelled to give this a new specific denomination.

LIBELLULA EPONINA.

Plate XLVII. fig. 2.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA EPONINA. Alis flavescentibus fasciis subtribus nigris. (Expans. Alar. 2 unc. 6 lin.)

SYN. Libellula Eponina, *Drury, App. vol. 2. Fabr. Syst. Ent. 2. 382. No. 39.*

HABITAT: Boston, New England (*Drury*). Carolina (*Fabr.*).

Mouth white. Eyes contiguous. Thorax and abdomen dark brown, the latter being clouded with black. Wings of a yellowish hue, each having two dark brown bars crossing them, one a little distance from the tips, the other near the middle of the wing; between the latter and the body is placed a dark brown spot with a streak above it, those on the inferior wings being largest and most distinct.

LIBELLULA PORTIA.

Plate XLVII. fig. 3.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA PORTIA. Cœrulescenti-nigra, alarum dimidio antico fusco-cœrulescenti nitido, postice bi-emarginato. (Expans. Alar. 1 unc. 9 lin.)

SYN. Libellula Portia, *Drury, App. vol. 2.*

Libellula marginata, *Pal. Beauv. d'Afr. et d'Amer. Neur. pl. 2. fig. 5. Fabr. Ent. Syst. ii. p. 380.*

HABITAT: Sierra Leone.

Head black. Eyes contiguous. Thorax and abdomen blue. Wings partly dark brown (almost black) and transparent, the anterior edges from the body to the tips being dark brown, and the posterior edges transparent. Posterior wings longest, a circumstance observable only in those whose wings next the body are broad and deep.

LIBELLULA SOPHRONIA.

Plate XLVII. fig. 4.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*.

GENUS. LIBELLULA, *Auct.*

LIBELLULA SOPHRONIA. Fusca-rufescens, alis fulvescentibus apice hyalinis. (Expans. Alar. 2 unc. 7½ lin.)

SYN. Libellula Sophronia, *Drury, App. vol. 2.*

HABITAT: China.

Head pale clay-coloured. Eyes contiguous. Thorax and abdomen dark brown, the former being of a pale clay colour underneath. Wings finely reticulated, and of a brownish yellow, with a transparent spot at the tips; a small narrow black streak is also placed near the anterior edges of each, appearing to issue from the body, being about half an inch in length.

LESTES LUCRETIA.

Plate XVIII. fig. 1.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ, *Leach*. SUBFAMILY: Agrionides.

GENUS. LESTES, *Leach*. Libellula p. *Drury, &c.*

LESTES LUCRETIA. Thorace fusco vittis pallidis, abdomine cœruleo longissimo; alis reticulatis nubilâ apicali.
(Long. Corp. 6 unc. Expans. Alar. 5 unc.)

SYN. Libellula Lucretia, *Drury, App. vol. 2.*

Agrion linearis, *Fabr. Ent. Syst. 2. 388. 5. Sulzer Hist. Ins. t. 24. fig. 1.*

HABITAT: Cape of Good Hope, *Dr. Fothergill (Drury)*. India, *Dr. Fothergill (Fabricius)*.

Eyes very large and globular, projecting as it were from the head, and placed at a distance from each other. Antennæ rather long and distinct, resembling a small fibre issuing from a thick stalk. Ocelli distinct. Thorax probably dark blue when the insect was living, but being now faded, and appearing of a dead black, it is also striped with white on the sides. Wings reticulated and transparent, the superior being tipped with white, and the inferior having a small black streak on the anterior edges, near the tips. Abdomen uncommonly long, being five inches and a half, and of a dark shining mazarine blue. Legs remarkably short for the size of the insect.

“In the 4th volume of Seba’s Museum, Tab. 68, are two figures somewhat like this (being the only ones I ever saw in any author) but are entirely different; the extremities of all the wings being tipped with black, and the bodies consisting of many more articulations than this; the eyes also are not so large and globular, and the feet are shorter.”—*Drury*.

XYLOCOPA LATIPES.

Plate XLVIII. fig. 2.

ORDER: Hymenoptera. SECTION: Mellifera. FAMILY: Apidæ.

GENUS. XYLOCOPA, *Fabr.* Apis, *Drury*, *Linn.*

APIS LATIPES. *Hirsuta atra, tarsi anticis explanatis flavis, intus ciliatis.* (Magn. Bomb. terrestr. major.)

SYN. Apis latipes, *Drury*, *App. vol. 2.* *Fabr. Ent. Syst. 2.* 314. 1. *Syst. Piez.* 337. 1.

HABITAT: The Island of Johanna, near Madagascar (*Drury*). China (*Fabr.*).

Eyes large, having the ocelli placed between them, just above the antennæ. Antennæ jointed in the middle, i. e. at the end of the long basal joint, which is broad and flat at the tip. Tongue horny and thick at top, ending in a sharp point. Thorax shining and dark blue, covered on the front with black hairs. Abdomen dark blue, the sides being hairy. Wings dark blue and opaque. Breast dark blue and hairy. Fore legs longer than the others, and very hairy, the femora and tibiæ being black; the first articulation of the tarsi being composed of a thin horn-like substance of a light yellow colour, concave and hollow within, but flat on the top or upper part; from the hinder side or edge whereof proceed many long hairs of the same colour.

According to Mr. Smeathman these bees are very injurious to wooden houses, the posts of which they bore and perforate in various directions, so as to weaken them very much. The holes they make are half an inch in diameter. Drury hazards the conjecture, that the curiously dilated anterior tarsi, and the long hairs with which it is furnished, appear to be useful to the creature for containing the substance of which these insects compose their nests. This, however, is but mere conjecture; since it is the males only which possess this curious construction; and this sex takes no share in the construction or provisioning of the nest in any species of bees with whose economy we are hitherto acquainted. There are certainly several distinct species confounded together under the common name of *Xylocopa latipes*.

SYNAGRIS CORNUTA ♂.

Plate XLVIII. fig. 3.

ORDER: Hymenoptera. SECTION: Diploptera. FAMILY: Vespidæ, *Leach*.

GENUS. SYNAGRIS, *Latr. Fabr.* Vespa, *Linn.* Apis, *Drury*.

SYNAGRIS CORNUTA. *Ferruginea, abdomine alisque nigris, mandibulis porrectis capite longioribus.* ♂. (Long. Corp. cum mand. 1 unc. 4½ lin.)

SYN. Vespa cornuta, *Linn. Syst. Nat. 1.* 2. 951. 20. *Fabr. Syst. Piez.* 252. 1. *Latr. Hist. Nat.* 3. 360. (Synagris c.) *Griffith Animal Kingdom, Insects, pl.* 106. § 107. fig. 1. *Drury, App. vol. 2.* (Apis c.)

HABITAT: Africa (*Fabr.*). Anamaboe (*Drury*).

Front of the head dark orange, the hinder part brown. Antennæ dark orange brown, and about the length of the thorax; the basal joint elongated. Ocelli distinct. From the front of the head proceed two slender horns, about three-eighths of an inch in length, of a solid bony substance, bending at the extremities toward each other, which the insect can open and close together horizontally, and which are the mandibles greatly developed. The base of these horns extends downwards, and forms a kind of

hollow beak, terminating in a point which encloses the tongue, and serves as a guard or fence to secure it from external injuries. Thorax and legs orange brown. Abdomen probably of a dark mazarine blue [?] when the insect was living, but is now of a dead black. Wings brown, opaque, and shining.

PHASMA (PLATYCRANA) JAMAICENSIS.

Plate XLIX. fig. 1.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Phasmidæ.

GENUS. PHASMA, *Fabr.* Mantis, *Drury.* SUBGENUS: *Platycrana*, *Gray.*

PHASMA (PLATYCRANA) JAMAICENSIS. *Linearis viridis, alis pallidè roseis costâ tenui viridi.* (Long. Corp. 3 unc. 6 lin.)

SYN. Mantis *Jamaicensis*, *Drury, App. vol. 2. Fabr. Ent. Syst. 2. 15. 11.* (Mantis J.) *Gray Syn. Phasm. p. 38.* (*Platycrana J.*)

HABITAT: Jamaica.

Head green. Eyes small and black. Antennæ filiform and long. Thorax and abdomen green, long, and slender. Tegmina very small, and striped with green, the anterior edges being yellow. Wings very thin and membranous, being of a pale blush or pink colour; but along the anterior edges are thick and green. Legs green; but at the articulations are of a yellowish hue. Femora furnished with spines; those on the fore ones being smallest. Tarsi of the ordinary form.

MANTIS CINGULATA.

Plate XLIX. fig. 2.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Mantidæ.

GENUS. MANTIS, *Linn. §c.*

MANTIS CINGULATA. *Luteo-fusca, clytris subolivaceis maculis duabus obliquis discoidalibus, alis fuscis basi et versus apicem pallidioribus, abdomine pallido nigro annulato.* (Long. Corp. 2 unc. 9 lin.)

SYN. Mantis *Cingulata*, *Drury, App. vol. 2.*

Mantis Domingensis, Pal. Beauv. Ins. d'Afr. et d'Amer. Orthopt. pl. 12. f. 2. ?

HABITAT: Jamaica.

Head brown yellow. Eyes rounded, and distant. Antennæ (in Drury's specimen) wanting. Thorax long and slender, flat at bottom and rounded at top. Tegmina pale greenish colour, with a nerve running down the middle like the leaf of a tree, extending, when closed, the length of the abdomen, being margined along the edges. Wings very thin and brown; but along the anterior edges thick and yellow. Abdomen yellowish, with black rings, and broad at the middle, but narrow where it joins the thorax. Fore legs yellow brown, with a black spot at the tips of the femora on the inner side. Trochanters flat and thin. Femora furnished with two rows of spines, and a groove between them to receive the tibiæ, which are furnished at the extremity with a strong spine bending inwardly, and likewise on each side with a row of small and shorter spines, regularly placed and very even. From this articulation proceed the slender tarsi, the first joint being the longest. The middle legs have a small flap, or membrane, placed near the tips of the tibiæ, on the first articulation of the bearers; with two small spines at the joints of the same articulations, both of these and the hinder legs.

PHASMA (DIAPHERODES) GIGAS.

Plate L.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Phasmidæ.

GENUS: PHASMA, *Fabr.* Mantis, *Drury.* SUBGENUS: Diapherodes, *Gray.* Cyphocrana, *Serville.*

PHASMA (DIAPHERODES) GIGAS. Aptera, capite thoraceque spinosis, hoc lateribus serratis, elytris brevissimis, femoribus subtus angulatis. (Long. Corp. 7 unc. 9 lin.)

SYN. Mantis gigas, *Drury, App. vol. 2. (1773.)* (nec *Fabr. Ent. Syst. Suppl. No. 6. Oliv. Encyl. No. 2. Serv. Rev. Orthopt. p. 33.*) *Gray Syn. Phasm. p. 33. (Diapherodes G.)*

Mantis angulata, *Fabr. Ent. Syst. 2. 13. (1793.)*

HABITAT: St. Vincent.

General colour brown, but probably green when alive, becoming brown by the spirits in which it was preserved. Antennæ about three inches long, and composed of a great number of articulations (not less than fifty) being thickest at their roots, from whence they diminish a little to their extremities. Head oblong, with two short thick spines on the top, near the front. Eyes small, round, black, and distant. Four palpi, each 4-jointed; that next the mouth being the shortest. Mouth appearing not to be furnished with strong teeth or jaws, but seeming rather formed for macerating tender plants. Neck and thorax having a great many short thick spines on them; particularly the latter, which has a ridge on each side, full of spines like the teeth of a saw, extending to the abdomen. "It is evident this species is furnished with wings when arrived to its complete state, by the rudiments observable in this; which, though they are exceeding small, are a sufficient proof it is not wingless." Abdomen composed of seven articulations; the last being divided into three smaller ones, from whence springs from the under part an instrument that extends about half an inch beyond the tail, being shaped like a three-edged sword; each side being hollowed and grooved like that weapon. When first received, the abdomen was considerably broader than it is now, being then nearly the breadth of a man's thumb; but now is contracted one-fourth, and in proportion every other part is less, except the head. The hind legs are longer than the rest; but are not formed, like the locust tribe, for leaping. The under part of the thighs are furnished with short thick spines; those on the hinder ones being the strongest, and most conspicuous. The tips of the femora are furnished with two thick strong spines, which are placed on each side the joint. The tibiæ are short and thick. The tarsi consist of five articulations besides the claws; the bottom of each having a valve or sucker to it; those placed between the hooks being considerably larger than the others, by which the creature is enabled to climb up any thing perpendicularly that has a smooth surface.

END OF VOL. II.

ILLUSTRATIONS
OF
EXOTIC ENTOMOLOGY,

CONTAINING
UPWARDS OF SIX HUNDRED AND FIFTY
FIGURES AND DESCRIPTIONS

OF
FOREIGN INSECTS,

INTERSPERSED WITH
REMARKS AND REFLECTIONS ON THEIR NATURE AND PROPERTIES.

BY DRU DRURY.



A NEW EDITION,
BROUGHT DOWN TO THE PRESENT STATE OF THE SCIENCE, ,
WITH THE SYSTEMATIC CHARACTERS OF EACH SPECIES, SYNONYMS, INDEXES,
AND OTHER ADDITIONAL MATTER.

BY J. O. WESTWOOD, F.L.S.

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MR. DRURY'S PREFACE

TO THE FIRST EDITION.

VOL. III.

GRATEFUL for the favourable reception the two preceding volumes of this work have met from the lovers of Natural History, it is with pleasure that I now present them, though late, with this my third and last volume, which has been completed in opposition to greater disadvantages and disappointments than attended either of the others.

It may not be superfluous to inform my readers, that this publication is the result of such leisure hours only as could be spared from an indispensable assiduity to immediate business, and a necessary attention, at that time, to an impaired constitution.

This being taken into consideration, little apology will be required for the length of time I have been in bringing it out, by those who know what trouble we must necessarily have with the various artists, who are employed in executing the different parts of such a work, and with what scrupulous exactness and care every minute part ought to be examined and corrected. This unavoidable delay, however, has been productive of another circumstance, which compels me to entreat all their candour and indulgence.

I have always made it a rule of my conduct to promote Natural History by every method in my power. My cabinet has therefore been open to all those gentlemen, from whatever part of the world they came, who made Entomology their study. In consequence of this permission, descriptions of many of the insects now published have got abroad some time since, and even figures of several of them have made their appearance. This I did not expect, as many of my plates were entirely finished some months, and even years, before those above-mentioned could have got forth. This will account for the seeming contradiction in many places, upon comparing the descriptions with the Index, where many insects are described and mentioned as *new* ones, but in the Index have their synonyms given in various authors. The truth is, the descriptions were made about the year 1775, between which time and the present those authors published their respective works.

But who can foresee disappointments, or avoid their effects? It may be urged, that these plates might have been omitted, and others substituted. In so doing, however, I could

not have been justified, either to the purchasers of the former volumes, or to myself. Many of them, there is no doubt, would not have the figures of those insects alluded to, unless in this work ; and, as to my part, without considering the loss, neither my business, my health, nor my leisure, would have enabled me to supply their place. This very circumstance I have mentioned in the Preface to my last volume, wherein I bespoke the candour of my readers for an *anticipation* of a similar kind, which got abroad before I could bring out that volume. In the present case, I have the greatest reason to request the same indulgence from a motive still stronger, which is, that almost all the figures given by other authors, and which I have quoted in the index, were taken from specimens originally in my possession. As it is, I hope, the novelty, the beauty, and the curiosity of the other insects herein published, will, by affording large gratification to the inquisitive naturalist, make some amends, and that the nature of my situation will procure me a full acquittal from any kind of premeditated imposition.

In regard to the manners and economy of the insects now published, I have been able to get little information. There are very few, even of those who collect abroad, who will give themselves the trouble of making observations ; and such as do not want inclination or ability, and even travel expressly for the purpose, find great, and to us almost inconceivable impediments.

Mr. Smeathman, who has been many years in Africa and the West Indies, has furnished me with a few remarks on this subject, together with observations on some particular insects, published in the preceding volumes as well as this. These observations, I am of opinion, will afford information and entertainment to my readers, and, at the same time, throw some light on the nature, qualities, or dispositions of many kinds of insects, of which, hitherto, we know nothing more than the external figure. He informs me, that in hot climates, especially such as are not well settled, the difficulties attending every kind of study, and every species of collecting, are infinitely greater than those who have not visited them can possibly suppose. In those countries, either from the scarcity and high price of the materials, or the dearness of labour, the traders or settlers are obliged to calculate for little more than necessary house-room, with such conveniences only as are absolutely necessary for their different occupations and pursuits ; in which they are, from these circumstances, frequently much cramped and embarrassed. If this is the case with those who have all the best means in their power of providing for themselves, how must it be with transient persons and speculative travellers, who are seldom profitable visitors, and whose studies consequently meet with little partiality from such as are assiduously engaged in the sole pursuit of wealth or power ?

As to the breeding of insects, and observing their changes and dispositions with care and circumspection, it seems almost impossible in the nature of things to be practised, except, comparatively speaking, with a very few.

(The ravages of the tropical ants and cock-roaches are then detailed from the informa-

tion given by Mr. Smeathman, which I have thought it more interesting to introduce with the descriptions of those insects in the second volume.)

The *termîtes* are another genus of insects, which some time or other injure the traveller, and at least add to the number of his cares. These wonderful creatures were little known till Mr. Smeathman developed their extraordinary history. They were generally supposed to be a species of ant, and in consequence so frequently confounded with the natural history of that great genus of insects, that it has thrown much obscurity into both.

The ravages of these insects are so insidious, that travellers frequently suffer irreparable damage before they are aware of them. When they are previously informed, the depredations of those insects may be greatly prevented ; but constant care and caution are required, which is no small addition to the number of cares that a collector must always have upon his mind. I shall not pretend to go any further into the history of this genus of insects, as I must necessarily borrow it from my ingenious friend's very entertaining account of them, published last year in the seventy-first volume, Part I. of the Philosophical Transactions, to which I refer my reader.

To these obstacles, Mr. Smeathman adds others, some of which we can have little idea of in these climates. The *Norway rats* are so numerous and so bold, that they will come and feed by the side of the table at supper, and during the still hours of night, search every corner for plunder, making a continual uproar, and often, in a kind of furor, carry away small utensils, and other articles, which they can turn to no advantage either for food or shelter. They are very mischievous to the naturalist's collection of plants and seeds, tearing them and the books, in which they are kept, to pieces, as it were in wantonness, and carrying away such as are edible, in which they are often assisted by the land-crabs. These amphibious insects frequently make holes for themselves, or use those made by the rats under ground, and enter through the floors of the negroes' cottages.

In the rainy seasons many small animals are apt to take shelter in the thatch ; among others, *various species of snakes*, who most probably get there in pursuit of the rats. Mr. Smeathman when on the African shore observed, that the former were very harmless ; and, as he found the latter very mischievous and destructive, he would not suffer the snakes to be killed or hunted out. The patient natives there, it seems, as well as the rational travellers, are not without consolation amidst this heterogeneous crowd of inmates. They see with pleasure the spiders always on the watch for the wasps and cock-roaches, the last of which are intolerable. The *lizards*, again, attack all sorts of insects, the large Tarantula, as it is called, not excepted. The lizards not unfrequently fall a prey to the *fowls*, and the rats to the snakes. Hence lizards, rats, snakes, and land-crabs occasionally serve as delicious repasts to the improvident inhabitants, who thus " thrive under evil."

Sometimes indeed the land-crab becomes, as in the West Indies, a part of the stock of the provident and luxurious inhabitants, who inclose a small piece of ground in the manner

of a yard, and feed them with fruit, herbs, Indian corn, and other grain, on which they fatten exceedingly, and stewed in any manner are most delicious eating.

Thus a speculative man can find few opportunities of securing his collections, or of making observations, while surrounded by the hospitable chief, the trader, the planter, and their families, who scarce finding room enough in their houses for themselves, think all time lost that is not spent in lucrative business, active pleasures, or social festivity. If to this we add frequent sickness, the want of boats or cattle for conveyance in cases where moving without is impracticable ; the want of information, of guides, of assistance, the means of transporting things, of candlelights, or even a table to write on, it will not be surprising we have so little knowledge of the uncultivated tropical regions. Even travellers, who go expressly to make observations, have other great difficulties to encounter. They are sometimes obliged to pass much of their time in providing the mere necessities of life, and some in securing themselves from danger, while their industry is always exposed to the avarice, the neglect, or the ill-will of ignorant people, whose services, though poor, are not to be easily dispensed with.

Sometimes the cottages have no windows, and the larger houses, which they contrive to form in such manner as to receive the breezes, are generally without glass ; so that the student frequently has his subject, his pen, or his paper blown away, with various other disappointments and vexations too numerous and too trivial to mention, but altogether distressing, and in many instances insurmountable.

As this is the case, we have not much reason to wonder that our accounts of some foreign countries, and their natural productions, are so short and imperfect. We must content ourselves with slight sketches, which, repeated and corroborated by various travellers, may at last amount to one great descriptive and useful work, of which those contained in this Preface are offered only as so many scattered seeds.

(The various observations upon the economy of different species figured in these Illustrations, and inserted in this Preface, have been respectively introduced under the species to which they belonged.)

ILLUSTRATIONS
OF
EXOTIC ENTOMOLOGY.

PAPILIO ANTIMACHUS.

Plate I.

ORDER: Lepidoptera. SECTION: Diurna, *Latr.* FAMILY: Papilionidæ, *Leach.*

GENUS. PAPILIO, *Linn.* (Section Equit. Troj.) &c.

PAPILIO ANTIMACHUS. Alis nigris, anticis elongatis maculis fulvis, posticis subdentatis disco radiato rufo, nigro punctato; apice nigro lunulis marginalibus fulvis. (Expans. Alar. 8½ unc.)

SYN. Papilio Antimachus, *Drury, App. vol. 3. Fabr. Ent. Syst. 3. pt. 1. p. 11. No. 31. Donov. Nat. Repos. pl. 100. § 101. God. and Latr. Enc. Méth. ix. p. 28. No. 8. Esper. Aus. Schm. t. 22. f. 2. Boisd. Hist. Nat. Lep. 1. p. 188.*

HABITAT: Sierra Leone (*Drury*).

Upper Side. Antennæ brown. Head black, with eight whiteish spots on the top. Thorax black, with four white spots at the base of the anterior wings. Abdomen black at the base and at top, clay-coloured on the sides and extremity. Anterior wings black at the base, but at the extremities more of a brown colour, with eighteen different shaped marks and spots; those next the body dark orange, the others yellow clay-coloured, some being so faint as to be hardly discernible. Posterior wings slightly dentated, the inner scollops being edged with clay-coloured crescents. These wings, next the body, are of a dark orange; the remainder clay-coloured, with a broad black border running round each wing, from the upper corners to the abdominal ones; the inner sides being deeply indented, and the outer ones scolloped, with eight roundish black spots near the middle of each wing, one of which is supposed to be hid in the figure.

Under Side. Head black, with two white spots in front. Palpi scarcely discernible. Breast and sides black, spotted with yellow. Abdomen clay-coloured. The middle of the superior wings has a black patch, on which are three orange-coloured spots, answering to three on the upper side; a long angular dark orange mark joins the anterior edges next the body, close to which are two roundish black spots; the extreme parts of these wings are of a dark greyish ash colour, the ribs being black. Posterior wings clay-coloured, with eight black spots, answering to those on the upper side: the black border being narrower on this side, and the inner edges much deeper indented.

This magnificent butterfly is so exceedingly rare that M. Boisduval, whose knowledge of the European Collections is very extensive, questions whether there exists any other specimen than that originally figured by Drury. Mr. Jones also, whose splendid Collection of Drawings are so frequently quoted by Fabricius, copied this insect, figuring both the upper and under sides, which figures have been lately published by Mr. Donovan in his Naturalist's Repository. Mr. Donovan also adds, that from the manuscripts of Mr. Drury, "we find that he received this insect in 1775, from Mr. Smeathman, an assiduous and very intelligent naturalist stationed at Sierra Leone."

"From the observations of Mr. Smeathman it may be imagined that this insect is not unfrequent in that particular part of Africa, but that its capture is attended with considerable difficulty, as well from the manner of its flight, as the time when it appears on the wing; it is seen only in mid-day, when every exertion under the direct influence of a vertical sun must be painful to an European. Its flight is also remarkable for its velocity, and to increase the difficulty of taking it, the insect frequents only the upper branches of the trees, from whence it darts and glances from one branch to another, and never descends nearer to the ground than the height of eight feet. Mr. Smeathman observes also, that it turns its head about instantly to the glade or path, and will not suffer any person to approach within 'striking distance' of it, but will dart away on the least motion of the body; if the naturalist however exerts his patience, it will at last become more familiar and careless, and is then to be caught upon some particular branch, to which it will appear more attached than to another."

Mr. Donovan however suggests, that the insect must be not only exceedingly local, but also of great rarity.

HEPIALUS CRASSUS.

Plate II. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Hepialidæ, *Steph.*

GENUS. *HEPIALUS*, *Fabr.* *Hepiolus*, *Illiger.* *Phalæna* (Noctua), *Drury.*

HEPIALUS CRASSUS. Alis anticis albis, fusco, cinereo, badioque variis, apice irregulariter albo, lunulâ magnâ fuscâ; posticis griseo-fuscantibus. (Expans. Alar. 7 unc.)

SYN. *Phalæna* (Noctua) *crassa*, *Drury, App. vol. 3.*

HABITAT: Sierra Leone.

Upper Side. Antennæ filiform, whiteish at the base, black at the tips. Head whiteish, small. Thorax whiteish, having two black tufts of hair on the shoulders, and two next the abdomen; upper part yellowish brown. Abdomen dark brown, almost black, being ringed and edged with dark grey. Anterior wings whiteish, intermixed with many patches and irregular spots of grey and dark brown. Posterior wings darkish grey brown, but lighter along the posterior edges.

Under Side. All the parts on this side are of a dark yellow brown, of the same colour with the upper side of the inferior wings. Abdomen rather lighter, with a dark brown line running along its middle from the thorax to the anus.

SPHINX IDRIEUS.

Plate II. fig. 2.

ORDER: Lepidoptera. SECTION: Crepuscularia. FAMILY: Sphingidæ, *Leach*.

GENUS. SPHINX, *Linn.*

SPHINX IDRIEUS. Corpore alisque anticis viridibus, posticis fulvis margine nigro. (Expans. Alar. 2 unc.)

SYN. Sphinx Idrieus, *Drury, App. vol. 3.* (1783.)

Sphinx Medea, *Fabr. Ent. Syst.* 111. 1. p. 363. No. 23. (1793.)

HABITAT: Africa (*Drury*). "Africa æquinoctiali" (*Fabr.*).

Upper Side. Antennæ yellow brown. Head olive green, with a cream-coloured stripe running on each side to the wings. Thorax and abdomen olive green; the latter having six small cream-coloured spots on each side near the anus. Anterior wings entirely olive green. Posterior orange-coloured, edged with black.

Under Side. Tongue spiral. Sides, breast, and abdomen paler green than on the upper side. Wings next the shoulders dark orange, but green at the extremities. Posterior wings greenish and mottled, the fringes being yellow.

ÆGERIA? PLUMIPES.

Plate II. fig. 3.

ORDER: Lepidoptera. SECTION: Crepuscularia? FAMILY: Ægeriidae, *Steph.*

GENUS. ÆGERIA, *Fabr.?* Sesia, *Latr.* Sphinx, *Drury.*

ÆGERIA? PLUMIPES. Alis cyaneis, abdomine fulvo-cingulato, apice barbato; pedibus fulvis, femorum posticorum apice plumoso. (Expans. Alar. 1 unc. 9 lin.)

SYN. Sphinx plumipes, *Drury, App. vol. 3.*

HABITAT: Africa.

Upper Side. Antennæ black, smallest at the tips. Eyes grey and shining. Palpi black. Head and thorax black. Abdomen black, with orange-coloured rings; the extremity being very small and long, and furnished with a tuft of hairs expanding like a star.

Under Side. Tongue spiral. Head and palpi orange. Breast black. Legs orange, furnished with long tibial spurs; the two hinder thighs having tufts of black hairs issuing from the tips above. Abdomen orange, sides black.

COSSUS LAOCOON.

Plate III. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Hepialidæ, *Steph.*

GENUS. COSSUS, *Fabr.* Phalæna (Bombyx), *Linn.*

COSSUS LAOCOON. Alis rufo-badiis, apice obscurioribus maculâ mediâ albidâ, nigro punctatâ, lunulisque submarginalibus pallidis. (Expans. Alar. 6 unc. 3 lin.)

SYN. Phalæna (Attacus) Laocoon, *Drury. Cramer, pl.* 117. B.?

HABITAT: Rio Janeiro, Brazil.

Upper Side. Antennæ brown, and filiform. Head brown, with two white spots beneath the antennæ. Thorax cream-coloured, with a red-brown spot arising at the head. Abdomen red-brown, with cream-coloured rings. Wings red-brown; the anterior ending along the external edges in a greyish brown, where there is a row of faint cream-coloured crescents; at the shoulders there is also a round cream-coloured spot, and in the middle, near the anterior edges, is another large patch of that colour, with darker marks thereon; several other spots are likewise dispersed on these wings. Posterior wings, along the external edges, grey brown; but next the body cream-coloured, with a row of faint cream-coloured crescents along the bottom, and two small spots on the abdominal edges.

Under Side. Breast and legs red-brown; the two fore legs having two cream-coloured spots on the fore joints. Abdomen red-brown, and cream intermixed. Wings, next the body, cream-coloured, but towards their extremities red-brown, more strongly marked than on the upper side. Margins of the wings entire.

ARCTIA? MENEÆ.

Plate III. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Stephens*.

GENUS. ARCTIA? *Schrank*. Callimorpha, *Latr.*? Phalæna (Noctua), *Drury*.

ARCTIA? MENEÆ. Flava, alis anticis basi, fuscâ latâ mediâ apiceque margineque postico posticarum nigris.

(Expans. Alar. 2 unc.)

SYN. Phalæna (Noctua) Meneæ, *Drury, App. vol. 3.*

HABITAT: Brazil.

Upper Side. Antennæ filiform and black. Head, thorax, and abdomen yellow. Wings yellow and black. Anterior having two round black spots at the shoulders, and two long ones at the tips. Posterior having a broad black border, beginning at the abdominal corners and running round the wings, crossing the fore wings and ending at the anterior edges.

Under Side. Palpi and tongue black. Legs black. Breast and abdomen yellow. Wings coloured as on the upper side. Margins of the wings entire.

CALLIMORPHA? MOPSA.

Plate III. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* Phalæna (Noctua), *Drury*.

CALLIMORPHA? MOPSA. Alis anticis fuscis fasciâ rectâ subapicali; posticis sanguineis, basi, fasciâ mediâ undatâ margineque nigris. (Expans. Alar. 1 unc. 9 lin.)

SYN. Phalæna (Noctua) Mopsa, *Drury, App. vol. 2.*

HABITAT: Madras.

Upper Side. Antennæ filiform and black. Thorax and abdomen chocolate, the latter edged with red. Anterior wings entirely of a dun chocolate colour, having a lemon-coloured streak crossing them from the lower corners to near the middle of the anterior edges. Posterior wings next the body almost

black; the remainder carmine, with a waved black line crossing them from the upper to the abdominal corners.

Under Side. Palpi grey. Breast red, with two black spots on each side. Legs grey. Wings coloured as on the upper side; the red colour on the inferior ones reaching to the body. Margins of the wings entire.

VANESSA ANACARDII.

Plate IV. fig. 1, 2.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Swains.*

GENUS. VANESSA, *Fabricius, Latr. God.* Hamadryades, *Hübner.* Papilio (Nymph. Gemmat.) *Drury.* (Dan. Cand.) *Linn.*

VANESSA ANACARDII. Alis subdentatis; supra margaritaceis extimumque versus nigro punctatis, anticis falcatis, posticis extus caudatis ocelloque ad angulum ani notatis. (Expans. Alar. 3 unc. 9 lin.)

SYN. Papilio (Dan. Cand.) Anacardii, *Linn. Syst. Nat.* 11. 758. No. 74.? *Fabr. Ent. Syst.* 1. p. 183. 567.?

Papilio (Nymph. Gemm.) Parrhasius, *Drury, App.* vol. 3.

Papilio Æthiops, *Pal. Beauv. Lep. pl.* 3. fig. 1. 2.

Papillon Opale, *Pal. Beauv. texte.* p. 22.

Vanessa Aglatonice, *Latr. God. Enc. Méth.* ix. p. 299. 8.

HABITAT : Sierra Leone (*Drury*). "In Anacardio Americæ," (*Linn.*) an recte?

Upper Side. Antennæ black. Thorax and abdomen dark green, the sides being white. Wings of a beautiful changeable colour, exhibiting, according to the direction in which the light falls upon them, a purple, red, blue, green, and white, the two latter being the predominant colours. Anterior wings, along the external edges, black, with two pale blueish spots thereon near the tips, and two round black spots on the light part of the wings near the lower corners. Posterior wings with two tails, and edged with a border of a brownish blue running from the upper to the abdominal corners, having thereon a row of small black angular marks placed between the tendons; three round black spots are also placed near the upper corners, the lowest being the smallest; and at the abdominal corners is a small eye, whose pupil is red, and iris black.

Under Side. Palpi, breast, legs, and abdomen white. The beautiful changeable colour is not seen on this side, all the wings being of a pale green. The anterior having two small eyes, the pupil being red, the iris white; the smallest of which is placed near the tips, the other lower, and towards the middle of the wing. A round black spot is also placed on these wings near the body, which in the figure is hid. A shade of a darker green, resembling a line, rises on these wings near the middle, and, crossing the inferior ones, meets below the abdomen. Posterior wings with two little eyes, placed near the upper and abdominal corners, having a faint resemblance of a border of a brighter green placed along the external edges. Wings angulated.

Linnaeus appears to have confounded this African insect with an American butterfly, figured by Mad. Merian, giving the name to the African species, with the additional habits of the American one. The copy of Drury's work, which belonged to Linnaeus, late in the library of Sir J. E. Smith (by whom the collections of the great Swede were purchased), and now in that of the Linnæan Society, contains a pencil note, by its late possessor, of reference of this figure to the *Anacardii* of Linnaeus.

CALLIMORPHA? CAFRA.

Plate V. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* *Phalæna* (Noctua), *Drury.*

CALLIMORPHA? CAFRA. Alis albis, anticis strigis duabus transversis, unâ humerali alterâ mediâ, apiceque marginali nigricantibus, posticis lunulis punctisque submarginalibus atris. (Expans. Alar. 4 unc.)

SYN. *Phalæna* (Bombyx) *Cafra*, *Drury, App. vol. 3.*

HABITAT: Sierra Leone.

Upper Side. Antennæ deeply pectinated and brown. Head white. Thorax and abdomen yellowish grey. Anterior wings white, edged with a dull blackish colour, and a large patch of the same at the tips, with two streaks also running from the anterior edges almost across the wings; one near the shoulders, the other in the middle, both narrowing as they go, and ending in points. A little group of spots is also placed at the lower corners. Posterior wings white, but next the body yellow, with a very irregular dark border running along the external edges, on which are several white spots unevenly dispersed, and of various forms.

Under Side. Palpi white, tipped with black. Fore legs red underneath, and black above, the ends being black: the other legs grey, the tips black. Breast and abdomen yellow grey. Wings coloured as on the upper side, but fainter. Margins of the wings entire.

CALLIMORPHA? NERINA.

Plate V. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* *Phalæna* (Noctua), *Drury.*

CALLIMORPHA? NERINA. Alis anticis nigris, nervis basalibus luteis, fasciis duabus punctisque submarginalibus albidis, posticis fulvo-brunneis apice nigro, punctis submarginalibus albis. (Expans. Alar. 3 unc. 6 lin.)

SYN. *Phalæna* (Bombyx) *Nerina*, *Drury, App. vol. 3.*

HABITAT: Sierra Leone.

Upper Side. Antennæ strongly pectinated and brown. Head brown, the front being white. Thorax brown, with two white streaks along it. Abdomen brown. Wings black, streaked with light brown from the shoulders along the tendons, and two light yellowish patches, almost crossing the wings from the anterior edges, with a row of white coloured spots placed along the external edges. Posterior wings dark yellow, with a deep black border running along the external edges from the upper to the abdominal corners.

Under Side. Palpi black. Mouth white. Neck and breast yellow. Legs brown, and yellow at top, and white beneath. Abdomen white, streaked longitudinally with brown. Anus yellow. Wings coloured as on the upper side, but brighter. Margins of all the wings entire.

NYMPHALIS DECIUS.

Plate VI. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS DECIUS. Alis suprà fuscis, fasciâ communi albâ; posticis caudatis, ad angulum ani rufis ocellis duobus. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio Decius, *Cram. pl.* 114. A. B. *Fabr. Ent. Syst.* 111. 1. p. 67. No. 210. *Herbst. tab.* 56. f. 112.

Nymphalis D., *Enc. Méth.* ix. p. 363. *Donovan Nat. Repos.* 4. 109.

HABITAT: Sierra Leone (*Drury*). Interior, near the Gold Coast (*Donovan*).

Upper Side. Antennæ black. Eyes, head, thorax, and abdomen brown. One-third of the superior wings next the body brown; apical half brownish black. These two colours divided by a white band or bar, which, beginning at the anterior edges, crosses these wings, and runs half way down the posterior ones, being edged with blue. Posterior wings furnished with two tails, the lower part of them being of a dark orange; next the body brown, and next the upper corners almost black. There are also two small eyes on these wings; one near the abdominal corners, the other at the middle of the external edges.

Under Side. Palpi and tongue yellow brown. Breast and abdomen brown. Legs next the body brown, the extreme joints almost white. Wings next the body brown for about half an inch, when they suddenly become white, and gradually alter in colour to a blueish, and then to a dark brown all along their external edges, where the inferior wings have several small spots and eyes. Wings dappled with an innumerable quantity of small streaks. Wings angulated.

Mr. Smeathman states that this species was taken at a considerable distance from the coast, and that it is exceedingly scarce.

NYMPHALIS EUPALE.

Plate VI. fig. 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS EUPALE. Alis supra argenteo-virescentibus, apice saturatiore, subtus gramineis, punctis marginalibus nigris ocellatis. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Pleb. Urbic.) Eupale, *Drury, App. vol.* 3. (1783.)

Papilio (Nymph.) Amasia, *Fabr. Ent. Syst.* 111. 1. p. 136. No. 419. (1793). *Encyclop. Méth.* ix. p. 389. (Nymphalis A.)

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Head and thorax dark greenish brown. Abdomen light green. Half the anterior wings next the body pea-green, the other half much darker green. The posterior wings also pea-green, but next the body paler, with a row of small different shaped brown spots placed along the external edges.

Under Side. Palpi white. Tips black. Tongue green. Legs, breast, and abdomen white. Wings beautiful pea-green, with some different shaped silver spots, very small and dispersed over

different parts, particularly two near the tips. Abdominal groove white. These wings are slightly dentated. The anterior ones are entire.

Mr. Smeathman states, that this species was obtained at a considerable distance from the coast, and that it is frequently seen in company with the groups of Nymph. *Erithonius* described in vol. ii. pl. 15. fig. 1.

NYMPHALIS CAMILLUS.

Plate VI. fig. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS CAMILLUS. Alis albis, fasciis fulvis nigro-marginatis, posticis bicaudatis angulo ani fulvo, punctis nigris albo marginatis. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio N. Camillus, *Fabr. Spec. Ins. tom. 2. p. 11. No. 42. (1781).* *Enc. Méth. ix. p. 361. No. 39.* (Nymphalis C.)

Papilio (Eq. Ach.) Pantheus, *Drury, App. vol. 2. (1783.)*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Thorax and abdomen brown, streaked with white. Wings white, edged with black. Anterior ones having a yellow streak next the shoulders, edged with black. Two others a little broader also rise at the anterior edges, and crossing these wings, are continued down the posterior ones almost to the abdominal corners, where they end in points; tips of these wings brown, edged with black, forming six square white spots. Posterior wings having two tails, abdominal corners yellow, with two round extensions of the wings like tails, with a singular group of small, black, white, and blue spots prettily contrasted.

Under Side. Palpi yellow above, and white beneath, tipped with black. Breast, abdomen, and legs white. Wings nearly coloured as on the upper side; posterior having two remarkable oval black velvety spots at the abdominal corners. Wings dentated.

NYMPHALIS ISIS.

Plate VII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS ISIS. Alis fusco-nigris, anticis integris utrinque maculâ disci chermesinâ; posticis dentatis, suprâ strigâ marginali albidâ. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Dan. Fest.) Isis, *Drury, App. vol. 3. (1783.)*

Papilio N. Isis, *Fabr. Ent. Syst. 111. 1. p. 124. No. 377. (1793.)* *Donovan Ins. India, pl. 7. fig. 1. 2.*

HABITAT: Rio Janeiro.

Under Side. Antennæ black. Thorax and abdomen brownish black. Wings very dark brown; the anterior having a large triangular patch of carmine red situated near the posterior and external edges. The posterior have also a narrow white streak at the abdominal corners.

Upper Side. Palpi black above, white beneath. Breast, abdomen, and legs ash-coloured. Wings lighter brown than on the upper side; a pale flesh-coloured bar crossing the wings from the anterior to the external edges, being about half an inch broad, between which and the body are several small bloody spots and streaks. Anterior wings entire, the posterior dentated.

It is by mistake that Donovan has introduced this Brazilian species into his work upon the Insects of India.

NYMPHALIS ANTIOCHUS.

Plate VII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS ANTIOCHUS. Alis supra holosericeo-nigris, fasciâ communi nitidè aurantiâ; anticarum abbreviatâ.
(Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (Dan. Fest.) Antiochus, *Linn. Mant.* 1. 537. *Drury, App. vol. 3.* *Fabricius Ent. Syst.* 111. 1.
p. 44. No. 134. Don. Ins. China, pl.

Papilio Eupalemon, *Cramer, tab. 143. fig. B. C.* *Le Velonté Daubenton pl. Eulum.* 68. f. 3. 4.

HABITAT: Brazil.

Upper Side. Antennæ, head, thorax, and abdomen black. Wings fine velvety black. An orange-coloured bar, about one-fourth of an inch broad, rises in the middle of the superior wings, running circularly and crossing the inferior ones, meeting about the middle of the abdominal edges.

Under Side. Palpi white. Tongue brown. Breast and legs white. Abdomen yellow-brown. Wings shining brown, exhibiting various shades of changeable colours; the tips terminating in an ash colour. Wings scarcely dentated.

Donovan has, in like manner, introduced this species into his work on the insects of China.

HIPPARCHIA CLUENA.

Plate VII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. HIPPARCHIA, *Fabr.* Satyrus, *Latr.* Papilio (Nymph. Phal.), *Drury.*

HIPPARCHIA CLUENA. Alis teneris, cinerascanti-violaceis, posticis dentatis utrinque ocellis quinque atris, subtus lineis tribus fasciâque brunneis a costâ anticarum deductis. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Cluena, *Drury, App. vol. 3.*

Papilio (Satyrus) Clueria, *Fabr. Ent. Syst.* 111. 1. p. 229. *No. 716. Enc. Méth.* ix. p. 492.

HABITAT: Brazil. "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*).

Upper Side. Antennæ brown. Thorax and abdomen grey-brown. Wings blueish grey-brown, with two narrow dark lines crossing the anterior ones from the anterior to the posterior edges; one in the middle of the wings, the other near the thorax; the posterior ones having five oval eyes placed near the external edges, the pupil being white, the iris dark, almost black.

Under Side. Palpi, legs, breast, and abdomen grey. Wings blueish flesh-colour, with a line crossing them, rising at a small distance from the tips, ending a little above the abdominal corners,

the external part of it being brown. A small eye is placed near the tips of the superior ones, having a black and yellow iris and white pupil. Five eyes of the same kind are also placed on the inferior ones along the external edges. Margins of the wings slightly dentated.

NYMPHALIS ARETHUSA.

Plate VIII. fig. 1, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury*.

NYMPHALIS ARETHUSA. Alis integris suprâ nitidè atris, virescenti-cœruleo multimaculatis; posticis subtùs punctis baseos angulique ani rubris ♂. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio Arethusa, *Cramer*, pl. 77. E. F. (♂.) pl. 130. fig. A. (♀ Pap. Laodamia.) *Fabr. Ent. Syst.* 111. 1. p. 43. No. 130.

Nymphalis Arethusus. *Enc. Méth.* ix. p. 427. *Donovan Nat. Repos.* 2. pl. 48. fig. super.

HABITAT: Brazil.

Upper Side. Antennæ black. Thorax and abdomen black, spotted with light blue. Wings black, having a great number of small light blue spots sprinkled over every part, and variously shaped.

Under Side. Palpi black, with a white streak on each. Tongue, legs, and breast black, the latter with bloody streaks on the side. Abdomen dark brown. Wings reddish dark brown; the anterior ones having two faint blue spots near the lower corners; and the posterior having a little group of bloody spots at the shoulders, with a row of the same coloured spots (five in all) placed along the external edges near the abdominal corners. Margins of the wings entire.

ERYCINA JARBAS.

Plate VIII. fig. 2.

ORDER. Lepidoptera. SECTION: Diurna. FAMILY: Lycenidæ? *Steph.*

GENUS. ERYCINA, *Fabr. Latr. God.* Papilio (Dan. Fest.), *Drury*.

ERYCINA JARBAS. Alis integerrimis atris, cœruleo micantibus singulis utrinque fasciâ fulvâ, transversali, mediâ. (Expans. Alar. 1 unc. 9 lin.)

SYN. Papilio (Dan. Fest.) Jarbas, *Drury, App. vol. 3.* (1783.)

Hesperia (rur.) Perditus, *Fabr. Ent. Syst.* 111. 1. p. 323. No. 222.

Erycina Perditus, *Enc. Méth.* ix. p. 590. No. 127.

HABITAT: Brazil. "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen nearly black. Wings brownish black. An orange-coloured bar, about a quarter of an inch broad, crosses the anterior wings from the middle of the anterior edges to the lower corners, from whence another of half that breadth crosses the posterior wings, meeting just below the anus.

Under Side. Tongue, legs, breast, and abdomen dark brown, the latter having a small orange streak on each side. Wings coloured as on the upper side. Margins of the wings entire.

ERYCINA MENETAS.

Plate VIII. fig. 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycenidæ? *Steph.*

GENUS. ERYCINA, *Fabr. Latr. God.* Papilio (Dan. Fest.), *Drury.*

ERYCINA MENETAS. Alis chermesinis, limbo tenuissimo nigro, margine antico et externo anticarum latiori, flavoque maculato, posticis triangularibus. (Expans. Alar. 1 unc. 3 lin.)

SYN. Papilio (Pleb. urb.) Menetas, *Drury, App. vol. 3.* (1783.)

Hesperia R. Tacitus, *Fabr. Ent. Syst.* 111. 1. p. 308. 168. (1793.)

Erycina Tacitus, *Enc. Méth.* ix. p. 588. *Donovan Nat. Reposit.* 4. 134.

HABITAT: "Brazil, Mr. Bonifas, 1776" (*Drury's MSS.*). Surinam (*Fabricius*).

Upper Side. Antennæ black. Front of the head yellow. Thorax black, with two yellow streaks at the base of the wings. Abdomen dark brown. Half of the superior wings black, beginning at the shoulders, and running to the external edges, on which are seven cream-coloured spots variously shaped. The other half of these wings is scarlet, without any marks. Posterior wings entirely scarlet, edged with black.

Under Side. Palpi cream-coloured. Breast and abdomen light yellow. Legs black, but underneath pale yellow. Wings coloured as on the upper side. Margins of the wings entire.

Mr. Donovan has lately published figures of the upper and under side of this butterfly (which closely resemble each other) in his Naturalist's Repository. These figures do not however represent the peculiar character of the posterior pair of wings, neither is the author correct in his chronological account of this species, as Drury's account and figure were published ten years previous to the Entomologia Systematica, in which work alone of Fabricius is the species mentioned. I have consequently retained the specific designation imposed by Drury, and adopted by the authors of the Encyclopédie Méthodique.

PAPILIO ASCANIUS.

Plate IX. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach.*

GENUS. PAPILIO, *Auct.* Papilio (Equit. Troj.), *Linn.*

PAPILIO ASCANIUS. Alis nigris, fasciâ communi albâ, posticarum rubro inquinatâ; his caudatis, maculis marginalibus chermesinis. (Expans. Alar. 4 unc.)

SYN. Papilio Ascanius, *Cramer, pl. 14. fig. A.* *Fabricius Spec. Ins. tom. 2. p. 2. No. 6.* *Ent. Syst.* 111. 1. p.

3. No. 8. *Enc. Méth.* ix. p. 73. *Boisduval Hist. Nat. Lepid.* 1. 306. 141.

HABITAT: Brazil. "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black. Head, thorax, and abdomen black, the latter tinged with orange. Anterior wings sooty black, having a broad white bar rising near the middle of the anterior edges, which crossing them and the anterior ones, meets just below the abdomen. These wings are furnished with two tails, and scalloped, the scallops being white. All the lower part of these wings is of a fine deep black, whereon are placed five red streaks between the tendons, running along the external edges. This black margin is separated from the white bar before mentioned by a carmine red one, and the space between the white bar and the shoulders is of a soot black.

Under Side. Palpi reddish. Tongue and legs black. Breast black, with red spots on the sides. Abdomen black, with the sides and anus red. Wings on this side coloured as on the upper side, but rather more brilliant.

ERYCINA AMPYX.

Plate IX. fig. 2, 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidæ? *Steph.*

GENUS. ERYCINA, *Fabr. Latr. God. Papilio* (Dan. Fest.), *Drury.*

ERYCINA AMPYX. Alis subintegris supra fuscis, anticarum maculis duabus flavis; subtus omnibus flavis, maculis ferrugineis auro-pupillatis. (Expans. Alar. 1 unc. 9 lin.)

SYN. Papilio (Pl. urb.) Ampyx, *Drury, App. vol. 3.*

Erycina Ampyx, *Latr. & God. Enc. Méth. ix. p. 586. No. 105.*

HABITAT: Brazil. "Rio Janeiro, Mr. Bonifas, 1776" (*Drury's MSS.*).

Upper Side. Antennæ white, brown at their extremities. Thorax, abdomen, and wings brown; the anterior wings having two oval straw-coloured spots placed near the middle, and the anterior edges of the posterior ones streaked with the same colour.

Under Side. Palpi, breast, legs, and abdomen straw-coloured. Wings straw-coloured, being spotted and streaked with red brown, each of these markings appearing to have a gold spot or streak in its centre, forming a very beautiful and singular appearance. Margins of the anterior wings entire, but of the posterior ones a little dentated.

PAPILIO AGAVUS.

Plate IX. fig. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach.*

GENUS. PAPILIO, *Auct. Papilio* (Equit. Troj.), *Linn.*

PAPILIO AGAVUS. Alis atris concoloribus; anticis fasciâ, posticis disco, albidis; his caudatis lunulis marginalibus anguloque anali chermesinis. (Expans. Alar. 3 unc. 6 lin.)

SYN. Papilio (Eq. Achiv.) Agavus, *Drury, App. vol. 3. Stoll. Suppl. Cram. pl. 32. 1. 1. A. Latr. & God. Enc. Méth. ix. p. 73. Boisd. Hist. Nat. Lep. 1. p. 306. 142.*

Papilio Lysander? *Fabr. Ent. Syst. 111. 1. p. 9*

HABITAT: Brazil.

Upper Side. Antennæ black. Neck red. Thorax, abdomen, and wings black. A narrow straw-coloured bar runs from the anterior edges of the superior ones near the tips, and, crossing the posterior edges, terminates in a large spot of the same colour on the posterior wings, situated near the shoulders. Posterior wings furnished with two short and two longer tails, and having two large carmine-coloured spots placed near the abdominal corners, and three others, that are smaller, along the external edges.

Under Side. Palpi and tongue black. Breast the same, the sides having streaks of red on them. Abdomen black, and the sides streaked with red. Wings nearly the same colour as on the upper side; the red spots on the posterior ones being more numerous, and those at the abdominal corners not so large.

NYMPHALIS (CHARAXES) ETESIPE.

Plate X.

ORDER: Lepidoptera, *Linn.* SECTION: Diurna, *Latr.* FAMILY: Nymphalidæ, *Swainson.*

GENUS. NYMPHALIS, *Latr.* Papilio (Eq. achiv.) *Linn. Drury.* Papilio Nymphalis, *Fabr.* (SUBGENUS Charaxes, *Boisduval.*)

NYMPHALIS (CHARAXES) ETESIPE. Alis supra atro-cæruleis, subtus albo griseo nigro ferrugineoque marmoratis; utrinque fasciâ albâ, mediâ, anticarum interruptâ. (Expans. Alar. 3 unc. 6 lin.)

SYN. Nymphalis Etesipe, *Latr. & God. Enc. Méth. ix. p. 355. No. 19.*
Papilio (Nymph. Phal.) Etheocles, *Drury, App. vol. 3. (nec Fabricius.)*

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen nearly black. The external part of the wings black, but next the body of a blueish cast. A blueish white bar, about a third of an inch in breadth, rises in the superior wings, and, crossing the inferior, meets just below the abdomen. At the tips of the former are five small oblong whiteish spots, and two larger, placed close to the forementioned bar, but separated from it by the tendons of the wing. Posterior wings furnished with four short tails of equal length, having four small white spots at the abdominal corners, and a small yellow crescent about the middle of the external edge.

Under Side. Palpi, legs, and breast white. Abdomen brown. Anterior wings next the body of a blueish ash-colour, which becomes darker as it approaches the external edges. Half these wings next the body, is adorned with many differently shaped spots of a dirty red, verged with black. A range of not less than seven oblong black spots is situated along the external edges, and the whiteish bar, visible on the upper side, is here to be seen, but not so regular. The ground of the posterior wings is the same colour as the anterior, with several reddish spots differently shaped, and verged with black. Anterior edges white, and along the external edges are a number of small black spots and streaks not to be distinctly described.

The name of Etheocles, which Drury applied to this insect, without any reference to Fabricius, had been previously employed by that author for a distinct but nearly allied species, which he indeed regarded as identical with Drury's insect. The distinctions between the two species were first pointed out in the *Encyclopédie Méthodique*, in which work the name adopted above was given to Drury's insect.

NYMPHALIS (CHARAXES) BERENICE.

Plate XI. fig. 1, 2.

ORDER: Lepidoptera, *Linn.* SECTION: Diurna, *Latr.* FAMILY: Nymphalidæ, *Swainson.*

GENUS. NYMPHALIS, *Latr.* Papilio (Eq. achiv.) *Linn. Drury.* Papilio Nymphalis, *Fabr.* (SUBGENUS: Charaxes, *Boisduval.*)

NYMPHALIS (CHARAXES) BERENICE. Alis supra nigris, fasciâ communi rufâ, disco nigro maculato; posticis subtus albo, flavo ferrugineoque maculatis. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Berenice, *Drury, App. vol. 3. (1783.) Fabr. Mant. Ins. 2. p. 48. No. 471. (1787.)*
Papilio Zingha, *Cramer, pl. 315. fig. B. C. Herbst. t. 151. fig. 3. 4. Donovan Nat. Repos. 3. 107.*

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black, with four white spots at the base and four on the sides of the neck. Thorax and abdomen yellow brown. Wings black, like velvet; anterior having the middle occupied by a large triangular space of a deep orange, crossing the posterior ones, and meeting at the body: on the anterior edges of this orange division are two distinct black spots, and a third very faint, situate in the middle of these wings. Posterior wings having two projections at the abdominal corners, like the rudiments of tails, with four yellow spots, and two very small white ones above them. A range of red spots, some of them very small, runs along the external edges of these wings, reaching from the upper to the abdominal corners.

Under Side. Palpi yellow. Breast black, with yellow and white streaks and spots on its side and front. Fore legs very short and black, the tips being white. Anterior wings along the anterior edges of a dark yellowish grey, the tendons being black; posterior parts of these wings reddish, verged with black, and having a number of different shaped black spots on them. Posterior wings black, but along the anterior edges cream-coloured, with five distinct round black spots on each; the remaining parts of these wings being beautifully adorned with a variety of different colours running among each other. Wings dentated.

BIBLIS ARIADNE?

Plate XI. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. BIBLIS, *Fabr. Latr. God.*

BIBLIS ARIADNE? Alis denticulatis, anticarum apice truncato, griseis, strigis nigris undulatis; subtus rufescentifuscis nigro variis, anticis apice puncto costali albo. (Expans. Alar. 2 unc. 5 lin.)

SYN. Papilio (Nymph.) Ariadne, *Linn. Syst. Nat.* 2. 778? *Fabr. Ent. Syst.* 111. 1. p. 383.?

Papilio Coryta, *Cramer, pl.* 86. E. F.

Papilio Merione, *Cramer, pl.* 144. G. H.?

Biblis Ariadne, *Enc. Méth.* ix. 327.

HABITAT: Coromandel, Java (*Enc. Méth.*). "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen grey brown. Wings grey, and appearing mealy, shaded with blackish brown, particularly the anterior ones along the external edges, and next the body along the anterior margin. Posterior ones also strongly shaded along the external edges.

Under Side. Palpi rather long, and dark brown, almost black. Breast, legs, and abdomen dark brown. Wings dark reddish brown, faintly shaded with streaks and marks of a darker brown, having two small white spots at the anterior edges of the anterior wings near the tips. Wings dentated.

Drury refers this insect to the Linnæan Ariadne, which is from Java. It is therefore with doubt that I give it the preceding synonyms, especially as Lépidopterists have neglected to cite Drury's figures.

NYMPHALIS ELEUS.

Plate XII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS ELEUS. Alis utrinque testaceis, apice suprâ æneo, anticarum fasciâ, posticarum punctis in simplici serie, albis. (Expans. Alar. 3 unc. 6 lin.)

SYN. Papilio (Nymph. Phal.) Eleus, *Drury, App. vol. 3. Fabr. Ent. Syst. 111. 1. p. 51. No. 156. Encycl. Méth. ix. 391.*

Nymphalis Eleus, *Donovan Natur. Repos. 4. 113.*

HABITAT: "Sierra Leone, Mr. Smeathman, 1774" (*Drury's MSS.*). "America" (*Fabricius* incorrectly).

Upper Side. Antennæ black, with two small white spots at the base. Thorax and abdomen black, spotted with two rows of white spots, in pairs, from the neck to the anus; those on the abdomen being the least. Half the superior wings next the tips black, with two white streaks thereon placed obliquely; the other half next the body dirty orange, the anterior edges being black. Posterior wings dirty orange, bordered along the external edges with black, whereon is a row of seven oval white spots on each wing, placed at equal distances.

Under Side. Palpi and breast orange. Fore legs orange, the rest white. Wings on this side dark orange-coloured. The white streaks near the tips of the anterior ones are very plain. Anterior edges of the posterior wings white, and the row of white spots along the external edges are here very conspicuous, each being verged with black.

Mr. Donovan has satisfactorily proved, from information derived both from Jones and Drury's MSS., that Fabricius erroneously gave America as the habitat of this insect.

ERYCINA BAUCIS.

Plate XII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidæ? *Steph.*

GENUS. ERYCINA, *Fabr. Latr. God.* Papilio (Pleb. rur.), *Drury.*

ERYCINA BAUCIS. Alis anticis fuscis, ocello minuto apicali, fasciâ communi abbreviatâ albâ, posticis caudatis ocello auriformi externo. (Expans. Alar. 1 unc. 9 lin.)

SYN. Papilio (Pleb. rur.) Baucis, *Drury, App. vol. 3.*

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ, thorax, and abdomen black. Anterior wings next the body nearly black, a third next the tips greyish brown, with a circular eye thereon; the iris being black and yellow, the pupil blue. A white streak rises on these wings, which crossing the posterior edges, ends at the middle of the posterior ones in a sharp point. Posterior wings blackish brown, the upper corners being greyish brown, where is a yellow mark, not unlike a human ear, the inner part being tinged with a shining blue colour. These wings are furnished with two broad tails, which suddenly become narrow and short, the tips white, and along the edges streaked with blue.

Under Side. Palpi wanting. Feet yellow. Breast white. Anterior wings lighter coloured than on the upper side. The white streaks are very conspicuous, and near the tips is another streak of ash-colour. The eye at the tips is very discernible. Posterior wings lighter coloured on this side, being chiefly ash-colour, with a brown streak longitudinally placed, verged at the bottom with yellow and blue streaks. The ear-like mark is also very plain on this side.

ACRÆA HYPATIA.

Plate XIII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Helicon.), *Drury.*

ACRÆA HYPATIA. Alis oblongis integerrimis fulvis, punctis plurimis margineque externo nigris, posticarum eodem margine supra immaculato, subtus flavo maculato. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Helic.) Hypatia, *Drury, App. vol. 3.* *Fabr. Ent. Syst.* 111. 1. p. 163. No. 504. *Enc. Méth.* ix. p. 232. (Acræa H.)

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black. Head yellowish. Thorax and abdomen brown; the former having two white spots near the neck, and two more at a little distance. The latter having several white spots, placed in pairs down to the anus. Wings fine flesh-coloured; anterior tipped with black, and verged with the same colour along their anterior and external edges. They are also clouded with black next the body, and have eleven distinct black spots on each, one of which next the tips is very long. Posterior wings having a broad black fringe along the external edges, and eleven distinct black spots on each, some of which are very small.

Under Side. Palpi yellow brown. Legs black and yellow. Breast black, spotted with white on its side. Wings nearly coloured as on the upper side; the anterior being not quite so brilliant, nor so strongly tipped with black. All the black spots on the outside of these wings are also seen here; but the black clouds next the body are wanting. Posterior wings next the body tinged with orange, and the black spots are much larger and more distinct and numerous than on the outside. Black fringe on the external edges, with seven white spots placed regularly, close to each other.

According to Mr. Smeathman, this butterfly and that represented in figures 3 and 4 of this plate, and indeed all the "Heliconii," are found in great numbers in those places where they breed, and are observed to bask and sport as much as possible in the sunshine, retiring towards sunset in great crowds to particular bushes. They breed chiefly in recent plantations, and near towns in general, so that, comparatively speaking, few of them are found in the ancient forests. Such however as inhabit them fly about the tops of the highest trees, seeking the honey from their flowers, and are seldom seen below.

ACRÆA MENIPPE.

Plate XIII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Helicon.), *Drury.*

ACRÆA MENIPPE. Alis oblongis integerrimis, anticis suprà fuscis nigro-punctatis; ad apicem fasciâ abbreviatâ maculisque marginalibus albidis; posticis fasciâ fulvâ latâ transversâ. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (Helic.) Menippe, *Drury, App. vol. 3. Stoll. Suppl. Cram. pl. 28. fig. 1. Herbst. tab. 81. f. 4. 5.*

Papilio H. Zetes? *Linn. Syst. Nat. 2. 766. No. 110*

Acræa Zethea, *Enc. Méth. ix. p. 236.*

HABITAT: Sierra Leone, and other parts of the Western Coast of Africa.

Upper Side. Antennæ black. Thorax black, with a row of four faint white spots next the neck. Abdomen at the base black, with yellow spots on the sides, the extremity being yellowish. Anterior wings very dark brown, almost black, clouded with faint dark orange marks and dark yellow spots, particularly along the external edges. Posterior wings deep orange, clouded with black next the body, and a deep black border along the external edges, with a row of eight small red spots running along the middle of it: these wings have also seven, eight, or more black spots on them.

Under Side. Palpi yellowish. Breast black, spotted with white on its sides. Anterior wings dusky orange-brown along the external edges, whereon is a row of dark orange oval spots, a whiteish cloud next them, and several different shaped black spots on the other part of the wings. Posterior wings cream-coloured, verged along the external edges with black, whereon is a row of white spots, and above it a row of small and very faint red ones: these wings next the body have a patch of a deep black, spotted with white, and verged with faint orange, and also several black spots.

This insect has been regarded as the Zetes of Linnæus; it does not appear however to agree with the Linnæan description, in which the anterior wings are said to be “nebulosis, punctatis:” nor with the habitat “in Indiis” given of that species.

HELICONIA GAZORIA.

Plate XIII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. HELICONIA, *Fabr. Latr. God.* Papilio (Helicon.), *Linn. &c.*

HELICONIA GAZORIA. Alis oblongis integerrimis, dimidiatim flavis hyalinisque margine exteriori fusco, posticis subtus (♀) maculâ baseos aurantiacâ (Expans. Alar. 2 unc.)

SYN. Heliconia Gazoria, *Latr. & God. Enc. Méth. ix. p. 214. No. 35.*

Papilio (Hel.) Euritæa, *Drury, App. vol. 3. (exclus. Syn. Crameri.)*

HABITAT: Rio Janeiro, Brazil.

Upper Side. Antennæ black. Head black, with small white spots. Neck orange. Thorax black, with grey marks. Abdomen black at top, and grey on the sides. Wings yellowish white, verged and tipped with black, without any marks or spots on them.

Under Side. Palpi and breast grey. Legs black. Abdomen white. Anus yellowish. Wings coloured as on the upper side.

BIBLIS HIARBAS.

Plate XIV. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. BIBLIS, *Fabr. Latr. God.* Papilio (Nymphal. Phal.), *Drury.*

BIBLIS HIARBAS. Alis dentatis, fuscis; fasciâ utrinque communi albâ, posticarum latiore, anticarum abbreviatâ.
(Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Nymph. Ph.) Hiarbas, *Drury, App. vol. 3. Donovan Ins. India, pl. 3. fig. 3. Fabr. Ent. Syst.*
111. 1. p. 128. No. 391.

Biblis Hiarba, *Enc. Méth. ix. p. 824. 2.*

HABITAT: Sierra Leone (*Drury*). Cape of Good Hope (*J. O. W.*).

Upper Side. Antennæ, head, thorax, and abdomen black. Wings deep brown, almost black: a white bar rises on the anterior ones near the tips, and running parallel with the external edges crosses the posterior ones, and ends just below the abdomen, gradually widening. Posterior wings at the abdominal corners tipped with orange, and having a double row of narrow white crescents along the external edges; the anterior wings having only a single row.

Under Side. Palpi white. Breast and legs grey-brown. Abdomen yellowish. The white bar and row of crescents nearly as on the upper side, but all the brown parts are prettily spotted and variegated with red-brown spots of different shapes; the general colour of the wings being a greyish brown. Wings dentated.

Fabricius cites Drury's collection alone for this species, incorrectly giving India as its habitat. Drury had previously stated it to have been received from Sierra Leone. Donovan, relying upon the former rather than the latter, figured the insect in his "Epitome of the Insects of India."

NYMPHALIS SEMIRE.

Plate XIV. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS SEMIRE. Alis subdentatis fuscis, fasciâ utrinque viridi interruptâ, posticis ad angulum ani ferrugineo maculatis; subtus omnibus basi luteis, nigro punctatis. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (N.) Semire, *Fabr. Spec. Ins. tom. 2. p. 88. Ent. Syst. 111. 1. p. 114. No. 351. Cramer, pl. 194. fig. B. C.*

Papilio (N. Ph.) Hippolyte, *Drury, App. vol. 3.*

Nymphalis Semire, *Latr. & God. Enc. Méth. ix. p. 392.*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Thorax and abdomen yellowish brown. Wings dusky greenish brown, and spotted with round black spots at the base. Anterior having ten distinct spots of a pea-green, of different sizes and forms. Posterior wings with a large central patch of pea-green, which being divided by the tendons appear like six distinct long spots; below this patch is a row of faint reddish triangular spots.

Under Side. Palpi and legs pale yellow. Breast grey. Abdomen yellowish. Wings with the

black spots much stronger, and the green spots more distinct than on the upper side. The general colour of the wings is much lighter, with a broadish cream-coloured bar running along the external edges, which, being separated by the tendons of the wings, appear like distinct streaks. Wings dentated.

VANESSA DELIUS.

Plate XIV. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. VANESSA, *Fabr. Latr. God. Hamadryades, Hübn. Papilio* (Nymph. Phal.) *Drury.*

VANESSA DELIUS. Alis dentatis suprâ fulvis basi extimoque fuscis, anticis apice strigâ punctorum alborum; posticis maculâ discoidali oblongâ ocellisque duobus analibus nigris, his extus caudatis, illis falcatis. (Expans. Alar. 2 unc. 5 lin.)

SYN. Papilio (Nymph. Phal.) Delius, *App. vol. 3.* (1783.)

Papilio N. Eurocilia, *Fabr. Ent. Syst. 111. 1. p. 79. No. 247.* (1793.)

Vanessa Demonica, *Latr. & God. Enc. Méth. ix. p. 301. No. 14.* (1819.)

HABITAT: Sierra Leone, with the two preceding (*Drury*). "In Indiis" (*Fabr.*). America? (*Enc. Méth.*).

Upper Side. Antennæ black. Thorax and abdomen red-brown. Anterior wings nearly black at the base, and also half of them next the tips, whereon are five small white spots, the middle of them being of a dark orange. Posterior wings also black at the base; each of them is furnished with two tails, the outward ones the longest; the external edges being bordered with dark brown, almost black, and all the middle part of the wing is dark orange.

Under Side. Palpi and legs yellowish. Breast dark brown. Abdomen yellowish. Wings with blackish and dark brown spots and marks, not to be distinctly described. Anterior wings with a broad yellowish bar crossing them from the anterior edges to the lower corners; while the posterior are also remarkable for a blueish patch placed between the outer tails and the abdominal corners.

The locality given by our author is evidently correct, because he was furnished with information respecting its habits by Mr. Smeathman, who stated that it breeds chiefly near open and cultivated spots, or in recent plantations, and sports in the sun like the *Acrææ*.

MORPHO LAERTES.

Plate XV. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. MORPHO, *Fabr. Latr. God. Papilio* (Equit. Achiv.), *Drury.*

MORPHO LAERTES. Alis subdentatis, utrinque margaritaceo-albis, anticarum fasciâ costali nigrâ, posticis subtus strigâ ocellorum lunulisque marginalibus. (Expans. Alar. 6 unc. 3 lin.)

SYN. Papilio (Eq. Achiv.) Laertes, *Drury, App. vol. 3. Esper Pap. Exot. tab. 43. f. 2. Fabr. Ent. Syst. 111. 1. p. 84. No. 262. Enc. Méth. ix. p. 444.* (Morpho L.)

Papilio Epistrophus, *Fabr. Ind. Alphab. to Ent. Syst. p. 124. Donovan Nat. Repos. 4. 143.*

HABITAT: Brazil.

Upper Side. Antennæ white. Thorax and abdomen whiteish. Wings blueish white; anterior tipped with dark brown, with half the front edges next the body verged with dark brown, which, at the extremity,

joins to a streak about three-fourths of an inch long, running from these edges towards the centre of the wing, near to which is placed two darkish round spots. Posterior wings having a row of dark crescents placed along the external edges, which becomes double near the abdominal corners; and a row of faint whiteish streaks crossing them from the anterior to the abdominal edges, meeting about an inch below the body.

Under Side. Palpi, legs, breast, and abdomen white. Wings coloured as on the upper side. The two round spots on the anterior ones are black; and the row of faint-coloured streaks crossing the posterior ones are here very strong; each streak being white, and placed on a brown ground, edged with yellow. Margins of the wings slightly dentated.

Fabricius, in the *Entomologia Systematica*, described two butterflies under the name of *Papilio* (N.) *Laertes*, No. 226. from Surinam figured by Cramer, and No. 262, from South America, figured by Drury. As the former species had the priority in point of date, Fabricius, in the alphabetical index to that work, altered the name of Drury's insect to *Epistrophus*. By the establishment, however, of the genus *Morpho*, comprising the insect figured by Drury, the difficulty is obviated, and as the species is universally known under the name of *Laertes*, it does not appear requisite to adopt the name of *Epistrophus*.

NYMPHALIS (CATAGRAMMA) HYDASPES.

Plate XV. fig. 2, 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr. God.* *Papilio* (Nymphalis), *Fabr.* SUBGENUS: Catagramma, *Boisduval*.

NYMPHALIS (CATAGRAMMA) HYDASPES. *Alis subdentatis, nigris, basi suprâ nitidè cyaneis, anticis utrinque fasciâ chermesinâ abbreviatâ; posticis subtùs annulis duobus flavis punctisque quatuor ocellaribus.*
(*Expans. Alar. 1 unc. 10 lin.*)

SYN. *Papilio* (Pleb. rur.) *Hydaspes*, *Fabr. MSS.* cited by *Drury, App. vol. 3.* (1783.) nec *Fabr. Ent. Syst.*

111. 1. p. 54. No. 167. (1793.)

Nymphalis Hydaspes, *Latr. & God. Enc. Méth. ix. p. 424.* (nec *Cat. Hydaspes*, *Boisd. Hist. Nat. Lep. 1.*

pl. 9. f. 2., Donovan Nat. Repos. vol. 2. pl. 60.)

Biblis Hesperia, *Perty Delect. Anim. art. Bras. pl. 30. f. 4. a. b.*

HABITAT: Brazil.

Upper Side. Antennæ black. Eyes, thorax, and abdomen dark brown, nearly black. Anterior wings black, but of a fine shining blue at the base. A streak of a beautiful red colour crosses these wings from the middle of the anterior edges to the lower corners, stopping at a little distance therefrom. Posterior wings black, with a most beautiful blue patch on them next the body.

Under Side. Palpi black. Mouth white. Tongue and breast black. Abdomen white. Anterior wings nearly coloured as on the upper side, but next the body verged with white. A white streak also crosses them near the tips; and at a small distance from the body is placed a small round spot of a most beautiful red colour. Posterior wings black, with white lines running along the abdominal and outer edges. The centre is adorned with four small round spots, three blue, one white, surrounded by a white line in a oval form. Wings slightly dentated.

Drury referred this insect to the then unpublished *Papilio Hydaspes*, on the authority of Fabricius's handwriting, (his specimen having most probably been thus labelled by that author.) The authors of the *Encyclopédie Méthodique* also cite Drury's figure under *Hydaspes*. Fabricius, however, cites only the Banksian Cabinet, and Mr. Donovan's figure taken from the Banksian specimen, and published in the *Naturalist's Repository*, Vol. 2. Pl. 60. convinces us that Drury's insect is specifically distinct from that described by Fabricius, although evidently identical with the insect described as *Hydaspes* in the *Encyclopédie Méthodique*. Under these circumstances I have considered it most advisable to retain the name of *Hydaspes* for Drury's insect, under which name it was known for the space of ten years before the publication of the Fabrician *Hydaspes*, to which a new specific name must be applied. As there are several other nearly allied Brazilian species, it is not impossible that Fabricius, from recollection alone, applied the name of *Hydaspes* to Drury's specimen, having previously described the insect from the Banksian Cabinet, the under surface of which especially is very different from that figured by Donovan.

NYMPHALIS HIPONA.

Plate XVI. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr. Godl.* *Papilio* (Nymphalis), *Fabr.*

NYMPHALIS HIPONA. Alis suprà nigris, anticis fulvo flavoque variis: posticis caudatis basi fulvo apice nigro strigâ marginali punctorum alborum. (Expans. Alar. 4 unc.)

SYN. *Papilio* (Nymph.) *Hipona*, *Fabr. Sp. Ins.* 2. p. 54. No. 258. *Ent. Syst.* 111. 1. p. 180. No. 559. *Donovan Ins. India*, pl. 35. fig. * *Encycl. Méth.* ix. p. 362.

Papilio (Nymph. Phal.), *Cramer*, pl. 90. fig. C. D. *Stoll Suppl. Cramer*, pl. 2. fig. 1. & 1. A. B. C. *Drury, App.* vol. 3.

HABITAT: Brazil (*Drury*). Guiana, Antilles (*Enc. Méth.*).

Upper Side. Antennæ black at the base, but yellow at the extremities. Thorax and abdomen greenish brown. Anterior wings angulated, and black, but orange-brown at the base; posterior edges verged with black. An irregular indented yellow bar crosses them from the middle of the anterior edges to the middle of the external ones; and near the tips are placed two white spots, one large, of an oval shape, and a small round one. Posterior wings with two tails, chiefly of a yellow-brown colour, but having a black circular patch placed along the external edges, and reaching nearly from the abdominal to the upper corners, whereon are placed three white crescents and a small round spot.

Under Side. Palpi yellowish. Tongue dark brown. Legs yellowish. Breast dark brown. Abdomen yellowish. Wings ornamented with such a variety of soft colours, as renders it impossible to describe them minutely.

The transformations of this curious species have been figured by Stoll in his supplementary volume to Cramer. The caterpillar is of a dark green, with a black dorsal line and lateral spots of the same colour. The head is black, with two yellow spots, and furnished with two short obtuse spines. It lives upon a plant called "poirvier," feeding

only by night, remaining during the day concealed in a kind of case, which it forms by rolling up a leaf. The chrysalis is short, and thick, without angular prominences, of a grey colour, with black dots. It attaches itself by the tail to the stem of the plant upon which it feeds.

Fabricius erroneously gives India as the habitat of this species, whence Donovan has introduced it into his work upon the insects of that country.

NYMPHALIS ORSIS ♂.

Plate XVI. fig. 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis), *Fabr.*

NYMPHALIS ORSIS. Alis nigris, (in mare cœruleo-micantibus) strigis tribus macularibus albis, prima et secunda corpus secantibus. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Orsis, *Drury, App. vol. 3.*

Papilio (N.) Oisis, *Fabr. Ent. Syst.* 111. 1. p. 124. No. 378. (♂.) *Enc. Méth.* ix. p. 381. No. 102. (Nymphalis O.)

Papilio N. Blandina, *Fabr. Ent. Syst.* 111. 1. p. 129. (♀.) *Donovan Ins. India, No. 2. pl. 1. f. 3.*

HABITAT: Brazil (*Drury, &c.*). In Indiis (*Fabr.*). East India (*Donovan*, erroneously).

Upper Side. Antennæ, thorax, and abdomen brown, the latter having six spots on it. Wings very dark changeable blue; anterior having a pale streak crossing them a little way on each side the thorax, with several other small ones on other parts.

Under Side. Palpi very small, hairy, and white. Thorax, legs and abdomen white. Wings pale red-brown, having a shade of darker colour running along their external edges, and on the anterior ones are placed two faint-coloured streaks, running from the external edges towards the middle of the wings. Margins of the wings angulated and dentated.

CASTNIA THAIS.

Plate XVI. fig. 4.

ORDER: Lepidoptera. SECTION: ———? (Hesperi-Sphinges, *Latr.*) FAMILY: Castniidæ.

GENUS. CASTNIA, *Fabr. Latr. God. Dalm.* Papilio (Dan. Festiv.), *Drury.*

CASTNIA THAIS. Alis anticis supra fusco-viridibus, nitidis, basi fasciisque duabus carneo-griseis; posticis rubris fasciis duabus margineque nigris. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Dan. Festiv.) Thais, *Drury, App. vol. 3.*

Castnia Thalaira, *Latr. God. Enc. Méth.* ix. p. 800. No. 14.

HABITAT: Brazil.

Upper Side. Antennæ brown. Thorax, abdomen, and anterior wings red-brown; the latter having two streaks or bars of a lighter colour crossing them from the anterior edges to the posterior and external ones; one crossing the middle of the wing, the other nearer the tips. Posterior wings orange; the lower part black along the external edge, whereon are placed a row of square orange-coloured

spots, those next the upper corners reaching to the edge; a black line also crosses these wings, beginning just below the body, and running almost across to the upper corner.

Under Side. Palpi and thorax red-brown. Abdomen yellowish. Anterior wings yellowish clay-coloured, with three black lines crossing them transversely, the middle one being the broadest. Posterior wings orange-brown, with a small white spot placed near the centre. Margins of the wings plain.

HESPERIA OPHION.

Plate XVII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Hesperiidæ, *Steph.*

GENUS. HESPERIA, *Fabr. Latr.* Erinnys p. *Schr.* Papilio (Pleb. Urb.), *Drury.*

HESPERIA OPHION. Alis fuscantibus, anticis utrinque punctis quinque discoidalibus alterisque tribus subapicalibus albis; posticis subtus albis margine antico nigro 3-maculato serieque punctorum submarginalium. (Expans. Alar. 1 unc. 10 lin.)

SYN. Papilio (Pleb. Urb.) Ophion, *Drury, App. vol. 3. Stoll Suppl. Cram. pl. 26. f. 4.*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Head with five small white spots. Thorax, abdomen, and wings dark greyish brown; anterior wings having a cluster of five small oval transparent white spots placed near the middle of the wings, and three very small round spots of the same kind nearer the tips. Several faint dark spots are also dispersed on these and the inferior wings.

Under Side. Palpi above brown, beneath white. Breast, legs, and abdomen white. Anterior wings coloured as on the upper side. Posterior white, but along the anterior edges brown, where are three black spots placed on each wing. A row of brown spots is also placed along the external edges, and another row of very small ones above them. Margins of the wings entire.

The African species of Hesperiidæ (according to Mr. Smeathman), including those represented in these and the two following figures, sport in the sun, and are remarkable for their very sudden and rapid short flights from bush to bush.

HESPERIA (EUDAMUS) ORION.

Plate XVII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Hesperiidæ.

GENUS. HESPERIA, *Latr. Fabr.* Thymele p. *Fabr.* (Syst. Gl.) Heteropterus, *Duméril.* SUBGENUS: Eudamus, *Swains. Boisd.*

HESPERIA (EUDAMUS) ORION. Alis nigro fuscis, anticis fasciâ tenui maculari subbifidâ punctisque subapicalibus; posticarum limbo externo caudisque albis. (Expans. Alar. 2 unc.)

SYN. Papilio Orion, *Fabr. Mant. Ins. 2. p. 85. No. 774. Cramer, pl. 155. f. A. B. Drury, App. vol. 3.*
Papilio (Pleb. Urb.) Proteus, var. β . *Linn. Mus. Lud. Ulr. p. 333. Enc. Méth. ix. p. 729. No. 4. (Hesp. O.)*
Eudamus Doryssus, *Swains. Zool. Illustr. N. Ser. pl. 48.*

HABITAT: Sierra Leone (*Drury*, correctly?). Brazil, Surinam (*Fabr. Enc. Méth. &c.*).

Upper Side. Antennæ black. Thorax, abdomen, and wings dark olive brown. Anterior wings having a small narrow transparent white line crossing them from the anterior edges to the lower corners,

intersected by the brown tendons of the wings. Posterior wings terminating in two white, short, and broad tails.

Under Side. Palpi white. Breast, abdomen, and wings coloured as on the upper side; the posterior differing merely in having their outward edges bordered with white.

This insect belongs to the subgenus *Eudamus* proposed by Mr. Swainson, in the new series of his beautiful Zoological Illustrations, and appears in no respect to differ from that which he has figured under the name of *Eudamus Doryssus*. He observes that the type of this group is the *Hesperia Proteus* Fabr.; that all the species, of which there are nearly thirty, are from America; that their flight is exceedingly rapid in the morning and evening, and that they rest with their wings perpendicular. Drury, on the other hand, gives Sierra Leone as the habitat, and adds, moreover, on the authority of Mr. Smeathman, that this species, like the last, sports in the sun, and is remarkable for the very rapid short flights it takes from bush to bush, so as to be caught with great difficulty. In his manuscripts, however, I find this species marked as being from “Madras, Mr. Skeene, 1772.”

NYMPHALIS JANAIS.

Plate XVII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis), *Fabr.*

NYMPHALIS JANAIS. Alis subdentatis, nigris; anticis utrinque albo-punctatis; posticis supra disco rubro, subtus basi flavo et nigro, punctato. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Janais, *Drury, App. vol. 3.*

Nymphalis J., *Latr. et God. Enc. Méth. ix. p. 392. No. 146.*

HABITAT: “Sierra Leone” (*Drury*, in text). “Rio Janeiro, Mr. Bonifas, 1776” (*Drury's MSS.*).

Upper Side. Antennæ, thorax, abdomen, and anterior wings black, the latter with a number of small white spots dispersed over different parts of the wings. Posterior wings black; the middle part fine carmine red, the scolloping next the abdominal corners being verged with white.

Under Side. Palpi black. Legs brown. Breast and abdomen black. Anterior wings coloured as on the upper side. Posterior wings as on the upper side, but next the body having a large patch of a yellow colour, on which are several small black spots. The red part of these wings is surrounded by a row of small white spots, placed on the black ground.

ACRÆA UMBRA.

Plate XVIII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Heliconii), *Fabr. olim.*

ACRÆA UMBRA. Alis oblongis integerrimis brunneis, extimo suprâ latè fusco, posticis subtus ad basin nigro punctatis. (Expans. Alar. 3 unc. 9 lin.)

SYN. Papilio (Dan. Fest.) Umbra, *Drury, App. vol. 3.*

Papilio (Hel. U.), *Fabr. Ent. Syst. 111. 1. p. 172. No. 535. Enc. Méth. ix. p. 236. (Acraea U.)*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Thorax black, with several white spots. Abdomen black, with five dark yellow spots on each side, and five rings of the same colour placed between them. Apical half the anterior wings a very dark brown, almost black; basal half, dark yellow-brown. One-third of the posterior wings, next the outer edges, almost black; the remainder of a dark yellow-brown. The black spots described on the under side are discernible on this side.

Under Side. Palpi black above, but whiteish underneath. Legs the same. Breast nearly black, with white spots. Abdomen yellowish. Anterior wings a very dark brown of a yellowish tinge; the posterior having a number of small black spots (about 18) situate near the body. Margins of the wings nearly entire.

The minute black spots at the base of the posterior wings, described by Drury and Fabricius, are not represented in the figure.

ACRÆA DICE.

Plate XVIII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Helicon.), *Fabr. olim*

ACRÆA DICE. Alis oblongis integerrimis concoloribus, anticis hyalino-cinerascentibus; posticis fulvis nigropunctatis, margine exteriori latè hyalino. (Expans. Alar 2 unc. 1½ lin.)

SYN. Papilio (Helicon.) Dice, *Drury, App. vol. 3.* (1783.)

Papilio (H.) Quirina, *Fabr. Ent. Syst.* 111. 1. p. 159. No. 492. (1793.) *Enc. Méth.* ix. p. 231. No. 2. (Acræa Q.)

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*). Madras (*Fabricius*).

Upper Side. Antennæ, eyes, thorax, and abdomen black; the latter having a row of white spots on each side, extending to the anus. Anterior wings thin and diaphanous; with a red streak along their posterior edges, reaching to the body from the lower corners, whereon is a small black line close to the body, with a small black round spot just below it. Posterior wings red, having a diaphanous border running along the external edges from the upper to the abdominal corners. These wings next the body are dark brown, and on the red are dispersed several small black spots, varying in number.

Under Side. Palpi brown. Fore legs yellow; the others yellow and brown. Breast spotted black and white. Abdomen ringed with yellow. Wings coloured as on the upper side, but the red is fainter; the dark brown part on this side is grey, and the black spots larger and more distinct. Margins of the wings entire.

ACRÆA CIRCEIS.

Plate XVIII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Heliconii), *Fabr. olim.*

ACRÆA CIRCEIS. Alis oblongis integerrimis; anticis hyalinis, nervis margineque fuscis, posticis fuscis fasciâ flavescenti, transversâ mediâ, his subtus basi cinereis nigroque punctatis. (Expans. Alar. 2 unc.)

SYN. Papilio Circeis, *Drury, App. vol. 3. Herbst. Pap. tab. 81. fig. 6. 7.*

Papilio (Parnass.) Mandane, *Fabr. Syst. Ent. 111. 1. p. 183. No. 565. Encycl. Méth. ix. p. 239. 29.*
(Acræa M.)

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen black, the latter spotted with white. Anterior wings diaphanous, the edges bordered with brown. Posterior wings russet brown, having a broad yellow bar crossing them about the middle of the abdomen, and reaching almost from one upper corner to the other; above the bar, next the body, are a number of black spots.

Under Side. Palpi, legs, and abdomen yellowish. Breast brown. Anterior wings coloured as on the upper side. Posterior wings grey in those parts where they are brown on the upper side; the yellow bar being fainter, but the black spots stronger, and amounting to ten in number. Margins of the wings entire.

Here, as in many places elsewhere, I have reverted to Drury's name, which Fabricius unwarrantably changed in the subsequently published *Entomologia Systematica*, and which in most cases the authors of the *Encyclopédie Méthodique* have adopted.

SATURNIA ALINDA.

Plate XIX.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Bombycidae, *Steph.*

GENUS. SATURNIA, *Schrank.* Attacus, *Germar.* Bombyx p., *Ochs.* Phalæna (Attacus), *Drury.*

SATURNIA ALINDA. Alis rufo-brunneis margine saturationibus signisque nonnullis undulatis obscuris, anticis maculâ discoidali fenestratâ; posticis ocello magno centrali. (Expans. Alar. 7 unc. 9 lin.)

SYN. Phalæna Attacus Alinda, *Drury, App. vol. 3. Oliv. Enc. Méth. 5. p. 26. 10.* (Bombyx A.)

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ pectinated. Neck buff-coloured. Thorax and abdomen brownish red, the centre of the former being grey. Anterior wings brown-red, darkest along the external edges, with two faint dark indented lines crossing them from the anterior to the posterior edges. A transparent spot is placed near the middle of the wings, about a quarter of an inch from the anterior edges, without any iris of a different colour. Posterior wings brown-red, and darkest along the external edges, having a few faint waved lines. Near the middle is a small transparent spot, edged with buff at the bottom, surrounded by a dark brown border, and which is also encircled by another quite black.

Under Side. Breast red-brown. Legs, abdomen, and wings entirely of a dark buff. All the faint waved lines, hardly discernible on the other side, are here very conspicuous. Close to the transparent spots, on the anterior wings, are two of a dark brown, and two larger are also placed close to the transparent ones in the posterior wings, without any of the circular ones which are on the upper side. Margins of the wings entire.

NYMPHALIS ALTHEA.

Plate XX. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr. God.* Papilio (Nymphalis), *Fabr.*

NYMPHALIS ALTHEA. Alis dentatis suprâ fuscis, fasciâ strigâque angulato-dentatis albis; subtus flavescentibus lituris atris fasciâ strigisque iisdem. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (N.) Althea, *Fabr. Spec. Ins.* 2. p. 88. No. 389. *Ent. Syst.* 111. 1. p. 113. No. 347. *Cramer, pl.* 89. fig. E. F.

Nymphalis A., *Enc. Méth.* ix. p. 383. No. 111.

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ brown. Thorax, abdomen, and wings dark brown; a row of ash-coloured crescents cross the latter from the middle of the posterior to the anterior edges, uniting with a bar of the same colour, which crosses the posterior wings, meeting below the abdomen: another row of ash-coloured marks, like beards of arrows, are placed between the above-mentioned row and the external edges, which are bordered with some faint lightish marks. Posterior wings with an additional row of light arrow beards running along the external edges, which are also bordered with faint lightish marks like the anterior.

Under Side. Palpi white. Breast and legs light clay-coloured. Wings paler than on the upper side, being greyish brown. The light-coloured bar, crossing the wings and meeting below the abdomen, is very conspicuous on this side. The markings are much the same as on the upper. Margins of the wings dentated.

VANESSA AMESTRIS.

Plate XX. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. VANESSA, *Fabr. Latr. God.* Hamadryades, *Hübner.* Papilio (Nymph. Phal.), *Drury.*

VANESSA AMESTRIS. Alis dentatis, anticis falcatis posticis rotundatis; omnibus suprâ fuscis ad extimum fasciis tribus macularibus transversis, intermediâ ferrugineâ, (ad apicem maculis duabus albis) cæteris cœrulescentibus subtus marmoratis. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (N. P.) Amestris, *Drury, App.* vol. 3.

Papilio (N.) Amestris, *Fabr. Ent. Syst.* 111. 1. p. 116. 360.

Papilio (N.) Zingha, *Fabr. loc. cit.* No. 358.

Vanessa Erinna, *Enc. Méth.* ix. p. 315.

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*). "In Indiis, Dom Drury" (*Fabr.* sub P. N. Amestris, incorrectly).

Upper Side. Antennæ black. Thorax and abdomen very dark. Anterior wings dark brown, with a row of red crescents inverted, placed near the external edges; above them are several blueish marks and dashes. Two square reddish spots are placed near the shoulders, having blueish borders. Two small round white spots are situated near the tips of each wing, and along the external edges are several blueish spots. Posterior wings nearly corresponding with the anterior. The row of red crescents is continued along these wings, and meets below the abdomen. The rows of blueish spots are also continued along the borders.

Under Side. Breast and legs dark brown. Wings very dark brown, variegated with many brown markings, in such manner as not to be described. A single white spot is situate at the tips of the anterior ones, and a series of small round spots run along the borders of all the wings. Margins of the wings deeply dentated.

NOCTUA TRISTIS.

Plate XXI. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. NOCTUA, *Auct.* SUBGENUS — ?

NOCTUA TRISTIS. Alis fuscis nigro-atomosis, dimidio basali saturatori strigâque ad angulum internum anticarum nigrâ. (Expans. Alar. 1 unc. 10 lin.)

SYN. *Phalæna* (Noctua) *Tristis*, *Drury, App. vol. 3.*

HABITAT: "Cape of Good Hope" (*Drury*, in text). "Jamaica" (*Drury's MSS.*).

Upper Side. Antennæ brown and setaceous. Thorax and abdomen grey-brown. Anterior wings grey-brown, having a small streak of a very dark colour placed near the lower corners, and two smaller ones at the tips; a large patch of the same colour occupies the middle of the wings, extending some way towards the shoulders. Posterior wings greyish-coloured, without any marks.

Under Side. Tongue not observed. Legs, breast, and abdomen greyish. Anterior wings darker on this side than on the upper; the anterior edges being white, and the dark streak at the lower corners very observable. Posterior wings coloured as on the upper side, and having two dark-coloured marks placed near the middle of the wings. Margins of the wings entire.

GNOPHRIA? COLLARIS.

Plate XXI. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Lithosiidæ, *Steph.*

GENUS. GNOPHRIA? *Steph.* *Lithosia* p., *Fabr.* *Phalæna* (Noctua), *Drury.*

GNOPHRIA? COLLARIS. Alis nigris, anticarum maculâ pone medium albâ, collari sanguineo. (Expans. Alar. 1 unc. 9 lin.)

SYN. *Phalæna* (Noctua) *Collaris*, *Drury, App. vol. 3.*

HABITAT: Brazil. "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black and setaceous. Thorax, abdomen, and wings blueish black, immaculate, except an oval white spot placed on the anterior ones, about a quarter of an inch from the tips.

Under Side. Palpi black. Tongue and neck yellow. Legs, breast, and abdomen grey. Anus yellow. Wings black, the anterior having a small white longitudinal streak near the shoulders, and the oval spot seen on the upper side. Posterior wings also fringed with white. Margins of the wings entire.

CALLIMORPHA CÆNEA.

Plate XXI. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA, *Latr.* Phalæna (Noctua), *Drury.*

CALLIMORPHA CÆNEA. Alis nigris, anticis fasciâ latâ transversâ, margineque antico posticarum flavescentibus.
(Expans. Alar. 2 unc. 9 lin.)

SYN. Phalæna Noctua Cænea, *Drury, App. vol. 3.*

HABITAT: Drury (incorrectly?) states that he received this insect both from Madras and Brazil. "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black and setaceous. Thorax and abdomen nearly black. Wings deep brown, nearly black; the anterior having a yellow band crossing them from the anterior edges to the lower corners; and the posterior having a broad yellow streak on the anterior edges.

Under Side. Coloured as on the upper side. Margins of the wings entire.

GEOMETRA (PÆCILOPHASIA) FULVATA.

Plate XXI. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Geometridæ, *Steph.*

GENUS. GEOMETRA, *Steph.* (SUBGENUS: Pæcilophasia? *Steph.*)

GEOMETRA (PÆCILOPHASIA) FULVATA. Alis fulvescentibus fasciâ latâ communi dilutiori, anticarum puncto subdiscoidali. (Expans. Alar. 1 unc. 7 lin.)

SYN. Phalæna (Geometra) fulvata, *Drury, App. vol. 3.*

HABITAT: Africa. "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ setaceous and yellow. Thorax and abdomen yellow. Wings deep straw-coloured, the anterior having a small black spot placed near the middle of the anterior edges. A small narrow line of a silverish colour runs along the external edges of these wings, beginning near the tips, and continuing along the edges of the posterior ones, ends at the abdominal corners.

Under Side. Breast, legs, and abdomen whiteish. Wings coloured as on the upper side, but dappled with minute reddish streaks. Margins of the wings entire.

NOCTUA (CALYPTRA) LUGUBRIS.

Plate XXI. fig. 5.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. NOCTUA, *Auct.* SUBGENUS: Calyptra, *Ochs.* Gonoptera, *Latr.*

NOCTUA (CALYPTRA) LUGUBRIS. Alis anticis dentatis subfalcatis, brunneo-fuscis basi saturatoribus, maculis dentatis submarginalibus. (Expans. Alar. 1 unc. 7½ lin.)

SYN. Phalæna (Noctua) lugubris, *Drury, App. vol. 3.*

HABITAT: Madras.

Upper Side. Antennæ brown and setaceous. Thorax ash-coloured. Abdomen and wings rusty iron, without marks, except the anterior, which have some faint blueish marks close to the external edges.

Under Side. Tongue not noticed. Breast, legs, and abdomen dark red. Wings redder-coloured than on the other side, without marks: anterior wings dentated, the posterior entire.

NOCTUA (ACONTIA) MARGARITATA.

Plate XXI. fig. 6.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ.

GENUS. NOCTUA, *Auct.* SUBGENUS: Acontia, *Ochs. Steph. Curtis.* Phalæna (Noctua), *Drury.*

NOCTUA (ACONTIA) MARGARITATA. Argenteo-alba, alis anticis pone punctum ordinarium fuscis, maculâ magnâ albâ costali margineque postico albo, lunulis punctisque nigricantibus, posticarum margine fusco.
(Expans. Alar. 1 unc. 5 lin.)

SYN. Phalæna Noctua Margaritata, *Drury, App. vol. 3.*

HABITAT: New York.

Upper Side. Antennæ brown and setaceous. Thorax and abdomen silvery white. Anterior wings at the shoulders silvery white, the remainder being of a shining red-brown, with the edges fringed with white; a large spot of silver colour is situate near the tips, on the anterior edges. Posterior wings silvery white, but along the external edges darker coloured.

Under Side. Tongue not noticed. Breast, legs, and abdomen white. Anterior wings silvery grey, being edged and fringed with yellow. Posterior wings coloured as on the upper side, without markings. Margins of the wings entire.

NOCTUA GUTTATA.

Plate XXII. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. NOCTUA, *Auct.* (SUBGENUS: ———?)

NOCTUA GUTTATA. Alis griseis punctis nonnullis discoidalibus strigisque apicalibus obscurioribus. (Expans. Alar. 1 unc. 7½ lin.)

SYN. Phalæna (Noctua) Guttata, *Drury, App. vol. 3.*

HABITAT: "Brazil" (*Drury*, in text). "Cape of Good Hope, Mr. Foster, 1775" (*Drury's MSS.*).

Upper Side. Antennæ setaceous. Thorax and abdomen grey. Anterior wings light-coloured, almost grey, the middle having some dark spots on them, and a few dark streaks near the tips. Posterior wings darker coloured, without spots.

Under Side. Palpi, breast, and abdomen grey. Anterior wings coloured as on the upper, immaculate. Posterior wings lighter-coloured than on the upper side. Margins of the wings entire.

NOCTUA ? HESIONE.

Plate XXII. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Steph.*

GENUS. NOCTUA? *Auct.* (SUBGENUS: ———?)

NOCTUA? HESIONE. Alis anticis brunneis strigâ longitudinali subcostali luteâ, fasciâque transversali dilutâ, strigis undulatis nigris marginatis, angulis posticis productis; posticis fulvis margine latè nigro.
(Expans. Alar. 2 unc.)

SYN. Phalæna (Noctua) Hesione, *Drury, App. vol. 3.*

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*).

Upper Side. Antennæ brown and setaceous. Thorax clay-coloured. Abdomen reddish. Anterior wings reddish-brown, with two darker bands crossing them; the anterior edges pale clay-coloured; a

small narrow clay-coloured line rises near the posterior edges close to the shoulders, and extends in a circular manner to the anterior edges: the lower corners of these wings are remarkably prominent. Posterior wings deep yellow, deeply bordered from the upper to the abdominal corners, with black.

Under Side. Palpi orange, remarkably long. Tongue spiral. Legs, breast and abdomen clay-coloured. Anterior wings dark-brown as on the upper side, the anterior edges yellow. Posterior wings paler yellow than on the upper side, and the black border not so distinct. Margins of the wings entire.

This insect is evidently the type of a distinct genus from any hitherto described, especially distinguished by the lively colours of the wings, the produced posterior angle of the anterior pair, and the form of the palpi.

ENDROMIS RHODOPE.

Plate XXII. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidæ.

GENUS. ENDROMIS, *Ochs. Germar.* Dimorpha, *Hübner.* Phalæna (Bombyx), (*Drury.*)

ENDROMIS RHODOPE. Alis albis pellucidis; strigis duabus undulatis parallelis submarginalibus, maculisque nonnullis discoidalibus anticarum virescentibus. (Expans. Alar. 2 unc. 6 lin.)

SYN. Phalæna (Bombyx) Rhodope, *Drury App. vol. 3.*

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1776" (*Drury's MSS.*).

Upper Side. Antennæ pectinated. Thorax and abdomen dark-brown, with some faint whiteish marks. Wings transparent white, having two rows of greenish crescents running along the external edges, the anterior wings having some faint marks of the same kind in the middle also. The anterior edges are of a yellow hue.

Under Side. Palpi white. Tongue not observed. Legs, breast, and abdomen white. Anus dark-brown. Wings coloured as on the upper side; the posterior ones having two brown spots on each near the abdominal corners. Margins of the wings entire.

CALLIMORPHA ? DIAPHANA.

Plate XXII. fig. 4.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidæ, *Steph.*

GENUS. CALLIMORPHA ? *Latr.* Phalæna (Noctua), *Drury.*

CALLIMORPHA ? DIAPHANA. Alis diaphanis, marginibus anticis et externis strigâque transversâ e margine antico ad angulum posticum ductâ, nigris. (Expans. Alar. 1 unc. 9 lin.)

SYN. Phalæna (Noctua) Diaphana, *Drury, App. vol. 3.*

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1774" (*Drury's MSS.*).

Upper Side. Antennæ pectinated. Thorax brown. Abdomen black, brown above. Wings diaphanous, the edges being bordered with black, a black band also crosses the anterior, from the anterior edges to the lower corners.

Under Side. Tongue spiral. Breast and legs black. Abdomen grey. Anus yellowish. Wings coloured on this side as on the upper. Margins of the wings entire.

CALLIMORPHA ? PHILETA.

Plate XXII. fig. 5.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* Phalæna (Noctua), *Drury.*

CALLIMORPHA? PHILETA. Alis anticis oblongis fuscis, fasciâ transversâ pone medium albâ, posticis fulvis margine externo nigro, thorace sanguineo. (Expans. Alar. 2 unc. 3 lin.)

SYN. Phalæna (Noctua) Phileta, *Drury, App. vol. 3.*

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black and setaceous. Thorax red, spotted, and striped with black. Abdomen yellow, with black streaks crossing it. Anterior wings sooty black, with a white band crossing each from the anterior edges to the lower corners. Posterior wings yellow, with a black border running along the external edges.

Under Side. Head and neck red. Legs streaked black and white. Breast and abdomen yellow, the latter spotted with black on each side. Wings coloured as on the upper side. Margins of the wings entire.

CALLIMORPHA ? EUCHARIS.

Plate XXII. fig. 6.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* Phalæna (Noctua), *Drury.*

CALLIMORPHA? EUCHARIS. Alis sulphureis, margine postico lato punctoque medio anticarum fuscis. (Expans. Alar. 1 unc. 6 lin.)

SYN. Phalæna (Noctua) Eucharis, *Drury, App. vol. 3.*

HABITAT: Brazil.

Upper Side. Antennæ setaceous. Thorax and abdomen brown. Anterior wings greyish yellow, with a single spot placed near the middle, almost close to the anterior edge. Posterior wings of the same colour as the anterior, and like them surrounded with a deep black border.

Under Side. Tongue spiral. Legs, breast, and abdomen grey. Wings coloured as on the upper side, the borders being fainter. Margins of the wings entire.

NYMPHALIS (CHARAXES) TIRIDATES.

Plate XXIII. fig. 1, 2.

ORDER: Lepidoptera, *Linn.* SECTION: Diurna, *Latr.* FAMILY: Nymphalidae, *Swainson.*

GENUS. NYMPHALIS, *Latr.* Papilio (Eq. achiv.) *Linn. Drury.* Papilio Nymphalis, *Fabr.* (SUBGENUS: Charaxes, *Boisduval.*)

NYMPHALIS (CHARAXES) TIRIDATES. Alis supra atro-cæruleis, margine postico lunulis ochraceis, omnium dimidio apicali punctis cærulescentibus. (Expans. Alar. 4 unc. 3 lin.)

SYN. Papilio (N.) Tiridates, *Fabr. Spec. Ins. 2. p. 11. No. 43. Cramer, pl. 162. f. A. B. Herbst. Pap. tab. 62. f. 3. 4. Donovan Ins. India, 3. pl. 2. f. 3.*

Nymphalis T., *Enc. Méth. ix. p. 354. 14.*

HABITAT: Amboyna, Java (*Fabr. & Enc. Méth.*). Brazil (*Drury, in text.*). "Rio Janeiro, Mr. Bonifas, 1766" (*Drury's MSS.*).

Upper Side. Antennæ black. Head dark brown, with four white spots on the crown. Thorax and abdomen dark brown. Wings fine dark blue, with a number of small light blue spots sprinkled on each wing. The anterior being edged with a row of yellow spots. Posterior wings furnished with four short tails and deeply scalloped, each scallop being edged with yellow.

Under Side. Palpi and abdomen clay-coloured. Breast and legs light hair-coloured. Anterior wings hair-coloured, with several small waved and irregular black lines half crossing them, from the anterior edges to the middle of the wing, each line being edged with blue. A black kidney-shaped spot is also situate next the lower corners, being also edged with blue. Posterior wings coloured as the anterior, and furnished with four short tails, having several irregular black lines on them near the body, which are edged with blue as on the anterior ones.

NYMPHALIS PYRAMUS ♂.

Plate XXIII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Sacins*.

GENUS. NYMPHALIS, *Latr.* Papilio (Pleb. rur.), *Drury*.

NYMPHALIS PYRAMUS. Alis nigris (in mare supra violaceo-micantibus) anticis utrinque fasciâ latâ miniatâ; posticis subtus irroratis strigâque marginali cærulescenti. (Expans. Alar. 1 unc. 7½ lin.)

SYN. Papilio Pyramis, *Fabr. Sp. Ins.* 2. 130. 590. *Ent. Syst.* 111. 1. p. 323. 223.

Papilio (Pleb. rur.) Pyramus, *Drury, App. vol. 3. Stoll Suppl. Cramer, pl. 32. f. 3. 3e. Enc. Méth. ix. p. 422.* (Nymphalis P.) *Donovan Nat. Repos. 1. t. 3. f. 2. 2.*

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1774" (*Drury's MSS.*).

Upper Side. Antennæ brown. Thorax and abdomen dark brown. Anterior wings at the extremities black, but next the body red-brown, the middle being occupied by a band which crosses them of a beautiful red, extending to the middle of the posterior ones, the remaining parts of which are of a fine blueish purple.

Under Side. Palpi, legs, breast, and abdomen white. Anterior wings next the body yellowish brown, the tips the same. The red band is not so strong on this side as on the upper, neither does it extend to the inferior wings, but is bordered with black on that side near the tips. Posterior wings yellowish brown, prettily variegated with very small lighter marks and spots, with a small faint blueish indented line running along the external borders.

The original Fabrician description of this insect is stated to have been derived from an insect from Cayenne in the collection of Mr. Yeats; and in the Fabrician detailed description, we find the wings characterized thus—"macula magna, *in medio*, fulva, anticæ subtus concolores." It appears, however, from the observations of Donovan that the celebrated iconographer Jones had made a drawing of Yeats's specimen, from which drawing Donovan published his illustration of the species in the Naturalist's Repository, with the following observations:—"There was a variety of this insect pretty nearly, but not exactly, according with this in the collection of an old and well-known entomologist, a figure of which appeared shortly after the publication of the Fabrician writings as the true Papilio

Pyramus. It was not precisely the same as it appeared to us from an inspection of the specimen in the Cabinet of Mr. Drury." Making due allowance for Donovan's over-charged colouring, there is still considerable difference between the figures of Drury and Donovan; in the former the fore-wings being almost entirely red on the under side, whilst in the latter, the upper side of same wings is red, except at the tips. In both these particulars, as will at once be seen from the above quotation of Fabricius, Drury's figure perfectly agrees with the character given of Yeats's specimen; whilst Donovan's differs in each respect. The female of this species is destitute of the purple gloss on the upper surface of the wings, and the red band does not run into the posterior pair.

SATURNIA PHÆDUSA.

Plate XXIV. and XXV.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Bombycidæ, *Steph.*

GENUS. SATURNIA, *Schrank.* Attacus, *Germ.* Phalæna (Attacus), *Drury.*

SATURNIA PHÆDUSA. Alis griseo-fuscis, anticis strigis tribus transversis saturatioribus maculæque parvâ triangulari fenestratâ mediâ; posticis obscurioribus oculo magno nigro, margine carneo-rufo cincto. (Expans. Alar. 7 unc. 9 lin.)

SYN. Phalæna (Attacus) Phædusa, *Drury, App. vol. 3.*

Bombyx Saturnus, *Fabr. Ent. Syst. 111. 1. p. 409.* *Oliv. Enc. Méth. 5. 27. 11.*

HABITAT: Sierra Leone (*Drury*). "In Indiis" (*Fabricius*).

Upper Side. PLATE XXIV. Antennæ broad in the middle and strongly pectinated, terminating in a point both at the base and extremity, the latter being like a thread. Head dark brown. The neck surrounded with a white collar. Thorax and abdomen greyish clay-coloured. Anterior wings the same, but towards their extremities becoming darker; the tips are angulated, and the edges a little scalloped; a dark line rises near the tips, which running across the wings ends near the middle of the posterior edges, but is there much fainter than at the tips. A small triangular transparent spot is situate near the centre of these wings, about three-eighths of an inch from the anterior edges. Posterior wings a little scalloped, being the same colour with the anterior next the abdomen, but darker towards the external edges. In the middle of these wings is a large eye, the pupil being black like velvet, surrounded with a narrow circle of a dark orange, round which is another cream-coloured circle, and this likewise is surrounded by a large border of a fine red-brown.

Under Side. PLATE XXV. Tongue not noticed. Thighs of the fore legs dark brown, the other legs lighter. Breast and abdomen light clay-coloured. Anterior wings the same, being next the body paler than towards the extremities; along the external edges is a pale indented border, running from the tips to the lower corners. Two dark brown spots are placed next the transparent one mentioned in the preceding description, and the dark line there mentioned is conspicuous on this side. Posterior wings coloured as the anterior, becoming darker towards the external edges. A pale indented border runs along the external edges, similar to that on the anterior wings. On the middle of these wings are four dark brown spots, two small and two large, being placed opposite to the eyes observed on the upper side; and just below them a dark line runs across from the upper corners to the middle of the abdominal edges.

In Mr. Drury's manuscripts I find the insect referred to these two figures is stated to have been obtained from the Duchess of Portland's Museum, and to be an inhabitant of New York.

NYMPHALIS LAODICE.

Plate XXVI. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Pleb. rur.) *Drury.*

NYMPHALIS LAODICE. Alis supra atro-cœruleis, limbo postico serie lunularum cœrulescentium; subtus fasciâ mediâ communi saturatori, posticis punctis marginalibus albis. (Expans. Alar. 3 unc. 9 lin.)

SYN. Papilio (Nymph. Phal.) Laodice, *Drury, App. vol. 3.* (1783.)

Papilio Lycurgus, *Fabr. Ent. Syst.* 111. 1. p. 67. No. 209. *Enc. Méth.* ix. p. 364. No. 49.

Nymphalis Lyc., *Paul. Beauv. Ins. d'Afr. et d'Amer. Lep. pl.* 4. f. 2.

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Thorax black. Abdomen dark brown. Wings very dark blue, almost black, the edges being dark brown; the anterior ones are angulated, and the posterior ones furnished with two short tails. A row of blue crescents, forming a line, runs along the posterior wings near the external edges, extending along part of the anterior ones, which also have two small oval blue spots, almost joined together, placed at the middle of the anterior edges, and one single one near the tips.

Under Side. Palpi not noticed. Legs brown above, and white beneath. Breast and abdomen dark brown. Wings soft brown, with some irregular and indented bands of a darker colour crossing them, particularly the posterior ones, which have a rather broad one running from the upper to the abdominal corners. These wings have also seven very small white spots placed along the external edges.

THECLA PHALEROS ♂.

Plate XXVI. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidæ, *Steph.*

GENUS. THECLA, *Fabr.* (Syst. Gloss.) Polyommatus, *Latr. God.* Hesperia p. *Fabr.* (olim.) Papilio (Pleb. rur.), *Drury.*

THECLA PHALEROS. Alis ♂ violaceo-cœruleis nitidis, ♀ albidis apice fusco, subtus albis fasciis transversis margineque nigris ad angulum ani conjunctis. (Expans. Alar. 1 unc. 9 lin.)

SYN. Papilio (Pleb. urb.) Phaleros, *Linn. Syst. Nat.* 2. p. 796. No. 272. *Enc. Méth.* ix. p. 628. (Polyomm. Ph.)

Hesperia R. Chiton, *Fabr. Ent. Syst.* 111. 1. p. 262. *Donovan Ins. India*, 1. pl. 3. f. 1.

Papilio Silenus, *Cram. pl.* 282. E.

Papilio Agis, *Drury, App. vol. 3.*

HABITAT: Brazil (*Drury*, in text). "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*). Surinam (*Enc. Méth.*). India (*Linn. Fabr. Donov.*).

Upper Side. Antennæ black. Thorax and abdomen dark blue. Wings blue, without marks. Posterior furnished with four small black tails, the tips of which are white. The abdominal corners are also edged with white.

Under Side. Palpi long, thin, and black, white at the base, as is the neck. Legs brown above and white beneath. Breast yellow. Abdomen blue. Wings yellow; the anterior having some brown,

irregular, and uneven lines crossing them from the anterior to the posterior edges. The external edges are also verged with brown, and at the lower corners have an orange-coloured patch. Posterior wings with three dark brown lines crossing them from the anterior edges to the abdominal corners, and externally edged with dark brown.

VANESSA PELARGA.

Plate XXVII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. VANESSA, *Fabr. Latr. God.* Hamadryades, *Hübner*. Papilio (Nymph. Phal.) *Drury*.

VANESSA PELARGA. Alis anticis falcatis, posticis intus subcaudatis, omnibus suprà fuscis, fasciâ cœrulescenti-albâ, nigro-punctatâ, extrorsumque fulvo inductâ; subtus xerampelinis lineâ fuscâ communi mediâ.
(Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (N.) Pelarga, *Fabr. Syst. Ent.* p. 513. No. 296. *Drury, App. vol. 3. Stoll Suppl. Cram. pl. 27. f. 2.*

Vanessa P., *Enc. Méth.* ix. p. 313. No. 37.

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ brown. Thorax and abdomen dark brown. Wings at the base dark olive brown; the anterior having two red and one blue crooked lines, a quarter of an inch long, placed near the anterior edges, which are also red. A white bar encircles all the brown part, beginning at the anterior edges, meeting just below the anus; the lower part of it being tinged with red or orange, on which are eight small round black spots, three on the anterior and five on the posterior wings. The external edges of all the wings are deeply bordered with olive brown, and near the tips are placed three small white spots, one larger than the rest. Abdominal groove orange. A few blue streaks are placed at the abdominal corners.

Under Side. Palpi long and white, but reddish above. Legs white. Breast and abdomen orange. Wings dark reddish brown, with very little variegations. The three white spots near the tips of the anterior wings are observable, and the five black spots on the posterior ones are faintly seen. Wings deeply angulated. The under side varies considerably in different specimens.

NYMPHALIS MELEAGRIS.

Plate XXVII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. Nymphalis, *Latr.* Papilio (Pleb. rur.), *Drury*.

NYMPHALIS MELEAGRIS. Alis suprà olivaceo-fuscis, subtus lutescentibus; utrinque albo, in triplici serie, multipunctatis. (Expans. Alar. 2 unc. 4½ lin.)

SYN. Papilio Meleagris, *Cramer, pl. 66. f. A. B. Herbst, t. 145. f. 1. 2. Drury, App. vol. 3. Fabr. Ent. Syst.* 111. 1. p. 128. *Enc. Méth.* ix. p. 387. (Nymphalis M.)

HABITAT: "Sierra Leone" (*Drury, in text*). "Brazil, Mr. Skeene, 1772" (*Drury's MSS.*).

Upper Side. Antennæ brown. Thorax, abdomen, and wings olive-brown, spotted with a number of round white spots edged with black; the anterior wings having twenty-five, the posterior eighteen, besides those placed on the external edges.

Under Side. Palpi white. Legs white. Breast yellowish. Abdomen olive-brown. Wings dusky orange; the white spots described on the upper side being here very discernible with the addition of a few others next the body. Margins of the wings entire.

NYMPHALIS (CHARAXES) ANTICLEA.

Plate XXVII. fig. 5, 6.

ORDER: Lepidoptera, *Linn.* SECTION: Diurna, *Latr.* FAMILY: Nymphalidæ, *Sicains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Eq. achiv.), *Linn.* *Drury.* Papilio Nymphalis, *Fabr.* (SUBGENUS: Charaxes, *Boisduval.*)

NYMPHALIS (CHARAXES) ANTICLEA. Alis suprà fuscis fasciâ terminali fulvâ, in anticis maculari et abbreviatâ, in posticis ocellis 4, anali sesquialtero. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (Nymph. Phal.) Anticlea, *Drury, App. vol. 3.*
Nymphalis Ant., *Enc. Méth. ix. p. 353. No. 9.*

HABITAT: Sierra Leone (*Drury*, in text). "Rio Janeiro, Mr. Bonifas, 1766" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen dark brown. Anterior wings chocolate-coloured; the lower corners being tipped with orange, to the upper part of which joins a spot of the same colour, and another small one is placed nearer the tips. The basal parts of the posterior wings chocolate, the apical parts orange; they are doubly angulated, and at the abdominal corners have a black ocellus with two white pupils, and a small orange spot below them; three other small eyes are also placed along the external edges.

Under Side. Palpi and legs buff-coloured. Breast russet. Abdomen dark orange. Wings russet-coloured, with bands of lighter and darker shades running from the anterior edges of the anterior wings, and ending below the body on the abdominal edges, some of the bands being verged with black. Anterior wings having three small black spots placed near the shoulders, and the posterior with two small white spots at the abdominal corners, and four others placed along the external edges, growing fainter as they approach the upper corners, till at length they are quite lost.

ACRÆA HORTA.

Plate XXVIII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. ACRÆA, *Fabr. Latr.* Papilio (Heliconii), *Fabr. olim.*

ACRÆA HORTA. Alis oblongis integerrimis, supra fulvis; anticis ad extimum hyalino-cinerascentibus, posticis utrinque nigro punctatis subtusque albidis. (Expans. Alar. 2 unc. 7½ lin.)

SYN. Papilio (Helic.) Horta, *Linn. Syst. Nat. 2. p. 755. No. 54.* *Drury, App. vol. 3.* *Cramer, Pap. pl. 298. fig. F. G.* *Herbst, Pap. tab. 83. f. 1. 2.* *Enc. Méth. ix. p. 231. 1.*

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*). Cape of Good Hope, and other parts of Africa (*Enc. Méth.*).

Upper Side. Antennæ, thorax, and abdomen black, the latter spotted on its sides. Anterior wings, next the body dark orange, but at the tips about two-fifths are pellucid. Near the middle, towards the anterior edge, is a small black spot, and a streak of the same colour. Posterior wings dark orange, black at the base, with a narrow border of orange and black running along the external edges, and a group, consisting of fifteen different shaped black spots, occupying the middle.

Under Side. Palpi hairy and light coloured. Legs and breast black. Abdomen light brown. Anterior wings very glossy, the marks on the upper side being so faint as to be scarcely discernible. Posterior wings cream-coloured, with the same number of black spots, but stronger and more distinct than those on the upper side. The external edges bordered with orange, within which is a small narrow black border, with light cream spots. Margins of the wings entire.

ACRÆA GEA ♂.

Plate XXVIII. fig. 3, 4.

ORDER. Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae.

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Heliconii), *Fabr. olim.*

ACRÆA GEA. Alis oblongis integerrimis, anticis utrinque fuscis, fasciis duabus fulvis aut albidis, unâ versus apicem, alterâ connexâ disco posticarum, his subtus rufescentibus, basi nigro-punctatis, postea striatis. (Expans. Alar. 3 unc.)

SYN. Papilio (Hel.) Gea, *Fabr. Spec. Ins.* 2. p. 32. No. 136. ♂. *Enc. Méth.* ix. p. 238. (Acraea G.)

Papilio (H.) Jodutta, *Fabr. Ent. Syst.* 111. 1. p. 175. No. 554. ♀.

Papilio (Hel.) Hirce, *Drury, App.* vol. 3.

Papilio Epæa, *Cramer, pl.* 230. f. B. C.

HABITAT: Sierra Leone (*Drury*). "Calabar, in Africa, Capt. Parker, 1771" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax black, with four white spots on each side. Abdomen dark orange, spotted on the sides with black, and a black streak running along the top. Anterior wings fine dark brown, almost black. A large patch of dark orange is placed at the middle of the posterior edges, and between that and the tips is a streak of the same colour, divided into three parts by the tendons of the wings. Near the body are six round black spots hardly discernible, on one of which, nearest the body, is a very small white one. Posterior wings near the body orange, but along the edges black, the space between being covered with rays, composed of those two colours. Next the body are ten round black spots, some larger than others, on one of which is a small white one, as on the upper wings.

Under Side. Palpi orange. Thorax black, spotted with white. Legs black above and white beneath. Abdomen orange. Anterior wings much lighter on this side than on the upper, the orange-coloured marks being, on this side, of a dark yellow. All the black spots on this side are more distinct than on the other, as is that with the small white one on it. Posterior wings next the body orange, from whence to the edges issue rays of a dusky yellow and black, there being no black border. The black spots next the body are also very strong. The edges of the posterior wings are a little dentated.

NYMPHALIS HOSTILIA.

Plate XXVIII. fig. 5, 6.

ORDER: Lepidoptera, *Linn.* SECTION: Diurna, *Latr.* FAMILY: Nymphalidae, *Swainson.*

GENUS. NYMPHALIS, *Latr.* Papilio (Eq. achiv.), *Linn. Drury.* Papilio Nymphalis, *Fabr.*

NYMPHALIS HOSTILIA. Alis dentatis subconcoloribus, fulvis, basi nigro-maculatis; anticarum apice fusco punctis flavescentibus. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Dan. Fest.) Hostilia, *Drury, App.* vol. 3. *Fabr. Ent. Syst.* 111. 1. p. 130. No. 399.

Nymphalis H., *Latr. God. Enc. Méth.* ix. p. 393.

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen dark brown. Anterior wings next the body dark tawny orange, but next the tips dark brown, almost black, the darkest part of the wings having several dusky yellow spots, while the orange part has a number of black ones. Posterior wings dark orange, and next the body streaked with black, and a black zigzag border running along the external edges.

Under Side. Palpi, neck, legs, and breast pale yellow. Abdomen orange. Anterior wings much lighter than on the upper side, being, next the body, cream colour; the part next the tips dark russet. All the spots are very discernible on this side, the yellow ones being here much lighter. Posterior wings cream-coloured, having the black border and streaks equally as strong and discernible as on the upper side. Margins of the wings entire.

SATURNIA ARGUS.

Plate XXIX. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Bombycidae, *Steph.*

GENUS. SATURNIA, *Schrank.* Attacus, *Germ.* Phalæna (Attacus), *Drury.*

SATURNIA ARGUS. Alis pallidè testaceo-albidis punctis ocellaribus fenestratis numerosis, caudis longissimis.
(Expans. Alar. 3 unc. 5 lin.)

SYN. Bombyx Argus, *Fabr. Ent. Syst.* 111. 1. p. 414. No. 24. *Donovan Nat. Repos.* 5. 173. *Oliv. Enc. Méth.* 5. 29. 22.

Phalæna (Bombyx) brachyura, *Cramer Ins. tab.* 29. f. 1. *Drury, App. vol.* 3.

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ almost black, and pectinated. The neck and head flesh-coloured. Thorax ash-coloured. Abdomen pale flesh-coloured. Wings dingy flesh-coloured, the anterior ones having five or six small transparent spots situated in the centre of them. The posterior ones furnished with two long tails about two inches and three-quarters long, the extremities being cream-coloured, the upper part red-brown; with five small yellowish round spots, edged with black, placed in the centre of the wings.

Under Side. Palpi brown. Tongue concealed. Legs red-brown. Breast, sides, and abdomen cream. Wings coloured as on the upper side.

I have adopted the Fabrician specific name, notwithstanding its subsequent date, that proposed by Cramer being exceedingly inapplicable. Drury states, on the authority of Mr. Smeathman, that this curious insect was found on the island of Banana. Its flight is exceedingly slow, and its tails seem rather to impede it. Mr. Donovan states that several specimens of this insect had been received from Sierra Leone (which habitat is given by Drury in the body of his work, but corrected as above in the observations communicated to him by Mr. Smeathman) and that he is not aware of the species having occurred in any other part of Africa, neither had he understood that any other collector since Mr. Smeathman had met with the species. Of the original specimens a pair belonged to Mr. Drury, which came into the hands of Mr. Donovan, who also mentions a fine specimen as existing in the Banksian Cabinet at the Linnæan Society; adding, that some few other specimens passed into different continental Cabinets, all of which, however, were those collected by Mr.

Smeathman. The late Mr. Haworth, however, (the sale of whose magnificent collection by public auction lasted for ten days,) possessed four specimens of this rare moth, a pair of which were purchased by W. Swainson, Esq., and the remaining pair by myself.

CALLIMORPHA EPIMENIS.

Plate XXIX. fig. 2.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Arctiidae.

GENUS. CALLIMORPHA, *Latr.* Phalæna (Noctua), *Drury*.

CALLIMORPHA EPIMENIS. Alis nigris, anticis maculâ magnâ pone medium albidâ, posticis basi nigris apice fulvis margine atro. (Expans. Alar. 1 unc. 3 lin.)

SYN. Phalæna (Noctua) Epimenis, *Drury, App. vol. 3.*

HABITAT: "Virginia, Mr. Abbot, 1774" (*Drury's MSS.*).

Upper Side. Antennæ black and setaceous. Eyes, head, thorax, abdomen, and anterior wings black, the latter with a large straw-coloured patch placed near the ends, and reaching across the wings from the anterior edges almost to the lower corners. Posterior wings nearly black, with a large orange-coloured patch, occupying one-third of the wings, and placed along the external edges.

Under Side. Palpi, head, legs, breast, sides, and abdomen, black. Wings coloured as on the upper side, with the addition of two small straw-coloured spots placed between the large ones and the shoulders; the colours being also rather brighter. Margins of the wings entire.

LITHOSIA? INO.

Plate XXIX. fig. 3.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Lithosiidae, *Steph.*

GENUS. LITHOSIA? *Fabr.* Phalæna (Noctua), *Drury*.

LITHOSIA? INO. Alis albidis, anticis punctis duobus humeralibus maculisque duabus magnis nigris (scil. ante et pone medium); thorace nigro punctato. (Expans. Alar. 1 unc. 3 lin.)

SYN. Phalæna (Noctua) Ino, *Drury, App. vol. 3.*

HABITAT: "Madras, Mr. Skeene, 1772" (*Drury's MSS.*).

Upper Side. Antennæ brown and setaceous. Head cream-coloured. Neck black. Thorax and abdomen cream-coloured, the former having some black spots on it. Anterior wings cream-coloured, with a large triangular black spot placed at the tips, another on the middle of the wings, extending across from the anterior edges almost to the lower corners. There are also two small ones next the shoulders. The external edges have a row of small black spots placed thereon. Posterior wings cream-coloured, tintured with red, with a faint black border, rising at the upper corners where it is broadest, and running half-way to the abdominal ones, gradually narrowing.

Under Side. Palpi, breast, legs, sides and abdomen cream-coloured. Wings reddish cream, without any marks; the black marks, &c. on the upper side being faintly perceived. Margins of the wings entire.

CALLIMORPHA? HELCITA.

Plate XXIX. fig. 4.

ORDER : Lepidoptera. SECTION : Nocturna. FAMILY : Arctiidae, *Steph.*

GENUS. CALLIMORPHA? *Latr.* Phalæna (Noctua), *Drury.*

CALLIMORPHA? HELCITA. Alis testaceis apice nigris, fasciâ maculari albâ. (Expans. Alar. 3 unc. 5 lin.)

SYN. Papilio (Dan. Cand.) Helcita, *Linn. Syst. Nat.* 2. 763. 94.

Phalæna fascelis, *Linn. Mus. Utr.* 390. No. 25.

Phælæna (Noctua) H., *Drury, App. vol.* 3.

Phalæna macularia, *Fabr. Ent. Syst.* 111. 2. p. 140. No. 40.

HABITAT : "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*). "In Indiis" (*Linn.*). India (*Fabr.* incorrectly).

Upper Side. Antennæ black and setaceous. Head, thorax, and abdomen black, the two last having a row of white spots running along the middle, and another on each side down to the anus. Wings fine dark red. Almost half the anterior next the tips being black, with five oval white spots thereon; three of which being the largest are joined together, the other two, being small and behind, are at a little distance apart. Posterior wings with a broad black border running from the upper to the abdominal corners, whereon are placed eight oval white spots at equal distances, two, being the outermost, very small and close together.

Under Side. Palpi yellow. Tongue spiral. Legs, breast, and sides black, spotted and streaked with white. Abdomen yellow. Wings coloured and marked as on the upper side. Margins of the wings entire.

Mr. Smeathman states that this insect is found in the savannahs. It is a sluggish creature, and easily taken. A specimen of this very rare insect was sold in the collection of the late Mr. Stothard, on the 18th May, 1835; and was purchased by Thomas Norris, Esq. M.E.S. at the price of fourteen shillings.

NYMPHALIS (CHARAXES) POLLUX.

Plate XXX. fig. 1, 2.

ORDER : Lepidoptera, *Linn.* SECTION : Diurna, *Latr.* FAMILY : Nymphalidae, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Phal.), *Drury.* (SUBGENUS : Charaxes, *Boisduval.*)

NYMPHALIS (CHARAXES) POLLUX. Alis supra fulvis, limbo postico latè nigro, subtus ad basin ferrugineis, annulis fasciâque albis. (Expans. Alar. 3 unc. 9 lin.)

SYN. Papilio Pollux, *Cram. pl.* 37. fig. C. D. *Herbst. Pap. t.* 63. f. 3. 4.

Papilio (N.) Castor, *Fabr. Gen. Ins. Mant. p.* 251. *Donovan Nat. Repos.* 4. 116.

Papilio (Nymph. Ph.) Camulus, *Drury, App. vol.* 3.

HABITAT : "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen red-brown. Anterior wings brown-orange, with a small round black spot near the middle, and another fainter and smaller a little beneath it. Along the anterior edges are several black marks and patches joining together; these wings are bordered with black, having along the external edges some small faint orange-brown spots. Posterior wings corresponding exactly with the anterior, and furnished with four short tails.

Under Side. Palpi yellow, bordered with white. Breast dark brown, with white streaks. Legs brown. Abdomen red-brown. The ground of the anterior wings next the body is a light chocolate, which is separated from a dusky brown border running along the external edges by a white and orange band, which, being the chief colours on this side, are continued along the posterior wings. The base is adorned with black streaks, surrounded with white, placed along the anterior edges, and others of different forms on the middle of the wings. Along the external edges, on the dusky border, is placed a row of black triangular spots, which at the lower corners are doubled. Posterior wings of the same colour as the anterior, the chocolate ground having a number of small black marks and streaks, bordered with white, in a very irregular manner. At the lower corner is placed a dark grey eye, with a black iris and a white longitudinal streak in the centre, two rows of small black spots, some being edged with white, of different forms, are also placed along the dusky border.

We learn, from the observations of Smeathman and Drury, that this is the insect noticed in the observation upon *Charaxes Jason*, as possessing exceedingly strong powers of flight. Vide Vol. I. Pl. 1. fig. 1.

NYMPHALIS VARANES.

Plate XXXI. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS VARANES. *Alis supra basi albis immaculatis, apice ferrugineis fulvo et fusco punctatis.* (Expans. Alar. 3 unc. 9 lin.)

SYN. Papilio (N.) Varanes, *Fabr. Sp. Ins.* 2. p. 14. No. 55.

Papilio (Nymph. Gemm.) Varanes, *Drury, App.* vol. 3.

Papilio V., *Cramer, pl.* 160. D. E. ♂. pl. 388. A. B. ♀.

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*). Caffraria (*Enc. Méth.*). India (*Fabr.* incorrectly).

Upper Side. Antennæ black. Thorax greenish. Abdomen white, spotted on the upper part with black. Basal half of the wings ash-coloured, and bordered with deep red-brown. Anterior wings having a row of six orange spots along the external edges, and two oval ones near the middle of the anterior edges; two black spots, shaped like the beards of arrows, are situated in the centre. Posterior wings angulated and furnished with two short tails, having a row of five black spots running parallel with the external edges. Wings not indented.

Under Side. Palpi, breast, and legs buff-coloured. Abdomen white. Wings next the body dark ash-coloured, but along the tips and external edges darker. A narrow line of a brown colour rises from the posterior edges of the anterior wings, and, bending towards the tips, is lost in the general colour of that part of the wings. A row of small faint black spots runs parallel with the external edges, being situated between them and the fore-mentioned dark line; the inner divisions of these and the posterior wings have a number of small black marks, like Hebrew characters, regularly dispersed on them. Posterior wings with a dark narrow line rising on the anterior edges, which crosses the wings, meeting below the abdomen. A small black eye, with a white pupil, is placed near the middle of the anterior edges, and a row of faint oval dark spots runs parallel with the external edges, ending at the abdominal corners.

This insect, like the last, flies exceedingly swift, and is observed sometimes to settle upon human excrement, a peculiar habit which is also adopted by other species of insects belonging to different orders.

PIERIS EUDOXIA.

Plate XXXII. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. *PIERIS*, *Schrank*. *Papilio* (Dan. Cand.), *Linn.* §c.

PIERIS EUDOXIA. Alis rotundatis, anticis dilutè fulvis posticis albis; omnium limbo communi nigro maculato.
(Expans. Alar. 2 unc. 3 lin.)

SYN. *Papilio* (Dan. Cand.), *Cramer*, pl. 213. fig. C. *Herbst*. tab. 107. f. 1. 2. *Drury*, App. vol. 3. *Fabr. Ent.*
Syst. 111. 1. p. 199. 620. *Boisduval Hist. Nat. Lepid.* 1. 510. No. 105.

Papilio (D. C.) *Rhodope*, *Fabr. Ent. Syst.* 111. 1. p. 196. No. 609. *Donovan Nat. Repos.* 3. pl. 86.

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen grey-brown. Anterior wings dark yellow, shaded along the anterior edges with dark brown; a black border occupies the tips and external edges of these wings, whereon is a row of dark yellow spots of an oblong form. Posterior wings entirely white, with a row of black spots placed along the external edges.

Under Side. Palpi grey. Breast, legs, and abdomen white. Anterior wings yellow, but next the body orange-coloured, with a row of triangular black spots placed along the external edges. Posterior wings white, but orange next the body, having a row of black round spots placed on the external edges, corresponding with the anterior wings. Margins of the wings entire.

PIERIS CHLORIS.

Plate XXXII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. *PIERIS*, *Schrank*. *Papilio* (Dan. Cand.), *Linn.* §c.

PIERIS CHLORIS. Alis suboblongis, integerrimis, teneris, albis apice nigro, subtus anticis basi calthaceâ, posticis luteo radiatâ, his limbo latè nigro. (Expans. Alar. 2 unc. 3 lin.)

SYN. *Papilio* (D. C.) *Chloris*, *Fabr. Syst. Ent.* 473. No. 129. *Drury*, App. vol. 2. *Herbst*. tab. 99. f. 1. 4.
Latr. et God. Enc. Méth. ix. p. 160. *Boisduval Hist. Nat. Lepid.* 1. 516.

Papilio Thermopylæ, *Cramer*, pl. 207. fig. F. G.

HABITAT: "Sierra Leone, Mr. Smeathman, 1774" (*Drury's MSS.*).

Upper Side. Antennæ black. Eyes dark brown. Thorax and abdomen dark grey. Anterior wings entirely white, with a black patch at the tips, the anterior edges being also black. Posterior wings also white, with a black border running along the external edges from the upper to the abdominal corners.

Under Side. Palpi grey. Legs, breast, abdomen, and anterior wings white; the latter black at their tips, as on the upper side, but next the body tinged with red. Posterior wings yellow, but one-half next the external edges is black; and on the upper part, next the body, having a streak of fine red. Margins of the wings entire.

PIERIS HYPATIA.

Plate XXXII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach*.

GENUS. PIERIS, *Schrank*. Papilio (Dan. Cand.), *Linn.* §c.

PIERIS HYPATIA. Alis rotundatis integerrimis, suprâ nigris, fasciâ albâ communi sinuatâ, subtus anticis maculâ apicali albidâ, posticis basi fulvo radiatis. (Expans. Alar. 2 unc. 3 lin.)

SYN. Pap. (Dan. Cand.) Hypatia, *Drury, App. vol. 3.*

Papilio Epaphia, *Cramer, pl. 207. fig. D. E.*

Pieris Higinia, *Latr. et God. Enc. Méth. ix. p. 135. No. 45.*

Pieris Saba, *Fabr. Ent. Syst. 111. 1. p. 201. 627. Latr. God. loc. cit. No. 46.*

Pieris Malatha, *Boisd. Faun. Madagascar, pl. 1. f. 4, 5.*

Pieris Orbona, *Boisd. loc. cit. pl. 1. f. 3.*

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen black. Anterior wings sooty black, having a white indented bar rising at the middle of the anterior edges, which crosses them, and ends on the middle of the posterior ones; at the tips are two small white spots. Posterior wings white and black, the upper half being white and the lower one black.

Under Side. Palpi, legs, breast, and abdomen white. Anterior wings tinged with yellow next the body, the white bar being the same on this side as on the upper; the black colour on this side partaking more of a brown, and at the tips having a white patch instead of the two spots seen on the upper side. Posterior wings marked as on the upper side. Margins of the wings entire.

NYMPHALIS (CHARAXES) EUDOXUS.

Plate XXXII. fig. 1, 4.

ORDER: Lepidoptera, *Linn.* SECTION: Diurna, *Latr.* FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Phal.), *Drury.* (SUBGENUS: Charaxes, *Boisduval.*)

NYMPHALIS (CHARAXES) EUDOXUS. Alis supra fasciâ mediâ maculisque marginalibus fulvis, subtus ad basin ferrugineis annulis argenteis; posticis tantum fasciâ albâ. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (Equ. Ach.) Eudoxus, *Drury, App. vol. 3.*

Papilio (N.) Eudoxus, *Fabr. Ent. Syst. 111. 1. p. 65. No. 203. Enc. Méth. ix. p. 352. No. 6.*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Eyes, head, thorax, and abdomen red-brown. Anterior wings dark chocolate, red-brown at the base; a row of brown orange-coloured spots is placed on the external edges of these wings, those next the tips being smallest; a brown-orange bar also rises on the anterior edges near the tips, and crossing these and the posterior wings meets at the extremity of the abdomen, increasing in width as it approaches the abdominal corners. Posterior wings likewise dark chocolate, but next the body red-brown. Each of them is furnished with two tails, and has an indented line of brown-orange running along the external edges, from the upper to the abdominal corners.

Under Side. Palpi and breast orange. Feet ash colour. Sides and abdomen red-brown. One half of the superior wings next the body is chocolate, but next the external edges brown-orange, with a large black streak at the lower corners, and three others of different shapes in the middle of the wings;

the chocolate division is adorned with a number of black streaks and marks, margined with fine silver white. Posterior wings chocolate, with an indented line of brown-orange placed along the external edges, verged at top with black; these wings are marked with a number of silvery white lines and streaks, placed against each other in different directions. Two small white spots, joined together, are placed on a black-ground at the abdominal corners.

HESPERIA HELOPS.

Plate XXXIII. fig. 2, 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Hesperiidæ, *Steph.*

GENUS. HESPERIA, *Fabr Latr. God.* Papilio (Pleb. Urb.), *Linn. Drury, &c.*

HESPERIA HELOPS. Alis anticis fuscis maculis hyalinis (tribus minutis) subapicalibus; posticis suprà flavis, fasciâ submarginali atrâ arcuatâ, subtus fuscis disco albo. (Expans. Alar. 2 unc. 2 lin.)

SYN. Papilio (Pleb. Urb.) Helops, *Drury, App. vol. 3.*

Hesperia (U.) Ennius, *Fabr. Ent. Syst.* 111. 1. p. 337. No. 283. *Enc. Méth.* ix. 749, No. 54. *Donovan Ins. Ind.* 11. pl. 3. fig. 1.

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*). "In Indiis" (*Fabr.*). India (*Donovan*).

Upper Side. Antennæ black. Head, thorax, and abdomen greenish brown. Anterior wings very dark brown, but next the body lighter, and having four diaphanous spots of different shapes on each wing; and also two yellow triangular ones, situated at the middle of the posterior edges. Posterior wings nearly black, with a large yellow patch on the middle of the wings, and two other yellow spots at the abdominal corners.

Under Side. Palpi ash-coloured. Legs yellow-brown. Breast and abdomen brown. Anterior wings dark brown, the lower parts along the posterior edges being lighter coloured; the diaphanous spots conspicuous, and the tips prettily tinged with red-brown. Posterior wings dark brown, the middle being occupied by a large silver white patch; the edges next the abdominal corners yellow, the other parts of the wings marked by paler and different coloured tints. Margins of the wings entire.

SATURNIA LUCINA.

Plate XXXIV. fig. 1.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Bombycidæ, *Steph.*

GENUS. SATURNIA, *Schrank.* Attacus, *Germ.* Phalæna (Attacus), *Drury.*

SATURNIA LUCINA. Alis albido-griseis fusco multi-rivulosis, strigis undulatis submarginalibus, anticis maculis nonnullis mediis ocelloque parvo apicali nigris. (Expans. Alar. 6 unc. 9 lin.)

SYN. Phalæna (Attacus) Lucina, *Drury, App. vol. 3.* *Oliv. Enc. Méth.* 5. 31. 27.

HABITAT: "Sierra Leone, Mr. Smeathman, 1775" (*Drury's MSS.*).

Upper Side. Antennæ yellow and pectinated. Thorax and abdomen brown. Wings russet-brown and cream-colour, disposed in a great variety of different shaped marks. Anterior wings next the body with a number of angulated lines following each other in a regular succession; the middle being composed of another succession of undulated lines crossing the wings from the anterior to the posterior edges: a black oval spot is placed at the tips, and a row of different sized oval marks runs along the external

edges. Posterior wings next the body dark brown, the middle and bottom having a series of undulated lines crossing them in regular succession from the anterior to the abdominal edges, while a row of light and dark oval marks is placed along the external edges.

Under Side. Palpi brown. Legs cream-coloured. Breast, sides, and abdomen brown. Tongue not observed. Wings differing but slightly from the upper side; the general manner of marking being still preserved here. On the upper part of the posterior wings, next the body, is a triangular cream spot, the inner space being brown. Margins of the wings entire.

THECLA ORCAS.

Plate XXXIV. fig. 2, 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Lycænidæ, *Steph.*

GENUS. THECLA, *Fabr.* (Syst. Gloss.) Polyommatus, *Latr. God.* Hesperia p. *Fabr.* (olim.) Papilio (Pleb. rur.), *Drury.*

THECLA ORCAS. Alis suprà virescenti-cæruleis, limbo maculisque nonnullis subcostalibus anticarum nigris; subtùs ferrugineo-fuscis maculis numerosis argenteis. (Expans. Alar. 1 unc. 6 lin.)

SYN. Papilio (Pleb. Rur.) Orcas, *Drury, App. vol. 3.* *Enc. Méth.* ix. 645. 102. (Polyomm. O.)

HABITAT: Sierra Leone.

Upper Side. Antennæ brown and thickest at their extremities, where they are white. Head black, but between the eyes white. Thorax and abdomen dark blue, almost black. Wings golden blue, bordered and fringed with black; the anterior having along the anterior edges three small black marks, besides the border. Posterior wings furnished with four tails, and having two singular red spots placed at the abdominal corners.

Under Side. Palpi and legs white. Sides, breast, and abdomen red and white. Wings fine red-brown, almost as deep as chocolate, adorned with a variety of different shaped silver spots; the anterior having eight, placed all over the wings, and the posterior eleven; the latter having an orange mark at the abdominal corners. Margins of the anterior wings entire, but of the posterior slightly dentated.

PAPILIO THYASTES.

Plate XXXV. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach.*

GENUS. PAPILIO, *Auct.* Papilio (Eq. Ach.), *Drury, Fabr.*

PAPILIO THYASTES. Alis caudatis nigris, fasciâ maculisque flavis, angulo ani sanguineo, posticis subtus lineâ sanguineâ. (Expans. Alar. 4 unc.)

SYN. Papilio (Eq. Ach.) Thyastes, *Drury, App. vol. 3.* *Fabr. Enc. Méth.* 111. 1. p. 26. No. 77. *Enc. Méth.* ix. p. 54. *Boisduv. Hist. Nat. Lepid.* 1. p. 349. 191.

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black. Head, thorax, abdomen, and wings black-brown; the anterior wings having the middle occupied by a triangular yellow space, continued to the middle of the posterior ones; four yellow spots are placed at the tips, and several others along the anterior edges. Posterior wings furnished with two black tails, edged and tipped with yellow, and having four yellow marks

situated along the external edges; they have also three blue crescents at the roots of the tails, and above them a square yellow spot on the abdominal edges, and three small red ones placed above it.

Under Side. Palpi not observed. Legs black. Breast and abdomen yellow. Wings paler brown than on the upper side, marked in the same manner as above, the yellow colour being here of a paler and greener hue. The posterior wings having the same marks here as above, with the addition of a row of short straight red lines placed along the external edges, but at a little distance from them.

HIPPARCHIA NEREIS ♂.

Plate XXXV. fig. 2, 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. HIPPARCHIA, *Fabr.* Satyrus, *Latr. God.* Papilio (Helic. Parn.), *Drury.*

HIPPARCHIA NEREIS. Alis fuscis subhyalinis, vittâ communi albâ; posticis ad apicem fulvis, ocellis duobus atris. (Expans. Alar. 3 unc.)

SYN. Papilio (Hel. Parn.) Nereis, *Drury, App. vol. 3.* *Herbst. Pap. tab. 84. f. 1. 2.* *Stoll Suppl. Cramer, pl. 26. f. 3.* *Fabr. Ent. Syst. 111. 1. 184.* *Enc. Méth. ix. p. 483.* (Satyrus N.)

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black. Head, thorax, and abdomen grey-brown. Anterior wings grey-brown, thin, and slightly diaphanous, with a small light-coloured bar running from the anterior edge near the tips to the posterior. Posterior wings having one-third next the body grey-brown, divided by a line drawn across the wings from the anterior to the abdominal edges; next to this is an angulated white patch, the rest of these wings being orange-coloured, with two black eyes, having white centres, placed one at the upper, the other at the abdominal corners, the former having a small white spot joining to its upper part. The edges of these wings are bordered with dark brown.

Under Side. Palpi, legs, breast, and abdomen cream-coloured. Anterior wings next the tips tinged with red-brown; the remainder of the wings being of the same colour as on the upper side. Posterior wings next the body pale clay, which occupies half the wings; below which is a white bar, the remainder of the wings being dark orange: the two black eyes are very small on this side, and the white spot above them not so distinct. These wings are larger than is generally observed among insects of this tribe. and are dentated, the anterior ones being entire.

PAPILIO ASIUS.

Plate XXXV. fig. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Papilionidæ, *Leach.*

GENUS. PAPILIO, *Auct.* Papilio (Eq. Achiv.), *Drury, Fabr.*

PAPILIO ASIUS. Alis nigris fasciâ communi flavescenti-albâ; posticis caudatis, his subtus basi anguloque antichermesino maculatis. (Expans. Alar. 3 unc.)

SYN. Papilio (Eq. Troj.) Asius. *Fabr. Spec. Ins. 2. p. 5. No. 17.* *Ent. Syst. 111. 1. p. 8. No. 21.* *Enc. Méth. ix. p. 55. No. 84.* *Boisdur. Hist. Nat. Lepid. 1. p. 309. 146.*

Papilio (Eq. Tr.) Astyagas, *Drury, App. vol. 3.*

[Papilio Manlius, *Perty Del. An. Art. Braz. Ins. pl. 29. f. 1.*

HABITAT: Brazil, "Rio Janeiro, Mr. Bonifas, 1776" (*Drury's MSS.*).

Upper Side. Antennæ, thorax, and abdomen black. Wings raven-black, having a pale yellow bar rising at the anterior edges near the tips of the superior wings, and crossing these and the inferior ones, meeting even with the abdomen, becoming wider gradually. Posterior wings furnished with two tails, and along the external edges having four small yellow crescents, and another at the abdominal corners: above which are two long square red spots, and another yellow crescent on the abdominal edges.

Under Side. Palpi, legs, and breast black. Abdomen black, with a white longitudinal stripe on each side. Wings marked nearly as on the upper side; the posterior having several red spots and streaks more than on the upper side, and placed next the body from the shoulders to the abdominal corners.

NYMPHALIS AFER.

Plate XXXVI. fig. 1, 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS AFER. Alis supra violaceo-cœruleis margine externo nigro, anticis utrinque strigâ apicali punctorum alborum, posticis fusco nebulosis. (Expans. Alar. 2 unc. 1½ lin.)"

SYN. Papilio (Nymph. Phal.) Afer, *Drury, App. vol. 3. Stoll Suppl. Cramer, pl. 27. fig. 3.*

Papilio (N.) Æthiopa, *Fabr. Ent. Syst. 111. 1. p. 136. No. 420. Enc. Méth. ix. p. 385. No. 119.*
(Nymph. Æth.)

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ black. Thorax and abdomen blueish black. Wings, when viewed in a particular direction, fine shining light blue; but in any other are blueish brown. The anterior ones with six small white spots placed near the tips, the four uppermost being the smallest, and placed in a zigzag direction, parallel with the external edges, and with a few faint shadows. Posterior wings having, like the superior, only some faint shadows.

Under Side. Palpi, legs, and breast clay-coloured. Abdomen brown. Wings having a variety of soft brown tints, of a light grey and dark brown colour, gradually softening into each other in a most agreeable manner. The six white spots in the superior wings are observable on this side; but there are no other marks either in the anterior or posterior wings sufficient to be regarded as characters. Margins of all the wings slightly dentated; the inferior ones being angulated.

We learn from Mr. Smeathman that this butterfly is found in the gloomy paths of the forests on the continent of Africa.

NYMPHALIS ALPHÆA.

Plate XXXVI. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.) *Drury.*

NYMPHALIS ALPHÆA. Alis lutescentibus strigis undulatis communibus fuscis, puncto dilutiori anticarum subapicali, subtus brunneis fasciis nigricantibus. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph.) Alphæa, *Drury, App. vol. 3.*

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Upper Side. Antennæ, head, thorax, and abdomen dark brown. Wings clay-coloured, with only a light spot on the anterior ones near the tips, and a number of small faint waved lines crossing the wings from the anterior to the posterior and abdominal edges.

Under Side. Palpi long, grey brown. Breast and abdomen the same. Wings rather darker than on the upper side, being of a reddish brown. The two spots on the anterior wings are more conspicuous on this side than the other; and the waved lines here become bars in the posterior wings of a darker colour than the general ground, having two conspicuous ones, the lowest being the broadest. Margins of the wings slightly dentated.

NYMPHALIS DORICLÆA.

Plate XXXVI. fig. 5, 6.

ORDER : Lepidoptera. SECTION : Diurna. FAMILY : Nymphalidæ, *Swains.*

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury.*

NYMPHALIS DORICLÆA. Alis lutescenti-fuscis suprâ strigis duabus punctorum nigrorum, posticis subtus puncto baseos atro. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Doriclæa, *Drury, App. vol. 3. Fabr. Ent. Syst. 111. 1. p. 248. No. 772. Enc. Méth. ix. p. 386. 124.*

HABITAT : Sierra Leone.

Upper Side. Antennæ brown. Thorax and abdomen dark brown. Wings dark clay-coloured. The anterior ones having three black marks placed at the middle of the anterior edges, being about a quarter of an inch long, and a few very faint dark marks at the external edges. Posterior wings with only two rows of small faint dark crescents placed along the external edges.

Under Side. Palpi, legs, breast, abdomen, and anterior wings light clay-coloured; the latter having two black streaks placed close to the anterior edges, near the middle, and a shade of dark brown along the external edges. Posterior wings along the upper part light clay; but towards the abdominal corners are darker. A dark-coloured narrow band rises at the middle of the anterior edges, which runs circularly towards the abdominal groove, but is lost in the general colour of the wing before it reaches that part. About the middle of this inner compartment is a small round black spot, being the only one either on the upper or under side. Margins of the wings entire, the posterior being slightly angulated.

PIERIS (LEPTALIS) CRISIA.

Plate XXXVII. fig. 1, 2.

ORDER : Lepidoptera. SECTION : Diurna, *Latr.* FAMILY : Papilionidæ, *Leach.*

GENUS. PIERIS, *Schränk. Latr. God.* Papilio (Dan. Cand.) *Linn. §c.* (SUBGENUS : Leptalis, *Boisduval.*)

PIERIS (LEPTALIS) CRISIA. Alis oblongis, anticis falcato-acuminatis fuscis, fasciâ ante apicem flavescente, posticis integerrimis flavescensibus, limbo fusco. (Expans. Alar. 2 unc. 9 lin.)

SYN. Papilio (Dan. Cand.) Crisia, *Drury, App. vol. 3. Fabr. Ent. Syst. 111. 1. p. 166. No. 515. Enc. Méth. ix. p. 197. (Pieris Cr.) Boisduval Hist. Nat. Lep. 1. p. 422. (Leptalis Cr.)*

HABITAT : Brazil. "Rio Janeiro, Mr. Bonifas, 1775" (*Drury's MSS.*).

Upper Side. Antennæ spotted white beneath. Thorax and abdomen grey-brown. Anterior wings dark brown, almost like chocolate, the tips forming an obtuse angle; a white streak crossing them obliquely towards the lower corners, having a very small black spot thereon near the upper part. The posterior edges are white, extending from the body almost to the lower corners. Three small faint white spots are situated near the tips. Posterior wings white, deeply edged with brown from the upper to the abdominal corners.

Under Side. Palpi, breast, and abdomen grey. Anterior wings not so dark as on the upper side; but having the same marks, with the addition of a white streak at the tips. Posterior wings white, with a few patches of a very light brown, the lower edges being dappled with that colour. Near the shoulders are two small yellow spots. Margins of the wings entire.

ACRÆA ETHOSEA.

Plate XXXVII. fig. 3, 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae, *Swains.*

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Heliconii), *Fabr. olim.*

ACRÆA ETHOSEA. Alis oblongis, supra fuscis disco albo, anticis integerrimis, posticis subdenticulatis, his infra basi punctis nigris, margine exteriori maculis albis trigonis serie digestis. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Ethosea, *Drury, App. vol. 3. Enc. Méth. ix. p. 235. No. 17.*

HABITAT: Sierra Leone.

Upper Side. Antennæ black. Thorax, abdomen, and wings deep brown, almost black; the disk of the anterior being white, and extending to the shoulders, all the middle part of the posterior being white likewise.

Under Side. Palpi grey. Breast and abdomen brown. Anterior wings next the body yellowish brown, but towards the tips inclining to grey; nerves black; the disk white, with a round black spot near the body, and another of a smaller size below it. The middle of the posterior wings is white, surrounded with brown, that part along the lower edges being darkest; next the body are five distinct black round spots, and an irregular shaped one at the middle of the upper edge; along the lower edges are a number of small triangular white spots. Margins of the posterior wings slightly dentated.

Although Sierra Leone is given by Drury in his published account of this insect as the locality for this species, I find it mentioned in his manuscript Catalogue as being received from "New Zealand, Mr. Banks, 1775." The authors of the *Encyclopédie Méthodique* evidently knew the species only from Drury's figures and descriptions, and therefore have given the former locality. It is difficult to account for this contradictory statement, or to assert which of these localities is the correct one.

ACRÆA CYNTHIA.

Plate XXXVII. fig. 5, 6.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae, *Swains.*

GENUS. ACRÆA, *Fabr. Latr. God.* Papilio (Heliconii), *Fabr. olim.*

ACRÆA CYNTHIA. Alis oblongis integerrimis fuscis, fasciâ communi anticarumque maculâ apicali, albidis; posticis suprâ punctorum fulvorum serie posticâ. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (Hel.) Cynthus, *Drury, App. vol. 3. Herbst. Pap. tab. 80. f. 1. 2.*

Acræa Cynthia, *Enc. Méth. ix. p. 234.*

HABITAT: Sierra Leone.

Upper Side. Antennæ brown. Eyes, thorax, and abdomen black. Anterior wings dark brown; a dark cream-coloured band rises at the middle of these wings, and crossing the posterior meets at the abdominal edges a little above the anus; a dark cream-coloured patch is also situated near the tips, and a narrow reddish line runs from the body to the disk. Posterior wings dark brown, having a row of five oblong lightish spots placed along the lower edges.

Under Side. Palpi grey. Breast and abdomen streaked and spotted with dark cream and black. Wings paler than on the upper side; the band and patch not so conspicuous as on the anterior ones; a row of marks, like acute angles, are placed along the edges of all the wings, the posterior ones having a cluster of ten small black spots placed near the body. Margins of the wings entire.

In Drury's manuscripts, which have come into my hands, it is stated that this insect was brought from Sierra Leone by Mr. Smeathman, and that "the original insect from which this figure was taken is destroyed, and was of a much livelier colour than those which I judge to be varieties of Cynthus."

HELICONIA IRENE.

Plate XXXVIII. fig. 1.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae, *Swains.*

GENUS. HELICONIA, *Latr. God.* Papilio (Helicon.), *Fabr.*

HELICONIA IRENE. Alis oblongis, anticis nigris basi ferrugineo radiatis, à medio ad extimum flavo-maculatis, posticis fulvis limbo exteriori maculisque ante apicem nigris, singulis infrâ punctis marginalibus albis. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (Nymph. Phal.) Irene, *Drury, App. vol. 3. Fabr. Ent. Syst. 111. 1. p. 165. No. 510. Enc. Méth. ix. p. 223. No. 60.*

HABITAT: "Jamaica, Mr. Shakespear, 1779" (*Drury's MSS.*).

Upper Side. Antennæ black at the base, but yellow at the tips. Thorax black. Abdomen dark brown. Anterior wings black, with twelve different shaped spots, occupying half the wings next the tips; these spots are principally yellow, (one next the body being orange), and differ very much in form and size; next the body are two narrow faint reddish longitudinal streaks. Posterior wings dusky orange, the edges being bordered with black from the middle of the anterior edges to the abdominal corners; a square black spot is placed near the upper corners, and two very small ones by the side of it.

Under Side. Palpi black. Breast streaked with white. Abdomen yellow. Wings less brilliant:

but having much the same markings as on the upper side; the black border on the posterior ones having a row of white spots thereon, and another row is observable on the edges of the anterior. Posterior wings dentated.

NYMPHALIS IOLE.

Plate XXXVIII. fig. 2.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. NYMPHALIS, *Latr.* Papilio (Nymph. Gemmat.), *Drury*.

NYMPHALIS IOLE. Alis suprâ basi fulvis, tunc nigris cœruleo-micantibus, subtus nitenti-ferrugineis, strigis duabus nigris undulatis, posticis caudatis. (Expans. Alar. 2 unc. 6 lin.)

SYN. Papilio (Nymph. Phal.) Iole, *Drury, App. vol. 3. Stoll Suppl. Cram. pl. 29. fig. 4. 4. D.*

Papilio (N) Furcula, *Fabr. Ent. Syst. 111. 1. p. 79. No. 246. Enc. Méth. ix. p. 360. 36. (Nymphalis F.)*
Donovan Nat. Repos. 5. 151.

HABITAT: "Jamaica" (*Drury*, in text). "Madras, Mr. Skeene, 1772" (*Drury's MSS.*).

Upper Side. Antennæ black. Eyes, thorax, and abdomen brown. Wings brown-black, a considerable part of them encircling the body being dark orange. Posterior wings furnished with two tails, rather lighter than the other part.

Under Side. Palpi, legs, breast, and abdomen cream-coloured. Wings brown, having a blueish as well as a reddish hue, several waved lines crossing them from the anterior to the abdominal edges: five small white spots are placed next the tips, and several small black ones are situated along the external edges of both wings.

HIPPARCHIA ANDROMEDA.

Plate XXXVIII. fig. 3.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Nymphalidæ, *Swains*.

GENUS. HIPPARCHIA, *Fabr.* Satyrus, *Latr. God.* Papilio (Helic. Parn.), *Drury*.

HIPPARCHIA ANDROMEDA. Alis hyalinis, anticis strigis duabus fuscantibus, posticis apice chermesinis ocello utrinque unico. (Expans. Alar. 2 unc. 3 lin.)

SYN. Papilio (P.) Andromeda, *Fabr. Syst. Ent. 467. No. 107. Ent. Syst. 111. 1. p. 184. No. 569.*

Papilio (Hel. Parn.) Menander, *Drury, App. vol. 3. Herbst. Pap. t. 84. fig. 6.*

Papilio Philis, *Cramer, 387. fig. E.*

Papilio Pireta, *Cramer, pl. 315. fig. A.*

HABITAT: Jamaica (*Drury*). Surinam (*Enc. Méth.*).

Upper Side. Antennæ black. Two small white spots on the neck. Eyes, thorax, and abdomen black. Wings perfectly transparent, the lower part of the posterior beautiful carmine-red; close to the upper corner of these wings is a round black spot encircled with yellow, and a small white one on its edge; another white one, very minute, is also situated just below it, which is barely discernible.

Under Side. Palpi white. Breast and abdomen grey. Wings are exactly the same as on the upper side. Margins of the wings entire.

HELICONIA SAPPHO.

Plate XXXVIII. fig. 4.

ORDER: Lepidoptera. SECTION: Diurna. FAMILY: Heliconiidae, *Swainson*.

GENUS. HELICONIA, *Latr. God.* Papilio (Helicon.), *Fabr.*

HELICONIA SAPPHO. Alis oblongis, supra atro cœruleis infra nigris; anticis utrinque fasciâ transversâ bifidâ; posticis margine exteriori albis, his subtus basi sanguineo radiatis. (Expans. Alar. 3 unc. 3 lin.)

SYN. Papilio (Hel. Parn.) Sappho, *Drury, App. vol. 3. Fabr. Ent. Syst.* 111. 1. p. 165. No. 511. *Stoll Suppl. Cramer, pl. 30. 2. § 2. B. Herbst. Pap. tab. 75. f. 7.*

HABITAT: "Jamaica, Mr. Shakespear, 1779" (*Drury's MSS.*).

Upper Side. Antennæ black. Eyes brown. Thorax and abdomen black. Wings mazarine blue; the anterior ones having a white band crossing them from the middle of the anterior edges to the lower corners; the posterior edged with a white border, intersected by the blue tendons of the wings.

Under Side. Palpi grey. Breast and abdomen black, streaked with white. Wings black where they are blue on the upper side, with the same white markings; but next the body are adorned with beautiful red streaks, ending in points resembling rays issuing from it. Margins of the wings entire.

EREBUS ZENOBIA.

Plate XXXIX.

ORDER: Lepidoptera. SECTION: Nocturna. FAMILY: Noctuidæ, *Stephens*.

GENUS. EREBUS, *Latr.* Thysania, *Dalm.* Noctua p., *Fabr.*

EREBUS ZENOBIA. Alis cinereis strigis dentatis et undulatis fuscis et brunneis variegatis, subtus ferrugineis nigro-undatis. (Expans. Alar. 5 unc. 6 lin.)

SYN. Phalaena (Bombyx) Zenobia, *Drury, App. vol. 3. Cramer? tab. 115. A. B.*

Noctua Zenobia, *Fabr. Ent. Syst.* 111. 2. p. 8. No. 1. *Gmel. Linn. S. N.* 2529, 969. *Oliv. Enc. Méth.* 8. p. 251. 1.

HABITAT: "Jamaica, Mr. Keuchan, 1775" (*Drury's MSS.*).

Upper Side. Antennæ setaceous and dark brown. Head the same. Thorax and abdomen grey; having a tuft of black hairs standing between them. General colour grey, faintly tinged with red. Anterior wings with a remarkable irregular black bar running from the tips to the shoulders, crossing the thorax horizontally, and parallel with the anterior edges; on the middle of this edge is a triangular dark brown spot edged with black, and nearer the body is a smaller one of the same shape and colour: a second narrower black line is situate about half an inch below, and parallel with the first, rising on the posterior edges, and extending across the wings almost to the external ones. Posterior wings with a black irregular bar arising near the external corners, and crossing them in a straight direction, meeting at the extremity of the abdomen; just above this, and almost close to it, is a very small and narrow waved black line running parallel with it, but towards the end suddenly turns off, and reaches the anterior edges. Besides the above markings there are a number of lighter and darker shades interspersed on the different parts of the wings.

Under Side. Palpi reddish, the extremities brown. Tongue spiral. Legs dark brown, mottled with red. Breast, abdomen, and sides red. Wings greyish red, with black indented lines and bars running parallel with the edges of the wings, and regularly placed one above another. Anterior wings

having a black spot near their centre shaped like a kidney-bean, with a small round one at a little distance nearer the body. Posterior having likewise a small black spot about half an inch from the base. Margins of the wings rather deeply scalloped.

GOLIATHUS DRURII.

Plate XL.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Cetoniidæ.

GENUS. GOLIATHUS, *De Lamarck*. Cetonia, *Fabr.* Scarabæus, *Linn.* Drury, §c.

GOLIATHUS DRURII. Albidus, thorace lineis sex et disco elytrorum irregulariter nigris, pedibus æneis, capite porrecto bifido. (Long. Corp. 4 unc.)

SYN. Goliathus Maximus var. *Drury, App. vol. 3. Fabr. Syst. Eleuth. 2. 135.*

Cetonia Goliata, *Oliv. Ent. 1. 6. p. 71. t. 9. f. 33. c.*

HABITAT: Sierra Leone, Africa (*Drury*).

Head cream-coloured at top, and black underneath, being full three-fourths of an inch in length, from the neck to the extremity of the two horns which issue from the fore part of it, the sides of which are furnished with two other thick horns which are shorter than the former. Eyes black, and situated so as to discern above and beneath. Antennæ black. Thorax an inch and a half long, cream-coloured, having a thin, sharp, black edge all round; on the top are six longitudinal black streaks differently shaped, separated by cream-coloured lines, the middle ones being narrowest, on each side of which near the lateral edge is a small single black spot; the under part of the thorax is cream-coloured. Scutellum of a longish triangular shape, and cream-coloured. Elytra cream-coloured, with a broad black streak like velvet, about a third of their breadth, running near the lateral edges from the shoulders to the tips. On each side the scutellum is a small black oblong spot, at about one-third of an inch from it. Legs dark green, finely polished. The hairs on the middle and hind thighs and tibiæ dark orange. Abdomen dark green. Abdominal scales [posterior coxæ] the same; on which, close to the joints of the hinder thighs, are two small cream-coloured spots. Sternum long, and of a dark green colour.

I have ventured, on the authority of several distinguished entomologists, to give this insect as a species distinct from *Goliathus maximus*, figured in the first volume of these Illustrations, Pl. 31. It is true, indeed, that both are from the tropical districts of the western coast of Africa, and that both exhibit the same general structure and form of the horns, (the variations of which constitute the chief specific differences in these cornuted species). Drury evidently at first regarded it as specifically distinct, for he says, in his observation upon it, "This insect is of the same genus with that described in Vol. I. Pl. XXXI., but I judge it to be a different species," although in the synoptical appendix to the volume he calls it "a variety of *Goliathus*," the markings are very different, as may be seen by comparing the two figures; but it might be considered that the specimen represented in the first volume was a rubbed individual of that here figured; this, however, is evidently not the case, because in both descriptions Drury expressly describes the dark part of the elytra as resembling velvet, which could not be the case if the specimen was

rubbed. Moreover, a very fine and recent specimen corresponding with the present figure has lately been received by Mr. Havill, of Oxford Street, printseller and naturalist, who has demanded the sum of fifty pounds for it. The individual here figured is in the collection of Mr. Mac Leay, to whom I have been indebted for a sight of it, and by whose father it was purchased at the sale of Mr. Drury's collection at the price of £12. 1s. 6d., forming lot 95, in the first day's sale, Thursday May 23, 1805, and described in the catalogue as "Scarabæus Goliathus, var." I have also seen in the Royal Museum at Berlin a female of this genus having the head unarmed, and agreeing in colour and markings with the insect here figured, but which is regarded by Dr. Klug as a species distinct from the *Goliath. maximus*, and which he has recently described in *Ermann's Voyage*.

MYRMELEON TORRIDUM.

Plate XLl.

ORDER: Neuroptera. SECTION: Filicornes. FAMILY: Myrmeleonidæ, *Leach*.

GENUS. MYRMELEON, *Linn. &c.*

MYRMELEON TORRIDUM. Capite thoraceque fulvescentibus, lineâ dorsali nigrâ, hoc griseo-pubescenti, abdomine fusco, alis fusco-punctatis et maculatis, maculis posticarum majoribus et versus apicem crucem irregularem formantibus. (Expans. Alar. 6 unc. 9 lin.)

SYN. Myrmeleon Libelluloides var., *Drury, App. vol. 3.*

HABITAT: Sierra Leone.

Antennæ black, slender, and thickest at the extremities. Head, neck, and thorax yellowish brown, with a black longitudinal stripe running along the middle. Four palpi, two of which are short; the other two long, slender, and knobbed at the extremities. Thorax nearly covered with grey hairs. Abdomen yellowish brown; but, when the insect was living, was probably green. Wings of equal length, the anterior being broadest, all marked with a great number of red-brown spots, and clouds of various shapes and sizes, and appearing to be composed of fine lattice-work like gauze, and perfectly transparent where they are not clouded. Legs nearly of equal length, having two strong tibial spurs.

This is the insect referred to in the observations upon *Myrmeleon Libelluloides* figured in Vol. I. tab. 46. fig. 1. as having been regarded by Drury and Fabricius as a variety of that South-Europæan species. That they are specifically distinct both in their habitat and characters will not, I think, be doubted. The peculiar dilatation of the extremity of the posterior wings is a curious character not found in the *Libelluloides*.

PEPSIS ATROX.

Plate XLII. fig. 1.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Pompilidæ, *Leach*.

GENUS. PEPSIS, *Fabr. Latr. Sphex, Linn. Drury*.

PEPSIS ATROX. Nigra, alis fusco-diaphanis, pedibus fulvis. (Long. Corp. 2 unc. 3 lin. Expans. Alar. 3 unc. 6 lin.)

SYN. *Sphex atrox, Drury, App. vol. 3.*

HABITAT: Sierra Leone.

Head dark brown. Jaws strong: two of the palpi are long, the other two short. Tongue dilated, and tufted at the tips. Eyes oblong, shining and prominent. Thorax and abdomen brown-black. Abdominal peduncle short. In the specimen figured the sting was exerted, curved, and furnished with two short clavate instruments at its base. Wings thin, and diaphanous. Legs yellow-brown, and furnished with a great number of short spines from the claws to the base of the tibiæ. Tibiæ with two spurs, except those of the fore-legs, which have but one.

Fabricius has described an insect from South America, under the name of *Pepsis Heros*, which nearly agrees with this species, with the following reference—" *Sphex Securus, Drury Ins. . tab. . fig. .*" It will be sufficient to observe that Drury has described no such insect, although it is probable that Fabricius, who was on terms of intimacy with our author, might have seen the unpublished figure of such insect in his possession. Mr. Smeathman informed our author that he was once stung in the finger by one of these insects, but the pain was not so severe as might have been expected from a wound made by so large a creature belonging to this genus. His method, when stung by any insects in Africa, was to open the puncture with a lancet, and squeeze out the blood and venom together, which, when effectually done, soon caused the pain to abate.

CHLORION FEROX.

Plate XLII. fig. 2.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Sphegidae, *Leach*.

GENUS. CHLORION, *Latr. Sphex, Drury*.

CHLORION FEROX. Viridi-cyaneum, nitidissimum, antennis pedibusque nigris, alis fuscescentibus. (Expans. Alar. fere 2 unc.)

SYN. *Sphex ferus, Drury, App. vol. 3.*

Sphex lobata? Fabr. Ent. Syst. 2, 206. 30. Syst. Piez. 217.

HABITAT: China.

Head fine green. Jaws strong. Tongue not observed. Eyes oblong. Antennæ black. Wings thin and diaphanous. Thorax and abdomen beautiful shining emerald green. Legs black.

The description given by Drury of this insect entirely agrees with a very common Chinese insect, the *Chlorion lobatum*, Latr. This figure is however hardly to be recognized.

ATTA FERVENS.

Plate XLII. fig. 3.

ORDER: Hymenoptera. SECTION: Heterogyna. FAMILY: Formicidæ, *Leach*.

GENUS. ATTA, *Fabr. Latreille*. Formica, *Linn. Drury*.

ATTA FERVENS. Fusca, sericea, alis fuscis, capitis angulis posticis rotundatis. (Expans. Alar. 2 unc. 6 lin.)

SYN. Formica fervens, *Drury, App. vol. 2. Say in Journ. of Nat. Hist. Soc. of Boston, p. 290.*

HABITAT: Musquito Shore, on the Bay of Mexico.

Antennæ small, setaceous, and shorter than the thorax. Head dark brown, small and flat, armed with strong jaws. Eyes small, round and black. Thorax and abdomen dark brown, and velvety. Wings brown and diaphanous. Legs coloured like the body, without any spines at any of the joints; neither is there any abdominal peduncle.

This insect (which appears to be a queen or female ant) is nearly allied to a very celebrated South American species, which, from visiting the houses of the inhabitants in great swarms, is termed the visiting ant. (*Atta Cephalotes*, *Fabr.*) The late Mr. Say, however, pointed out the differences between the two species in his manuscripts, which have been published in the Journal of the Natural History Society of Boston for 1836.

PEPSIS SEVERA.

Plate XLII. fig. 4.

ORDER: Hymenoptera. SECTION: Fossores. FAMILY: Pompilidæ, *Leach*.

GENUS. PEPSIS, *Latr. Fabr.* Sphex, *Linn. Drury*.

PEPSIS SEVERA. Atra, alis fulvo-diaphanis apice fuscis, pedibus fulvis femoribus nigris. (Expans. Alar. 3 unc. 3 lin.)

SYN. Sphex Severus, *Drury, App. vol. 3.*

HABITAT: Coast of Africa.

Head black. Tongue not observed. Palpi four. Eyes oblong, prominent and shining. Wings yellow-brown, diaphanous, the tips black. Thorax, abdomen, and thighs black. Tibiæ and tarsi yellow-brown.

MANTIS (HARPAX) OCELLARIA.

Plate XLIII. fig. 1.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Mantidæ.

GENUS. Mantis, *Linn.* (SUBGENUS: Harpax, *Serville*.)

MANTIS (HARPAX) OCELLARIA. Capite inermi, femoribus posticis lobo apicali, elytris viridibus oculo magno discoidali flavo nigro-cingulato. (Expans. Alar. 2 unc. 6 lin.)

SYN. Mantis ocellaria, *Drury, App. vol. 3.*

HABITAT: Coast of Africa.

Antennæ setaceous. The insect, when living, was probably green, but is now of a yellowish brown; the eyes, head, and thorax being of that colour. One-third of the tegmina, next the tips, is transparent, the remainder being green. In the centre is a yellow spot resembling an eye, encircled with black, whose centre is dark green, with a black margin at top. Wings transparent. Fore-legs yellow-brown. Femora strong, with two rows of spines, and a groove between to receive the tibiæ, which are furnished with a strong spine at the tip. Middle and hind legs having a small flap placed at the tips of the femora, and two tibial spurs.

“This rare and beautiful mantis was found in a savanna.”—*Smeathman*.

PENTATOMA BICOLORATA.

Plate XLIII. fig. 2.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorisæ. FAMILY: Pentatomidæ.

GENUS. PENTATOMA, *Latreille*. Cimex, *Fabricius*, *Drury*.

PENTATOMA BICOLORATA. Fusca, pronoti lateribus in spinam obtusam utrinque productis, scutello versus basin et ad apicem elytrorumque maculâ costali fulvis. (Long. Corp. lin. 7.)

SYN. Cimex rostratus, *Drury*, *App. vol. 2*.

La punaise à sept taches, *Stoll*, *pl. 14. fig. 97*.

HABITAT: Sierra Leone (*Drury*). Coast of Guinea (*Stoll*).

Head and eyes brown. Thorax dark yellow in front; the hinder part brown, the sides terminating in two obtuse spines. Scutellum yellow, brown in the middle. Hemelytra brown, with a yellow spot on the middle of the anterior edges. Legs yellow-brown, the fore ones having a remarkable spine on the thighs, placed near the tips. Rostrum strong, extending as far as the middle legs. Abdomen with two lateral dark indented lines extending to the anus.

I have been compelled to propose another specific name for this insect, that given to it by our author being quite inexpressive.

CERBUS? FLAVEOLUS.

Plate XLIII. fig. 3.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorisæ. FAMILY: Coreidæ, *Leach*.

GENUS. CERBUS? *Hahn*. Cimex, *Drury*.

CERBUS? FLAVEOLUS. Fuscus, pronoti marginibus fasciâque angulatâ elytrorum fulvis; abdomine rufo, nigro marginato. (Expans. Alar. 1 unc. 9 lin.)

SYN. Cimex flaveolus, *Drury*, *App. vol. 3*.

HABITAT: Sierra Leone.

Head dark orange. Antennæ filiform, four-jointed, about three-fourths the length of the insect. Thorax brown, edged with yellow. Scutellum triangular, not large, brown. Hemelytra brown, one-half of the posterior edge next the body having a yellow line running along it, crossing the middle, and

ending at the anterior edge. Wings diaphanous. Abdomen red, edged with black. Rostrum slender, and extending just below the fore-legs. Legs yellow-brown. Tibiæ and tarsi almost black.

DIASPIDIUS SCAPHA.

Plate XLIII. fig. 4.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Reduviidæ, *Leach*.

GENUS. DIASPIDIUS, *Westw.* *Cimex*, *Drury*.

DIASPIDIUS SCAPHA. Fulvus; capite, antennis, pronoti lobo antico, membranâ elytrorum pedibusque nigris.
(Expans. Alar. 2 unc.)

SYN. *Cimex Scapha*, *Drury*, *App. vol. 3.*

HABITAT: Sierra Leone.

Head very small, black, hairy, and long. Antennæ filiform, about half the length of the insect. The fore part of the thorax is hairy and black; the remainder and the scutellum yellow-brown. Basal half of the hemelytra orange-coloured, the remainder dark brown. Wings diaphanous. Abdomen brown-yellow. Rostrum short and black, not reaching to the fore-legs, which are black. Middle and hind legs partly black and brown.

This insect differs so much from the other species of the extensive family Reduviidæ, that I have been compelled to raise it to the rank of a distinct genus, the characters of which are as well marked as those of the majority of the genera recently proposed by the Continental Entomologists in this group. Its characters as a genus are—

Caput parvum. Antennæ breves vix longitudine thoracis, 4?-articulatæ; articulo 2^{do}., 1^{mo}. et 3^{to}. breviori. Pronotum posticè in lobum magnum depressum, supra scutellum et basin alarum productum. Hemelytra marginem lateralem abdominis haud tegentia. Tarsi ut videtur 1-articulati.

PYRRHOCORIS PRINCEPS.

Plate XLIII. fig. 5.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Lygæidæ.

GENUS. PYRRHOCORIS, *Fallen*, *Burmeister*. *Astemma*, *St. Farg. & Serv.* *Platynotus*, *Schill.*

PYRRHOCORIS PRINCEPS. Sanguineus; pronoti lobo antico in medio, elytrorum fasciâ versus basin maculâque costali mediâ nigris, membranâ apicali fuscâ, femoribus in medio nigris. (Expans. Alar. 2 unc.)

SYN. *Cimex longirostris*, *Drury*, *App. vol. 3.*

HABITAT: Sierra Leone.

Head yellowish-brown. Thorax in front black, and brown behind. Antennæ black and slender, about half the length of the insect. Scutellum triangular and black. Corium yellow-brown, having a black streak crossing the middle, and a black spot near it; apical membrane opaque and dark brown. Wings diaphanous. Rostrum long and slender, reaching to the middle of the abdomen. Legs partly black and brown. Tarsi three-jointed.

The name applied to this species by Drury is so inexpressive that I have been induced to propose for it a new specific designation, which has allusion to its large size and rich colouring.

CETONIA TORQUATA.

Plate XLIV. fig. 1.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Cetoniidæ.

GENUS. CETONIA, *Fabricius*, §c. *Scarabæus*, *Linn.* §c.

CETONIA TORQUATA. Obscure viridis, thoracis margine antico luteo, pygidii maculis duabus albis; elytrorum apice suturali spinoso. (Long. Corp. 2 unc. 6 lin.)

SYN. *Scar. torquatus*, *Drury, App. vol. 3. Herbst. Col. 111. p. 198. t. 28. f. 1. Schon. Syn. Ins. 3. 117.*

HABITAT : Sierra Leone.

Head rather square, depressed above; dusky in front, grey behind. Eyes round and prominent. Antennæ black. The thorax dusky green, margined. Scutellum large, triangular, and green. Elytra dusky green, the sides and suture margined, having two swellings near the extremities, and two short thick spines at the end of the suture. The abdomen covered above with a fine brown pile like velvet. Hind part of the abdomen green, with two silvery white spots of a squarish form. All the under side of the insect green, and of a more lively or shining colour than the upper. Legs strong and thick, the tibiæ furnished with thick spines, both in the middle and at the tips, the hinder ones being hairy.

This splendid and exceedingly rare insect flew on board a ship at Sierra Leone, and was taken on the awning on the following morning. It seems to be unknown to the French Entomologists, and is omitted in the “*Monographie des Cétoines*” of Messrs. Gory and Perchéron.

PELIDNOTA UNICOLOR.

Plate XLIV. fig. 2.

ORDER : Coleoptera. SECTION : Lamellicornes. FAMILY : Rutelidæ, *Mac Leay*.

GENUS. PELIDNOTA, *Mac Leay*. *Scarabæus* p., *Drury*.

PELIDNOTA UNICOLOR. Tota lutea; elytris tenuiter striatis. (Long Corp. 1 unc. 1½ lin.)

SYN. *Scarabæus unicolor*, *Drury, App. vol. 3.*

Melolontha Druryana, *Herbst. Col. 11. p. 163. 121. t. 27. f. 3.*

Melolontha lutea, *Olivier Ent. 1. 5. p. 23. t. 19. 1. f. 2.*

Pelidnota testacea, *Deg. Cat.*

HABITAT : Brazil.

Brown. Thorax margined. Scutellum small and semi-circular. Elytra margined, and faintly striated. Anterior tibiæ dentated. Tibiæ with two spurs, except the fore ones, which have only one.

RUTELA LINEOLA.

Plate XLIV. fig. 3.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Rutelidæ.

GENUS. RUTELA, *Latreille*. Scarabæus p. *Drury*. Cetonia p. *Fabr.*

RUTELA LINEOLA. Nigra, lineâ a capite ad scutellum ductâ, lateribusque flavis, elytrorum plagâ magnâ flavidâ.
(Long. Corp. 7½ lin.)

SYN. Scarabæus Lineola var. *Linn. Syst. Nat.* 1. 11. p. 552. 53. *Fabr. Syst. El.* 11. p. 145. 53. (Cetonia L.)

Syst. Ent. p. 46. 17. *Oliv. Ent.* 1. 6. p. 78. 98. t. 11. f. 106. var. β.

Cetonia Ehippium, *Fabr. Mantiss.* 1. p. 29. 31.

Scarabæus Hespera, *Drury, App.* vol. 2.

HABITAT: Brazil.

Antennæ brown. Head black, with a deep yellow stripe down the middle, which is continued across the thorax; that part being black, the sides yellow, whereon is a black spot in the middle. Scutellum yellow and triangular. Elytra black, with a large yellow patch in the middle of each. Podex yellow, the middle being black. Abdomen ringed with black and yellow above: black beneath, with two yellow spots on it. Sternum yellow, extending to the posterior coxæ, which are brown. Posterior femora broad, yellow and brown; the other legs brown.

The specimen here figured appears to differ from the ordinary character of the species in having the thorax more strongly marked with dark yellow.

MACRASPIS FUCATA.

Plate XLIV. fig. 4.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Rutelidæ.

GENUS. MACRASPIS, *Mac Leay*. Cetonia p., *Fabricius*. Scarabæus p., *Drury*.

MACRASPIS FUCATA. Atra nitida, thoracis margine omni elytrorumque vittis duabus flavis. (Long. Corp. 10½ lin.)

SYN. Cetonia fucata, *Fabr. Syst. El.* 11. p. 151. 82. *Ent. Syst.* 1. 11. p. 145. 69. *Sch. Syn. Ins.* vol. 3. p. 158.

Cetonia quadri-vittata, *Oliv. Ent.* 1. 6. p. 73. 92. t. 7. f. 65.

Scarabæus Cinctus, *Drury, App.* vol. 2. *Herbst. Col.* 111. p. 249. 38. t. 31. f. 5. (Cetonia c.)

HABITAT: Rio Janeiro.

Head black and circular. Thorax black, margined with yellow. Scutellum very large, black, and triangular. Elytra black, the sides brown, between which colours is a narrow yellow line, which, running round the extremities, returns back pretty broad up to the anterior edge. Podex and abdomen brown. Sternum long and black. Legs black. Tibiæ with two long spurs at the tips, the fore-legs having only one. Ungues having a long slender spine fixed to the joint, of equal length with the hook itself.

ECTRICHODIA BARBICORNIS.

Plate XLV. fig. 1.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Reduviidæ, *Leach*.

GENUS. ECTRICHODIA, *Laporte*. Ectrichotes, *Burmeister*. Loricerus, *Hahn*.

ECTRICHODIA BARBICORNIS. Nigra; thorace, abdominis lateribus pedibusque rufis, scutello nigro nitido. (Long. Corp. 1 unc. 1½ lin.)

SYN. Reduvius barbicornis, *Fabr. Ent. Syst.* 4. 194. 4. *Syst. Rh.* 267. 4. *Drury, App.* vol. 3. (Cimex b.)

HABITAT: Sierra Leone.

Head small and dark brown. Antennæ filiform, black. Thorax dark orange. Scutellum small, black, rough, and shining. Hemelytra black, velvety; but edged next the body with orange. Abdomen black, edged with orange. Rostrum short, not reaching to the fore-legs, and brown. Legs slender and orange-coloured.

CERBUS FALX.

Plate XLV. fig. 2.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Coreidæ, *Leach*.

GENUS. *CERBUS*, *Hahn*. *Anisoscelis*, *Latr*. *Lygæus*, *Fabr*.

CERBUS FALX. Fuscus, thoracis lateribus compresso-lunatis serratis, femoribus posticis dilatatis haud dentatis, tibiisque posticis membranaceo-dilatatis. (Long. Corp. $9\frac{1}{2}$ lin.)

SYN. *Cimex falx*, *Drury*, *App. vol. 3*.

HABITAT: Coast of Africa.

Head small, dirty brown, which is the general colour of the insect. Antennæ slender, about two-thirds the length of the insect. Thorax brown, the sides terminating in two broad and thin protuberances, bending forward towards the head, the edges being serrated. Scutellum triangular. Wing-cases, wings and legs muddy-coloured, the hinder legs having the tibiæ very broad, and thin.

This insect is very nearly allied to *Lygæus Tragus* Wolff, fig. 188, which is, however, an inhabitant of China.

DIACTOR LATIPES.

Plate XLV. fig. 3.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Coreidæ, *Leach*.

GENUS. *DIACTOR*, *Burmeister*. *Acanthocephalus*, *Laporte*. *Cimex*, *Drury*. *Lygæus*, *Fabr*.

DIACTOR LATIPES. Fuscus sive brunneus, unicolor; pronoto cano granoso, elytrorum venis rufis, tarsis posticis pallidis. (Long. Corp. 1 unc. $1\frac{1}{2}$ lin.)

SYN. *Cimex latipes*, *Drury*, *App. vol. 3*.

Lygæus compressipes, *Fabr. Syst. Rh.* 209. 24. *Stoll Cim. t. 2. f. 14*. *Burmeister Handb. 2. 334*.
(*Diactor c.*)

HABITAT: Jamaica (*Drury*). South America.

Head black and very small. Antennæ slender, and almost as long as the insect. Thorax dark muddy green, almost black, which is the general colour of the insect. Next the head there is a white mark, somewhat resembling a crown, the sides terminating in two angles. Scutellum triangular. Hemelytra and wings of the same dark colour with the other parts. Rostrum slender, extending to the middle legs. Fore and middle legs slender, the thighs being dentated. Hinder legs very long, the thighs very thick and strong, and much dentated; the tibiæ being very broad and thin, and the inner edges serrated. Tarsi dark orange.

HAMMATOCERUS PURCIS.

Plate XLV. fig. 4.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorisæ. FAMILY: Reduviidæ, *Leach*.

GENUS. HAMMATOCERUS, *Burm.* Hammacerus, *Laporte.* Cimex, *Drury.*

HAMMATOCERUS PURCIS. Niger, undique granosus, elytris basi albis, femorum posticorum basi sanguineâ.
(Long. Corp. 1 unc.)

SYN. Cimex Purcis, *Drury, App. vol. 3. Brown Ill. tab. 70. f. 2.*

Reduvius Nychthemerus, *Illig. Burm. vol. 2. 236. 1. (Hammatocerus n.)*

Hammacerus conspicularis var. *Laporte Hem. 79.*

HABITAT: Virginia (*Drury*). Georgia (*Burmeister*).

Head, eyes, and thorax black; the latter rough. Antennæ setaceous, consisting of innumerable articulations. Scutellum triangular and black. Corium white, terminal membrane black. Wings white and transparent. Abdomen black, the edges marked with scarlet and black spots. Rostrum black and short, not reaching to the fore legs. Legs black, the hinder thighs next the body scarlet.

CERBUS SANCTUS.

Plate XLV. fig. 5.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocorisæ. FAMILY: Coreidæ, *Leach*.

GENUS. CERBUS, *Hahn.* Anisoscelis, *Latr.* Lygæus, *Fabr.*

CERBUS SANCTUS. Fuscus, thorace maculâque cruciatâ elytrorum fulvis, thorace inermi, pedibus nigris femoribus posticis maximis, tibiis medioeribus. (Long. Corp. fere 1 unc.)

SYN. Cimex Sanctus, *Drury, App. vol. 3.*

HABITAT: Sierra Leone.

Head dark brown. Antennæ almost as long as the insect. Thorax orange brown, having a black streak on it next the head. Scutellum triangular and black. Corium orange brown, apical membrane black. Rostrum small and slender, not reaching to the fore legs. Legs black. Hinder thighs strong and thick, having a strong spine on the under part, and another longer, near the tip of the tibiæ.

Fabricius has applied the specific name of Sanctus to one of the species of thick-legged Coreidæ, from Brazil, which is placed by Burmeister in the Genus Crinocerus. Drury quoted the Fabrician description as belonging to his species, but the diversity in their locality would alone be sufficient to prove them to be distinct.

RAPHIGASTER VALIDUS.

Plate XLV. fig. 6.

For the description of this species, and a representation of an individual with expanded wings, see Vol. II. plate XXXVIII. fig. 4. The following are the only material variations noticed in the descriptions of this specimen as compared with that referred to above, and which can only be regarded as indicating slight variety.

Head very small and black. Antennæ black, about half the length of the insect. Thorax shining, punctated, and of a deep blue, almost black, being surrounded with a circular line of a cream colour, and which is divided in the middle, the sides terminating in two black angular spines. Scutellum large.

glossy, triangular, and black, the tip being cream-coloured and punctated. Hemelytra brownish, tinged with blue, the extremities being blueish black. Abdomen red above, edged with orange and black; deep yellow beneath, with black spots on the edge. Legs deep yellow, tibiae black. Tarsi black above, yellow beneath.

CERBUS UMBROSUS.

Plate XLV. fig. 7.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Coreidae, *Leach*.

GENUS. CERBUS, *Hahn*. Anisocelis, *Latr*. Lygæus, *Fabr*.

CERBUS UMBROSUS. Obscurè fulvescens, pronoti disco striis tribus nigris, antennarum articulo ultimo fulvo, elytris striis obliquis nigris notatis, membranâ apicali æneâ nitidâ, femoribus tibiisque posticis serratis. (Long. Corp. 1 unc. 3 lin.)

SYN. Cimex umbrosus, *Drury, App. vol. 3*.

HABITAT: Brazil.

Head and thorax dark orange, the latter with three longitudinal streaks of a darker colour. Antennæ dark orange and black, the last articulation orange. Scutellum triangular, and dark brown. Hemelytra striated with dark orange and brown, the extremities being of a bronze-colour and glossy. Abdomen darker than the other parts. Rostrum extending to the middle legs. Legs orange-brown, the hinder ones having the thighs and tibiae serrated.

HAMMATOCERUS CONSPICILLARIS.

Plate XLV. fig. 8.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Reduviidæ, *Leach*.

GENUS. HAMMATOCERUS, *Burm*. Hammacerus, *Laporte*. Cimex, *Drury*.

HAMMATOCERUS CONSPICILLARIS. Niger, elytris basi albis, maculâ irregulari nigrâ, abdominis marginibus rubro-maculatis. (Long. Corp. 1 unc. 1½ lin.)

SYN. Cimex conspicillaris, *Drury, App. vol. 3*. *Laporte Hemipt. p. 79*. *Burmeister Hem. p. 236. 2*.

HABITAT: Brazil.

Head small and black. Antennæ setaceous, black, and about half the length of the insect. Thorax black. Scutellum triangular and black, but tipped with white. Hemelytra black, the base white, whereon is an oblong black spot. Abdomen dark red, edged with dark red and black. Rostrum short and curled, not reaching to the fore legs. Legs black.

PENTATOMA CATENA.

Plate XLVI. fig. 1.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Pentatomidæ.

GENUS. PENTATOMA, *Latreille*. Cimex, *Fabr. Drury*.

PENTATOMA CATENA. Albida, pronoti dorso maculâ magnâ nigrâ, lineâ tenui albâ in medio divisâ, scutello maculâ basali, alterâ subapicali, membranâque elytrorum nigris. (Long. Corp. lin. 7½.)

SYN. Cimex catena, *Drury, App. vol. 3*.

HABITAT: Brazil.

Head cream-coloured and black. Antennæ about half the length of the insect. Thorax flesh-coloured; a large black spot occupying the middle, which is divided by a cream-coloured line. Scutellum shaped like a bell, black, surrounded with cream colour, and divided transversely by a line of the same colour. Hemelytra flesh-coloured, the extremities black. Beneath cream-coloured, with a great many black spots. Rostrum black, extending below the fore legs. Legs cream, streaked with black.

EDESSA VIRENS.

Plate XLVI. fig. 2.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Scutati, *Burm.*

GENUS. EDESSA, *Fabr.* Centroproctus, *Hahn.* Cimex, *Drury.*

EDESSA VIRENS. Obscure virescens, elytris fuscis margine externo pallido, pronoto lateribus utrinque in spinam longam rectam et acutam productis. (Long. Corp. 10½ lin.)

SYN. Cimex virens, *Drury, App. vol. 3.*

Edessa cervus? *Fabr. Syst. Rh. 146. 2.*

HABITAT: Brazil.

Antennæ small, about two-thirds the length of the insect. Head, thorax, and scutellum dirty green; the latter large and triangular. The thorax on each side ends in very acute angles. Hemelytra brown, but were probably green when the insect was living. Beneath dirty green. Rostrum extending beyond the hinder legs.

LARGUS LINEOLA.

Plate XLVI. fig. 3.

ORDER: Hemiptera. SECTION: Geocoris. FAMILY: Lygæidæ, *Leach.*

GENUS. LARGUS, *Hahn.* Euryopthalmus, *Laporte.* Cimex, *Drury.*

LARGUS LINEOLA. Ferrugineo-niger, profunde punctatus, pronoto postice luteo, membranâ albido-cinereâ fusco venosâ limbo fusco. (Long. Corp. 6 lin.)

SYN. Cimex Lineola, *Linn. Syst. Nat. p. 721. No. 52.*

Cimex punctatus, *De Geer Mem. pl. 34. fig. 17. 18.*

Cimex humilis, *Drury, App. vol. 3. Hahn. Wanzen. Art. Ins. t. 2. f. 6. (Largus h.) Stoll, tab. 27. fig. 265.*

Euryopth. puncticollis, *Laporte Hemipt. 38. 4.*

Lygæus Mutilus, *Perty Del. Art. Braz. pl. 34. f. 9.*

HABITAT: Brazil.

Head black. Antennæ small and black, and about half the length of the insect. Thorax black in front, orange behind; with many minute black spots, the under part being edged with cream. Scutellum triangular, small and black. Hemelytra black at the base: white at the extremities. Abdomen black, edged with cream both above and beneath. Rostrum black, extending to the hinder legs, all of which are black likewise.

PENTATOMA SPECTABILIS.

Plate XLVI. fig. 4.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Pentatomidæ.

GENUS. PENTATOMA, *Latreille*. Cimex, *Fabr. Drury*.

PENTATOMA SPECTABILIS. Capite rufescenti postice nigro, pronoto albido, antice maculisque duabus posticis nigris, scutello et corio albidis fasciâ latâ communi membranâque apicali nigris. (Long. Corp. $7\frac{1}{2}$ lin.)

SYN. Cimex spectabilis, *Drury, App. vol. 3.*

HABITAT: Brazil.

Head red. Eyes, neck, and antennæ black. Thorax cream-coloured, edged in front with black, having two small black spots on the shoulders, and two larger on the hinder part, which are continued on the front of the scutellum, which is large and triangular; the tip being cream colour, the middle having a broad black band crossing it and the hemelytra, which are cream-coloured at the base, the hinder part being black. Beneath red, with small black spots along the sides. Rostrum long and black, extending below the hinder legs. Thighs red, the tibiæ and tarsi black.

PENTATOMA RUTILANS.

Plate XLVI. fig. 5.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Pentatomidæ.

GENUS. PENTATOMA, *Latreille*. Cimex, *Fabr. Drury*.

PENTATOMA RUTILANS. Cyanea aut viridi ænea, pronoti fasciâ transversâ anticâ, scutelli apice elytrorumque basi internè sanguineis, abdomine sanguineo maculis marginalibus pedibusque nigris. (Long Corp. 1 unc. 3 lin.)

SYN. Edessa rutilans, *Fabr. Syst. Rh. 151. 25.*

Cimex anchorago, *Drury, App. vol. 3.* (nec *Fabr. Ent. Syst. 4. 86. 25.*)

HABITAT: Sierra Leone.

Head dark blue. Antennæ black. Thorax deep shining mazarine blue, the fore part with a scarlet transverse streak. Scutellum triangular, appearing swelled in the fore part, which is of a dark greenish blue, the hinder part being scarlet, and continued along the edges up to the shoulders. Hemelytra dark blueish green. Abdomen scarlet, edged with dark blue spots. Rostrum black, extending to the hinder legs. Beneath deep yellowish flesh-colour, spotted on the sides with blue. Legs black.

PENTATOMA REGIA.

Plate XLVI. fig. 6.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Pentatomidæ.

GENUS. PENTATOMA, *Latreille*. Cimex, *Fabr. Drury*.

PENTATOMA REGIA. Lutea; capite, pronoti maculis duabus oblongis, scutelli basi, elytrorum maculâ centrali membranâque apicali nigris. (Long. Corp. lin $7\frac{1}{2}$.)

SYN. Cimex regius, *Drury, App. vol. 3.*

Pentatoma catena var. vel sexus alter? *Drury*, in text.

HABITAT: Brazil.

The principal difference between this insect and *Pent. catena*, is two black spots on the flesh-coloured part of the hemelytra; the scutellum not having the black part divided by the cream-coloured line, and the under part of the insect being rather more spotted than that.

ASPONGOPUS JANUS.

Plate XLVI. fig. 7.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Pentatomidæ.

GENUS. ASPONGOPUS, *Lap. Burm.* *Edessa, Fabr.* *Cimex, Drury.*

ASPONGOPUS JANUS. Niger, supra ruber; capite, pronoti maculâ anticâ, scutelli basi, membranâque nigris. (Long. Corp. 10 lin.)

SYN. *Cimex Janus*, *Fabr. Ent. Syst.* 4. 107. 105. *Syst. Rhyn.* 151. 23. (*Edessa J.*) *Stoll Cim.* 2. t. 6. f. 41. *Wolff. Cim.* 1. 13. t. 2. f. 13. *Burmeister Hemipt.* p. 352. 3. (*Aspongopus J.*) *Cimex Afer*, *Drury, App. vol.* 3.

HABITAT: Coast of Coromandel (*Drury*). "In Americæ insulis" (*Fabr.* haud recte).

Head and antennæ black. Thorax red and margined, having a black triangular spot situated near the head. Base of the scutellum black, the hinder part and sides being red. Hemelytra red, the extremities black. Abdomen red. Rostrum short, extending only to the fore legs. Beneath black, edged with red. Legs black.

The specific name, *Afer*, given to this insect, although having the priority in point of date over that of *Fabricius*, is so completely inappropriate that I have not hesitated in adopting the latter.

PENTATOMA PULCHELLA.

Plate XLVI. fig. 8.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Pentatomidæ.

GENUS. PENTATOMA, *Latreille.* *Cimex, Fabr.* *Drury.*

PENTATOMA PULCHELLA. Sanguinea, supra cœruleo nigra, fasciis duabus sanguineis, anticâ arcuatâ, antennis pedibusque nigris. (Long. Corp. 10 lin.)

SYN. *Cimex pulchellus*, *Drury, App. vol.* 3. *Stoll, pl.* 5. fig. 30. § *pl.* 21. fig. 142. *Cimex concentricus*, *Klug, Burmeister Hemipt.* 365. 5.

HABITAT: Bay of Honduras (*Drury*). Para (*Burmeister*). Guiana (*J. O. W.*).

Head flesh-coloured. Antennæ black. Thorax dark blue, the angulated corners red. Scutellum scarlet, with a dark blue band crossing it near the middle, and two small blue spots adjoining to the thorax. Hemelytra, next the thorax red, below which is a broad dark blue band crossing them, and a narrow scarlet one beneath it; the remainder being dark blue. Rostrum black, extending below the hinder legs. Abdomen scarlet at the base, with two rows of white streaks; the extremity next the anus dark blue. Legs black.

SPHÆROCORIS ANNULUS.

Plate XLVI. fig. 9.

ORDER: Hemiptera. SUBORDER: Heteroptera. SECTION: Geocoris. FAMILY: Pentatomidæ.

GENUS. SPHÆROCORIS, *Burmeister*. Tetyra, *Fabr.* Cimex, *Drury*.

SPHÆROCORIS ARGUS. Lutea, guttis 15 pallidis sive rubris nigro-cinctis. (Long. Corp. lin. 4.)

SYN. Cimex annulus, *Fabr. Ent. Syst.* 4. 82. 10. *Syst. Rh.* 132. 20. (Tetyra A.)

Cimex Argus, *Drury, App. vol.* 3. (nec *Fabr. Syst. Rh.* 533.) *Stoll Cim. pl.* 7. fig. 50.

Sphærocoris Argus, *Burmeister Hemipt.* 391. No. 2?

Scutellera gibbosa, *Pal. Beauv. Ins. d'Afr. et d'Amer. Hemipt. pl.* 5. b. f. 3.

HABITAT: Sierra Leone.

Head dark cream colour, with two black lines from the front to the hinder part. Thorax dark cream, with two waved bands crossing it from side to side, of a darker colour. Scutellum very large, and entirely covering the abdomen. This part is high and rounded, of the same colour with the rest of the insect, having a number of oval, circular, and other shaped marks thereon. Beneath dark-cream; breast and fore-part lightest. Rostrum extending below the hinder legs, all of which are of the same dark cream colour with the other parts.

There is some confusion as to the specific names of the insects composing the present genus. The Tetyra Argus of Fabricius, with which the species here figured (from Sierra Leone) was considered identical by Drury, is an inhabitant of South America. Dr. Burmeister has also confused it with a species from the Cape of Good Hope.

ELATER (TETRALOBUS) FLABELLICORNIS.

Plate XLVII. fig. 1.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Elateridæ.

GENUS. ELATER, *Linn. &c.* (SUBGENUS: Tetralobus, *Encycl. Méth.*)

ELATER (TETRALOBUS) FLABELLICORNIS. Fuscus, antennis 8-laminatis, elytris nitidis lævibus. (Long. Corp. 2 unc. 6 lin.)

SYN. Elater flabellicornis, *Linn. Syst. Nat.* 1. 11. p. 651. 1.? *Fabr. Syst. Ent.* 1. *App. p.* 824. 1.? *Syst.*

Eleuth. 11. p. 221. 2.? *De Jean Catal. Col. 2nd Edit.* 85. *Oliv. Ent.* 11. 31. p. 8. t. 3. fig. 28.?

Herbst. Col. ix. p. 320. t. 127. f. 1.?

Elater Gigas, *Fabr. Syst. Eleuth.* 11. p. 221. 1.?

HABITAT: Sierra Leone (*Drury, Afzelius, Schonh.*). Guinea (*De Jean*). India (*Linn. Fabr. Oliv.*).

Head rather small, square, surrounded with a small black margin; palpi very short. Antennæ black; those of the male laminated, having eight distinct plates or laminæ laying close to each other, which, when closed together, appear to be of equal thickness. General colour dark or dirty brown. Thorax with a black margin, terminating on the sides in two sharp spines. Scutellum small. Elytra smooth and glossy, without any margin, and rounded at the extremities, without spines. Sternum black and small. Beneath of the same colour as the upper side.

This figure has been usually cited as the *Elater flabellicornis* Linn., the habitat of which is said to be India, whereas the real habitat of Drury's insect, as confirmed by Afzelius and De Jean, is Sierra Leone and Guinea. This insect was sometimes found by Mr. Smeathman in the evenings, having flown into the houses, to which it was attracted by the lights.

ELATER (AGRYPNUS) QUADRI-MACULATUS.

Plate XLVII. fig. 2.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Elateridæ.

GENUS. ELATER, *Linn.* §c. (SUBGENUS: *Agrypnus*, *Eschscholtz.*)

ELATER (AGRYPNUS) QUADRI-MACULATUS. Cinereus, thoracis punctis quatuor, elytris fasciis duabus undulatis nigris. (Long. Corp. 9 lin.)

SYN. *Elater quadri-maculatus*, *Fabr. Ent. Syst.* l. 11. p. 219. 14. *Syst. Eleuth.* 11. p. 224. 13. *Oliv. Ent.* 11. 31. p. 20. t. 8. f. 79. *Herbst. Col.* x. p. 105. t. 168. f. 3. *Klug Ermann's Voy. App.* p. 31. pl. 15. f. 3.

Elater fasciatus, *Drury, App.* vol. 3.

HABITAT: Coast of Africa (*Drury*). "In Africa æquinoctiali" (*Fabr.*).

Head grey. Antennæ serrated and black; much shorter than the thorax, which is grey, with two small round black spots on the middle, and two square ones next the scutellum, which is black, surrounded by a patch of the same colour. Elytra grey, with two waved irregular bands crossing them, one near the middle, the other near the tips. Beneath black, and, when viewed through a microscope, appearing to be powdered as it were with grey. Legs black.

ELATER (CARDIOPHORUS?) PICTUS.

Plate XLVII. fig. 3.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Elateridæ.

GENUS. ELATER, *Linn.* §c. (SUBGENUS: *Cardiophorus*, *Eschsch.*?)

ELATER (CARDIOPHORUS?) PICTUS. Fulvus, antennis nigris serratis, thorace elytrisq[ue] nigro-lineatis et undulatis, his etiam maculâ utrinque triangulari nigrâ. (Long. Corp. 9 lin.)

SYN. *Elater pictus*, *Drury, App.* vol. 3. *Schönh. Syn. Ins.* 3. 277.

HABITAT: Coast of Africa.

Head yellow-brown. Antennæ deeply serrated and black, being shorter than the thorax. Thorax yellow-brown, with several black longitudinal streaks. Scutellum very small and yellow brown. Elytra of the same colour, with several faint black marks thereon, particularly two situated near the middle of a triangular shape, and reaching to the sides; they are a little striated, and terminate in four blunt spines, two to each. Beneath of a greyer colour than on the upper side. Sternum remarkably large.

ELATER (SEMIOTUS) LIGNEUS.

Plate XLVII. fig. 4.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Elateridæ.

GENUS. ELATER, *Linn. &c.* (SUBGENUS: *Semiotus*, *Eschscholtz.*) *Pericalus*, *Enc. Méth.*

ELATER (SEMIOTUS) LIGNEUS. Ferrugineus, elytris mucronatis vittis duabus lateralibus suturæque obscurioribus, thorace lineâ mediâ nigrâ. (*Long. Corp.* 1 unc. 3 lin.)

SYN. *Elater ligneus*, *Linn. Amœn. Acad.* vi. p. 395. 24. *Syst. Nat.* 1. 11. p. 652. *Fabr. Syst. Eleuth.* 11. p. 224. No. 20. *Oliv. Ent.* 11. 31. p. 17. t. 2. f. 15. *Herbst. Col.* ix. p. 339. 14. t. 158. f. 8.

Elater serraticornis, *Drury, App.* vol. 3.

Elater conicus, *Voot Col. Ed. Panz.* 11. p. 110. 9. t. 42. f. 9.

HABITAT: Rio Janeiro.

Head red brown. Antennæ black, shorter than the thorax, which is red-brown, with a dark longitudinal streak running along the middle from the head to the scutellum, the sides terminating in two angular points. Scutellum small and brown. Elytra red-brown, margined and ending in two spines; they are a little striated, with three longitudinal streaks of a dark brown colour; one in the middle along the suture, the others on each side. Breast and base of the abdomen red-brown colour; hinder part of the latter is darker, having two oval spots of a lightish colour near the anus.

ELATER (SEMIOTUS) SUTURALIS.

Plate XLVII. fig. 5.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Elateridæ.

GENUS. ELATER, *Linn. &c.* (SUBGENUS: *Semiotus*.)

ELATER (SEMIOTUS) SUTURALIS. Thorace utrinque unidentato ferrugineo, lineâ dorsali punctisque duobus; coleoptris testaceis vittis tribus atris. (*Long. Corp.* 1 unc. 5 lin.)

SYN. *Elater Suturalis*, *Fabr. Ent. Syst.* 1. 11. p. 224. 35. *Syst. Eleuth.* 11. p. 231. 52. *Oliv. Ent.* 11. 31. p. 18. t. 1. f. 3. a. b. c. *Herbst. Col.* ix. t. 158. f. 5. 6.

Elater angulatus, *Drury Ins. App.* vol. 3.

HABITAT: Brazil.

Head black, with two thick and short spines. Antennæ black, strongly serrated. Thorax orange, with a broad black streak down the middle; two black lozenge-shaped spots are placed near the middle of the thorax, and united to the black streak; close to these are two protuberances, on the sides of the thorax. Scutellum black. Elytra pale orange, the sides and middle having three black stripes running along them, the extremities ending in two sharp spines. Breast orange, with two long black spots on the sides. Abdomen dark cream-coloured, with two black stripes running along the sides from the breast, and joining at the anus. Legs orange.

ELATER (CHALCOLEPIDIUS) PORCATUS.

Plate XLVII. fig. 6.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Elateridæ.

GENUS. ELATER, *Linn. ꝯc.* (SUBGENUS: Chalcolepidius, *Eschscholtz.*)

ELATER (CHALCOLEPIDIUS) PORCATUS. Viridi-ceneus, elytris sulcatis; sulcis villosulo-albis, thoracis marginibus luteis. (Long. Corp. 1 unc. 9 lin.)

SYN. Elater porcatus, *Fabr. Syst. Ent. p. 211. 8. Syst. Eleuth. 11. p. 225. 26. Oliv. Ent. 11. 31. p. 14. 10. t. 7. f. 74. Herbst. Col. ix. p. 323. t. 157. f. 3. Drury, App. vol. 3.*

HABITAT: Bay of Honduras.

Head dark green. Antennæ black. Thorax yellow at the sides; having a broad bar of a green colour running longitudinally from the head to the hinder part, being margined with black. Elytra deeply furrowed with green and yellow lines, the sides having a broad yellow stripe along them, and margined with black, the extremities being round, and not ending in a spine. Breast, abdomen, and legs dark green. Sternum black and large.

FLATA——? PUPA——?

Plate XLVIII fig. 1.

ORDER: Hemiptera. SUBORDER: Homoptera. FAMILY: Fulgoridæ.

GENUS. FLATA, *Fabricius, ꝯc.* Aphis, *Drury.*

FLATA—— PUPA? Corpore toto albo pulveroso vel lanoso. (Long. Corp. Ins. haud declar. 9 lin.)

SYN. Aphis lanosa, *Drury, App. vol. 3.*

HABITAT:

Head appearing united and fixed to the body, and furnished with a horny beak, about one-fourth the length of the whole insect. Antennæ of equal thickness, and apparently only two-jointed; one next the head, which is white, another in the middle, the extreme part being black; the length being about a tenth part of the whole insect. Body white, and covered with a very fine cottony substance. Legs white at the base, the remainder black. The insect above is round, beneath flat; a fine soft white substance, like down, intermixed with hairs of different sizes, some being very small, others very coarse, arises from the abdomen.

“I am not certain it is a complete insect.”—*Drury.*

This figure represents an insect belonging to the genus Flata (probably *Flata nigricornis* from South America) in an imperfect state, being most likely a pupa. The species of this genus are ascertained to be similar to this figure in their preparatory states, and especially the *Flata nigricornis* which is represented by Stoll, both in the winged and apterous condition, as well as by Donovan, in his *Insects of China*.

CHOLUS URBANUS.

Plate XLVIII. fig. 2.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Cholidæ.

GENUS. CHOLUS, *Germar.* Rhynchænus, *Fabr.* Curculio p. *Linn. &c.*

CHOLUS URBANUS. Fusco-viridis, thorace elytrisq. flavo marginatis. (Long. Corp. rostr. inclus. 1 unc. 1½ lin.)

SYN. Curculio urbanus, *Oliv. Enc. Méth.* v. p. 503. *Sch. Syn. Ins. Curcul.* 3. 571. 17. (Cholus u.)

Curculio cinctus, *Drury, App. vol. 3.* (nec Cholus cinctus, *Oliv. Rhynchænus.*) *Herbst. Col.* vi. p. 478. t. 79. fig. 7.

HABITAT: Musquito Shore, near Honduras.

Head black. Rostrum half the length of the insect. Antennæ black, arising near the end of the beak. Thorax dirty green, with a cream-coloured stripe running on each side, which is continued along the sides of the elytra, meeting at the anus. Beneath cream colour. Legs the same, being dirty green above. Every part of the insect appears covered with innumerable small black pustules, like spots, some smaller than others, those on the upper side being largest. Each of the femora is furnished with a single spine.

DYNASTES CLAVIGER.

Plate XLVIII. fig. 3.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Dynastidæ.

GENUS. DYNASTES, *Mac Leay.* Geotrupes, *Fabr.* Scarabæus, *Linn. Latr.*

DYNASTES CLAVIGER. Rufus, thoracis cornu elevato apice dilatato; capitis longo, subulato recurvo. (Long. Corp. fere 2 unc.)

SYN. Scarabæus claviger, *Linn. Mant.* 1. p. 529. *Fabr. Syst. Ent.* 1. p. 5. No. 7. *Syst. El.* 1. p. 6. No. 11. *Oliv. Ent.* 1. 3. p. 20. No. 18. t. 5. fig. 40. a. b. *Jabl. Nat. Syst.* 1. p. 239. No. 10. t. 3. f. 1. *Pal. Beauv. Ins. d'Afr. et d'Amer. Col.* ix. pl. 1e. f. 1.

HABITAT: Cayenne.

Head small, margined, and armed with a long horn which bends upwards. Thorax dark brown and margined, having a very remarkable erect and black horn issuing from it, which bends forward towards the head, the extremity of which is trifurcate, hollowed beneath, and covered with a brown pile like that of velvet. Elytra brown, the margin and suture being black. Legs black. Thighs brown. Tibiæ with two spurs. Anterior tibiæ with three spines placed on the external part.

HISTER (OXYSTERNUS) MAXIMUS.

Plate XLVIII. fig. 4.

ORDER: Coleoptera. SECTION: Clavicornes. FAMILY: Histeridæ.

GENUS. HISTER, *Linn. &c.* (SUBGENUS: Oxysternus, *Erichson.*)

HISTER (OXYSTERNUS) MAXIMUS. Depressus ater nitidus; elytris striatis, mandibulis exsertis capite longioribus. (Long. Corp. cum mandib. 1 unc. 3 lin.)

SYN. Hister maximus, *Linn. Syst. Nat.* 1. 2. 566. 1.

Hololepta maxillosa, *Park Mon. Hist.* 111. 9. t. ix. f. 7.

Hister maxillosus, *Drury, App. vol. 2.*

Oxysternus maximus, *Erichson in Jahrb. der Ent.* 1. 100.

O. maxillosus, *Guérin & Percheron Genera des Ins.* 1. Col. pl. 7. (♀ ?) *Fabricius Ent. Syst. vol. 4. Append. p. 437. Schonh. Syn. Ins.* 1. p. 98.

HABITAT: Cayenne.

Black. Head furnished with two horn-like mandibles, being thicker near the head, and terminating in a point; that fixed on the left side of the insect being longest. Thorax broad and margined. Elytra slightly striated. Scutellum not to be seen. Posterior tibiæ rather long. Tarsi short.

PHANÆUS FESTIVUS ♀.

Plate XLVIII. fig. 5.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ.

GENUS. PHANÆUS, *Mac Leay*. Copris p. *Fabr.* Scarabæus p. *Linn.*

PHANÆUS FESTIVUS. Thorace gibbo bicorni, capitis cornu erecto ♂, elytris rubro-æneis; ♀ thorace mutico æquali nigro-maculato, capite mutico. (Long. Corp. 1 unc. 1½ lin.)

SYN. Scarabæus festivus, *Linn. Syst. Nat.* 1. 2. p. 552. 252. *Fabr. Ent. Syst.* 1. p. 42. No. 139. *Syst. El.* 1. 32. No. 10. *Oliv. Ent.* 1. 3. p. 110. No. 127. t. 3. f. 21. a. b. *De Geer Ins.* iv. p. 315. t. 37. fig. 3. ♂. 4. ♀.

HABITAT: Cayenne.

Head black, broad, rounded in front and margined. Thorax red and margined, having several black patches thereon. Scutellum not distinct. Elytra red and striated, being margined with black. Beneath black and shining. Legs thick and strong.

COPRIS FAUNUS.

Plate XLVIII. fig. 6.

ORDER: Coleoptera. SECTION: Lamellicornes. FAMILY: Scarabæidæ.

GENUS. COPRIS, *Geoffroy*. Scarabæus p., *Linn.*

COPRIS FAUNUS. Thorace quadricorni, cornubus mediis brevissimis, lateralibus dilatatis, capitis cornu recurvo serrato. (Long. Corp. 1 unc. 9 lin.)

SYN. Scarabæus Faunus, *Fabr. Ent. Syst.* 1. p. 47. No. 155. *Syst. El.* 1. p. 38. No. 36. *Oliv. Ent.* 1. 3. 103. t. 10. f. 87. t. 22. f. 87. b. *Jabl. Nat. Syst.* 11. p. 61. t. 9. f. 3.

HABITAT: Cayenne.

Entirely black. Head rounded in front and margined; armed with a long horn that inclines towards the body, the inner part of which, near the top, is dentated. Thorax terminating at the corners, next the body, in two projections like horns, extending in an horizontal position, being very obtuse, and wider at the ends than the middle. The central part has two small projections which are bifid, and two dents on the middle of the posterior margin. Scutellum not distinct. Elytra deeply furrowed. Legs thick and strong. Fore and hinder tibiæ dentated.

RHIPICERA DRURÆI.

Plate XLVIII. fig. 7.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Cebriionidæ.

GENUS. RHIPICERA, *Latr. Kirby*. *Hispa*, *Fabr. Drury*. *Ptilinus*, *Fabr.* *Polytomus*, *Dalman*. *Ptiocerus*.
Hoffmansegg.

RHIPICERA DRURÆI. Thorace griseo sericeo; elytris brunneis albo-punctatis scutelloque albido, pedibus supra
fuscis subtus griseis. (Long. Corp. 7½ lin.)

SYN. *Hispa mystacina*, *Fabr. Syst. Ent.* p. 70. 1.? *Syst. Eleuth.* 1. p. 328. 1.? (*Ptilinus* m.) *Herbst. Col.* v.
p. 45. t. 46. f. 13.? *Laporte in Ann. Soc. Ent. de France*, 1834. p. 235.? (*Rhipicera* m.)

HABITAT: "Sierra Leone, Mr. Smeathman, 1776" (*Drury's MSS.*).

Head small, black, thin, and margined from the part where the antennæ are placed; but behind them to the thorax growing suddenly thick and round. Antennæ strongly pectinated, each ramification increasing from the base towards the middle, and then gradually decreasing in length; they are about a third part of the insect's length, and entirely black. Thorax grey, rounded, having a ridge on each side, and seeming covered with a fine pile or down. Scutellum grey and round, appearing like a whiteish spot. Elytra dark red-brown, covered with a multitude of small whiteish spots, furrowed and margined at the sides and suture. Breast and abdomen grey, each ring of the latter having some black spots on it. Legs brown above, grey beneath.

I have attached a mark of doubt to all the synonyms quoted above, 1st. on account of the difference of locality between Drury's Insect, and that described by Fabricius, which is from New Holland. 2ndly. Because Drury's description does not agree with the true *Rh. mystacina*: and 3dly. because as there is another spotted species of the genus found in North America, described by Laporte, it is most probable that Drury's insect is altogether distinct, in which case I have proposed for it the name of *Rhipicera Druræi*. Mr. Kirby speaks of the New Holland species of this genus as though there were more than one, and he has described one from that country under the name of *R. femorata*, in the 12th volume of the Linn. Trans. No. 9. in which the thorax, as well as the elytra, is spotted with white, whereas the thorax of *Mystacina* is described by Fabricius as being "cinereus." The *Rh. mystacina* of Laporte entirely agrees with Mr. Kirby's *Rh. femorata*. The *Rh. femorata* of Dalman is a totally distinct species from Brazil, and as it is necessary that a new specific name should be given to it, I would suggest that it should be termed *Rh. Dalmanni*.

SAPERDA SPECTABILIS.

Plate XLVIII. fig. 8.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Lamiidæ.

GENUS. SAPERDA, *Fabr.* *Cerambyx* p., *Drury*. (SUBGENUS: — ?)

SAPERDA SPECTABILIS. Nigra, thorace flavo punctis tribus nigris, elytris fasciis duabus flavis, apice truncato et
spinoso. (Long. Corp. 9 lin.)

SYN. *Cerambyx spectabilis*, *Drury, App. vol. 2. Sch. Syn. Ins.* 3. 421. (*Saperda* s.)

HABITAT: Bay of Honduras.

Head black, with a large yellowish spot between the eyes. Antennæ black, and almost the length of the insect, having a row of short hairs running along the under side. Thorax black beneath, lemon-coloured above, with three black spots. Scutellum small, triangular, and black. Elytra black, with two broad straw-coloured bars crossing them, each having a spine at the extremity near the suture. Beneath black, except the middle of the abdominal rings, which is grey.

PRONUS (TITANUS) GIGANTEUS.

Plate XLIX. fig. 1.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Prionidæ.

GENUS. PRIONUS, *Geoffroy*. Cerambyx p., *Lin.* (SUBGENUS: Titanus, *Serv. Ann. Soc. Ent. France*, 1. p. 133.

PRIONUS (TITANUS) GIGANTEUS. Thorace utrinque bidentato, corpore nigro, elytris ferrugineis, antennis brevibus. (Long. Corp. 6 unc. 9 lin.)

SYN. Cerambyx Giganteus, *Lin. Mant.* 1. 531. *Shaw Nat. Misc. t.* 280. *Fabr. Syst. El.* 2. 261. 17. (Prionus g.) *Oliv. Ent.* 4. 66. p. 12. t. 6. f. 21.

HABITAT: Cayenne.

Head and thorax black; all the rest of the insect dark brown. Jaws broad and thin, the extremities bending inwards towards each other. Antennæ thickest at their base, and about half the length of the insect, gradually diminishing in size to the extremities. Thorax smooth and rounded at top, the middle appearing as if polished; the sides rough, like shagreen, and armed with two short and pointed spines, like horns; it is also margined. Scutellum small and bell-shaped. Elytra deeply margined on their sides and suture; faintly ribbed, each having five placed longitudinally, the surface very rough. Sides of the abdomen covered beneath with a dark brown velvety pile. Legs with short strong tibial spurs.

HEILIPUS? SCALARIS.

Plate XLIX. fig. 2.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ.

GENUS. HEILIPUS? *Germer.*

HEILIPUS? SCALARIS. Niger; thoracis lateribus et elytrorum disco irregulariter flavescentibus. (Long. Corp. 1 unc. 1½ lin.)

SYN. Curculio scalaris, *Drury, App. vol.* 3.

HABITAT: Bay of Honduras.

Head, eyes, and rostrum black, slender, and nearly half the length of the insect; antennæ arising near the end of it. Thorax black, with a yellow streak running along each side from the eyes to the corners of the elytra. Scutellum small, black, triangular. Elytra black, with a yellow zigzag streak running along the sides, all the black part being full of small punctures. Beneath entirely black.

CERAMBYX (COSMISOMA) PLUMICORNIS.

Plate XLIX. fig. 3.

ORDER: Coleoptera. SECTION: Longicornes. FAMILY: Cerambycidae.

GENUS. CERAMBYX, *Linn. &c.* (SUBGENUS: Cosmisoma, *Serv.*)

CERAMBYX (COSMISOMA) PLUMICORNIS. Fulvus, elytris cruce nigrâ, pedibus antennisque nigris, his scopiferis.
(Long. Corp. $7\frac{1}{2}$ lin.)

SYN. *Leptura plumicornis*, *Drury, App. vol. 2. Sch. Syn. Ins. 3. 429.* (*Saperda* p.)

HABITAT: Musquito Shore, Bay of Honduras.

Head dark brown. Antennæ longer than the insect, and slender; basal joint thickest; furnished with remarkable tufts of hair, four on each antenna; the smallest is on the first articulation from the head; the next articulation has a pretty large one surrounding entirely the joint of the antenna, and is black. On the next joint is a very small one, standing on the joint in the form of an acute angle, and is also black. At a little distance from this, the largest tuft is situated, which, like the second, entirely surrounds the antenna, part of it next the head being black, the remainder orange colour. Thorax round, without lateral spines, orange-coloured. Elytra orange, with a broad black patch crossing them in the middle, where are two lines in the form of a cross. Legs black, the hind ones very long. Femora thick at the tips.

CYPHUS 16-PUNCTATUS.

Plate XLIX. fig. 4.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Brachyderides.

GENUS. CYPHUS, *Schönherr.* *Chlorima, Dej.* *Curculio* p., *Linn.*

CYPHUS SEDECIM-PUNCTATUS. Cærulescens, thorace punctis nigris quatuor, coleopteris duodecim. (Long. Corp. 1 unc.)

SYN. *Curculio sedecim-punctatus*, *Linn. Syst. Nat. 1. 2. 618. 92. Fabr. Syst. Eleuth. 3. 509. 10. Oliv. Ent. v. 83. t. 2. f. 17. a. b. Schönh. Syn. Ins. Curcul. 1. 625. 8.*

HABITAT: Cayenne.

Entirely fine blue-coloured. Antennæ somewhat longer than represented in the plate, and black. Thorax with five black spots on it; one in the centre, and two on each side. Elytra having twelve spots of the same colour, the apices terminating in two sharp points.

SOLENOPUS CACICUS.

Plate XLIX. fig. 5.

ORDER: Coleoptera. SECTION: Rhyncophora. FAMILY: Curculionidæ. SUBFAMILY: Cholidæ.

GENUS. SOLENOPUS, *Schönherr.* *Odontoderes, Sahlberg.* *Curculio* p., *Drury.*

SOLENOPUS CACICUS. Ater sulphureo-squamosus, thorace bivittato, lateribus granulatis, elytris punctis magnis oblongo-quadratis et striatis. (Long. Corp. rostr. inclus. 1 unc. 3 lin.)

SYN. *Curculio morbillosus*, *Drury, App. vol. 3.*

Solenopus cacicus, *Schönh. Syn. Ins. Curcul. 3. 597. 1.*

Dionychus granicollis, *Germ. Ins. Spec. 315. 454.*

HABITAT: Cayenne.

Head, eyes, and rostrum black, the latter being about the length of the thorax. Antennæ arising near the end of the beak. Thorax dirty brown, having a number of very small pustules on it. Scutellum small and triangular. Elytra the same colour with the thorax, with patches of lighter brown on them. They are also margined and furrowed, having a great number of black pustules. Legs black, tibiæ with two spurs, the outer ones being the thickest.

LESTES CÆRULEATA.

Plate L. fig. 1.

ORDER: Neuroptera. SECTION: Subulicornes. FAMILY: Libellulidæ.

GENUS. *LESTES*, *Leach*. *Libellula* p., *Drury*, *Donovan*.

LESTES CÆRULEATA. Cærulea, thorace pallidè vittato, alis hyalinis fasciâ latâ subapicali cærulescenti, stigmatè nigro. (Expans. Alar. 5 unc. 6 lin. Long. Corp. fere 4 unc.)

SYN. *Libellula cæruleata*, *Drury*, *App. vol. 3*.

Libellula cærulea, *Donovan Nat. Repos. 4*. 110.

HABITAT: Bay of Honduras (*Drury*). "Muskito Shore, Mr. Shakespear, 1779" (*Drury's MSS.*).

Eyes large, projecting from the head. Thorax dark blue. Wings reticulated and transparent, having a broad patch of a deep mazarine blue crossing them near the extremities, the tips being transparent. Abdomen three inches and an eighth in length, dark blue. Under side of the head, thorax, &c. grey.

LAMPYRIS GIGANTEA.

Plate L. fig. 2.

ORDER: Coleoptera. SECTION: Serricornes. FAMILY: Lampyridæ.

GENUS. *LAMPYRIS*, *Linn. &c.*

LAMPYRIS GIGANTEA. Ovata depressa, thorace semi-circulari fulvo, disco irregulari, elytris fuscis vittâ laterali albidâ. (Long. Corp. 1 unc. 3 lin.)

SYN. *Lampyris gigantea*, *Schonh. Syn. Ins. 3*. 66. No. 46.

Lampyris splendida, *Drury, App. vol. 3*.

Lampyris Savignii? *Kirby Trans. Linn. &c. v. 12. Guérin. Icon. R. An. Ins. pl. 14. fig. 7*.

HABITAT: Rio Janeiro.

Antennæ setaceous, with a small spine, like a short hair, at each of the joints. Head withdrawn, and entirely hid by the shield-like thorax. Thorax yellow, margined and semicircular, with a rugged projection in the middle. Scutellum small, yellow, and triangular. Elytra dark red-brown, with a cream-coloured line running longitudinally from the thorax towards the apex, and having a small cream-coloured margin. Breast orange colour. Legs partly orange and black. Abdomen, which is rather thick, black, with a cream-coloured streak crossing it near the anus.

BLATTA (PHORASPIS) PICTA.

Plate L. fig. 3.

ORDER: Orthoptera. SECTION: Cursoria. FAMILY: Blattidæ.

GENUS. BLATTA, *Linn. &c.* (SUBGENUS: Phoraspis, *Serville.*)

BLATTA (PHORASPIS) PICTA. Atra; elytris vittâ sanguineâ thoracisque margine antico flavescenti. (Long. Corp. 9 lin.)

SYN. Blatta picta, *Drury, App. vol. 3. Fabr. Ent. Syst. 2. p. 10. Serville Revis. Orthop. p. 17.* (Phoraspis p.)
Lampyris rufo-vittata, *Schönh. Syn. Ins. 3. p. 66. Na. 47.*

HABITAT: Rio Janeiro, Brazil.

Antennæ filiform, orbicular. Head dark brown, and retracted under the shield-like thorax, which is black, the anterior margin being yellowish. Elytra black and margined, semi-coriaceous, and crossing over one another, having a red streak from the shoulders to the apex. Abdomen black, having two spines at the extremity near the anus. Legs black and cursorial, the tibiæ being furnished with many spines.

FULGORA DIADEMA.

Plate L. fig. 4.

ORDER. Hemiptera. SUBORDER: Homoptera. FAMILY: Fulgoridæ.

GENUS. FULGORA, *Linn.*

FULGORA DIADEMA. Fusca, vertice, pronoti medio, elytrorum fasciâ luteis; alis purpureis, apice nigris, capitis cornu in medio dentato apice dentibus tribus majoribus. (Long. Corp. cum capitis cornu, 1 unc. 9 lin. Expans. Alar. 3 unc. 6 lin.)

SYN. Fulgora diadema, *Linn. Syst. N. 1. 2. 703. 2. Fabr. Syst. Rh. 2. 3. Stoll, fig. 22. Donovan Nat. Repos. vol. 5. fol. 145.*

Fulgora armata, *Drury, App. vol. 3.*

HABITAT: Cayenne (*Drury*).

Head extending almost half an inch above the eyes, having many tubercles, like stubbed horns, on the sides, trifurcate at the tip. It is likewise furnished with two short pointed and black horns that are placed directly over the eyes, and two smaller ones a little below them. It appears as if it had four eyes; two fixed, and of a grey colour like horn; just below which the other two (seeming eyes) are placed. They are black and moveable, but are the antennæ, and are perfectly round. Hemelytra dirty green at the base, with some dusky red patches irregularly placed; but near the extremity having a large patch of a dark orange colour. The wings are black, but next the body red, with some red spots in the centre of them. Rostrum horny, lying between the legs, even with and close to the breast. Tongue seeming to proceed from the mouth, and much smaller than the other instrument (labium), being as small and fine as a hair. Feet formed for walking.

There is a confusion in the works of the earlier authors relative to the native country of this species; Linnæus and Fabricius stating it to be India, whilst Stoll records Surinam, Drury, Cayenne, during that it and others figured by him were collected by Mons. Mallouet,

who sent them to Europe, but in their passage they were taken by the Shaftesbury privateer, and afterwards sold by public auction, where he purchased them. Donovan states that two specimens he possessed were taken in Brazil; and Dr. Burmeister still more satisfactorily says, "Gleichfalls aus *Sud-Amerika* findet sich besonders häufig auf den Cautschuck-Bäumen (*Siphonia elastica*)."

NOTES

SELECTED FROM THE MANUSCRIPT CATALOGUES OF MR. DRURY.

RELATIVE TO SPECIES OF DISPUTED LOCALITY

Contained in Vol. 1 and 2 of these Illustrations.

(The Notes relating to the Species of the third Volume are incorporated in the text.)

GENUS.	SPECIES.	LOCALITY.	FROM WHOM RECEIVED.	DATE.	ILLUSTRATIONS.
Scarabæus	Gideon var.	Africa	Mr. Smeathman	1775	Vol. 1. plate 36, fig. 1.
————	Didymus	St. Vincent's	Mr. Kearton	1773	Vol. 1. plate 32, fig. 3.
————	tetradactylus	Brazil	Mr. Bonifas	1774	Vol. 1. plate 37, fig. 7.
————	cordatus Swederus, Cet. olivacea	Sierra Leone	Mr. Smeathman	1773	Vol. 2. plate 32, fig. 5.
————	sulcatus	Georgia	Mr. Abbot	1785	Vol. 1. plate 35, fig. 1.
Cerambyx	cinnamomeus	Jamaica	Mr. Keuchan	1775	Vol. 1. plate 40, fig. 2.
————	notatus	{ Caught in a Timber-yard in Bunhill Row; sup- posed to be bred in fir* }	Mr. Haller	1768	Vol. 2. plate 35, fig. 2.
————	araneiformis	Jamaica	Mr. Felton	1765	Vol. 2. plate 35, fig. 4.
————	atomarius	Georgia	Mr. Abbot	1785	Vol. 1. plate 41, fig. 6.
————	longipes	{ Bay of Honduras—they live in the mahogany trees }	By the Actæon	1771	Vol. 1. plate 37, fig. 4.
————	irroratus	Jamaica	Mr. Dupont	1765	Vol. 1. plate 41, fig. 3.
Papilio	Dione	Batavia	General Rengers	1776	Vol. 2. plate 8, fig. 3, 4.
————	Licis	Madras†	Mr. Skeene	1772	Vol. 1. plate 16, fig. 1.
————	Arethusa	Madras	Mr. Skeene	1772	Vol. 2. plate 19, fig. 5, 6.
————	Bolina	Sierra Leone	Mr. Smeathman	1775	Vol. 1. plate 14, fig. 1, 2.
————	Philantha	Sierra Leone	Mr. Smeathman	1776	Vol. 1. plate 21, fig. 1, 2.
————	Iphiola	Jamaica	Mr. Keuchan	1772	Vol. 1. plate 14, fig. 3, 4.
————	Laure	Jamaica	Dr. Fothergill	1777	Vol. 2. plate 17, fig. 5, 6.
————	Leda	Madras	Mr. Skeene	1772	Vol. 1. plate 15, fig. 5, 6.
————	Pan	New York	Mr. James	1766	Vol. 2. plate 23, fig. 3, 4.
————	Isis	Sierra Leone	Mr. Smeathman	1775	Vol. 2. plate 3, fig. 4, 5.
————	Acis	New York	Mr. James	1766	Vol. 1. plate 1, fig. 2.
————	Phylæus	Madras	Mr. Skeene	1772	Vol. 1. plate 13, fig. 4, 5.
Phalæna	Chera	Madras	Mr. Skeene	1772	Vol. 2. plate 20, fig. 4.
————	Egle	Antigua	Mr. Archer		Vol. 2. plate 20, fig. 3.
————	Myrtæa	Rio Janeiro	Mr. Bonifas	1776	Vol. 2. plate 2, fig. 3.
Cimex	incarnatus	Madras	Mr. Skeene	1773	Vol. 2. plate 3, fig. 5.
Libellula	Lucretia	Muskito Shore	Mr. Shakespear	1779	Vol. 2. plate 48, fig. 1.
Formica	barbara?	Island of Johanna	Mr. Richardson	1772	Vol. 2. plate 38, fig. 3.
Sphex	cœruleata	Boston, New England	Mr. J. Harris	1768	Vol. 2. plate 39, fig. 4.
————	maculata	Coromandel Coast‡	General Rengers	1770	Vol. 2. plate 40, fig. 3.
————	plumipes	Jamaica	Mr. Dupont	1760	Vol. 1. plate 44, fig. 4, 5.

* Thus confirming my observations on this insect in vol. 1. p. 68. (J. O. W.)

† Drury however received many insects from Brazil as well as Madras by Mr. Skeene.

‡ "Banks of the Morea, up the Mediterranean," in the text, Edit. 1.

GENERAL ALPHABETICAL INDEX.

Obs.—The names to which an * are attached are those employed in the first edition of this work, and which are here introduced for convenience of reference.

- Acheta membranacea, vol. 2. pl. 43. f. 2. p. 91.
 — (Schizodaetyla) monstrosa, vol. 2. pl. 43. f. 1. p. 90.
 Acrea Camoena, vol. 2. pl. 7. f. 2. p. 15.
 — Circeis, vol. 3. pl. 18. f. 5, 6. p. 26.
 — Cynthia, vol. 3. pl. 37. f. 5, 6. p. 51.
 — Dice, vol. 3. pl. 18. f. 3, 4. p. 25.
 — Ethosea, vol. 3. pl. 37. f. 3, 4. p. 50.
 — Gea, vol. 3. pl. 28. f. 3, 4. p. 38.
 — Horta, vol. 3. pl. 28. f. 1, 2. p. 37.
 — Hypatia, vol. 3. pl. 13. f. 1, 2. p. 16.
 — Menippe, vol. 3. pl. 13. f. 3, 4. p. 17.
 — Umbra, vol. 3. pl. 18. f. 1, 2. p. 24.
 Actias Luna, vol. 1. pl. 24. f. 1. p. 45.
 Ageria? plumipes, vol. 3. pl. 2. f. 3. p. 3.
 — tibialis, vol. 2. pl. 28. f. 2. p. 52.
 Agrocera amabilis, vol. 2. pl. 13. f. 3. p. 25.
 Aeshna Junia, vol. 1. pl. 47. f. 5. p. 116.
 Aglaope plumipes, vol. 2. pl. 27. f. 3. p. 51.
 Agrion Caia, vol. 2. pl. 45. f. 2. p. 92.
 — Titia, vol. 2. pl. 45. f. 5. p. 94.
 — virginica, vol. 1. pl. 48. f. 2. p. 118.
 Alcis scolopacea, vol. 2. pl. 22. f. 1. p. 40.
 Anthocaris Arethusa, vol. 2. pl. 19. f. 5, 6. p. 37.
 Aphana lanata, vol. 2. pl. 37. f. 3. p. 75.
 *Aphis lanosa, vol. 3. pl. 48. f. 1.
 *Apis annularis, vol. 2. pl. 37. f. 7.
 * — cornuta, vol. 2. pl. 48. f. 3.
 * — grossa, vol. 1. pl. 45. f. 3.
 * — latipes, vol. 2. pl. 48. f. 2.
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Zygæna Thetis, vol. 1. pl. 26. f. 4. p. 52.

SYSTEMATIC ARRANGEMENT

OF

THE INSECTS

FIGURED IN THESE ILLUSTRATIONS.

NOTE.—The Species are arranged alphabetically under the Generic Names, independently of the Subgenera, which are in brackets thus, ().

Order: COLEOPTERA, *Linnaeus*.

Section: ADEPHAGA.

Family: CARABIDÆ.

Sub-Family: BRACHINIDÆ.

Casnonia longicollis, vol. 1. pl. 42. f. 4, 6. p. 90.

Galerita Americana, vol. 1. pl. 42. f. 2. p. 89.

Section: CLAVICORNES.

Family: HISTERIDÆ.

Hister (Oxysternus) maximus, vol. 3. pl. 48. f. 4. p. 72.

Section: LAMELLICORNES.

Family: SCARABÆIDÆ.

Coprobius lævis, vol. 1. pl. 35. f. 7. p. 73.
—— *triangularis*, vol. 1. pl. 36. f. 7. p. 77.

Onthophagus serratipes, vol. 1. pl. 36. f. 8. p. 78.

Onitis Spinipes, vol. 1. pl. 35. f. 8. p. 74.
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—— *festivus*, vol. 3. pl. 48. f. 5. p. 73.

Copris Carolina, vol. 1. pl. 35. f. 2. p. 72.

—— *Faunus*, vol. 3. pl. 48. f. 6. p. 73.

—— *minutus*, vol. 1. pl. 35. f. 6. p. 73.

—— *Molossus*, vol. 1. pl. 32. f. 2. p. 64.

—— *Sulcatus*, vol. 1. pl. 35. f. 1. p. 71.

Family: DYNASTIDÆ.

Oryctes nasicornis, vol. 1. pl. 34. f. 7, 8. p. 71.

Dynastes Ægeon, vol. 2. pl. 30. f. 5. f. 58.

—— *Antæus*, vol. 1. pl. 34. f. 3, 4. p. 26.

—— *Centaurus*, vol. 1. pl. 36. f. 1. p. 75.

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Dynastes Claviger, vol. 3. pl. 48. f. 3. p. 72.

—— *Geryon*, vol. 2. pl. 30. f. 6. p. 58.

—— *Gideon*, vol. 1. pl. 36. f. 5. p. 76.

—— *Hercules*, vol. 1. pl. 30. f. 1, 2. p. 59.

—— *Satyrus*, vol. 1. pl. 34. f. 1, 2. p. 69.

—— *Titanus*, vol. 1. pl. 36. f. 3, 4. p. 76.

Phileurus Didymus, vol. 1. pl. 32. f. 3. p. 64.

Family: RUTELIDÆ.

Rutela lineola, vol. 3. pl. 44. f. 3. p. 60.

Cyclocephala signata, vol. 1. pl. 36. f. 6. p. 77.

Pelidnota punctata, vol. 1. pl. 34. f. 5. p. 70.

—— *unicolor*, vol. 3. pl. 44. f. 2. p. 60.

Chasmodia? virens, vol. 2. pl. 30. f. 3. p. 57.

Macraspis fucata, vol. 3. pl. 44. f. 4. p. 61.

—— *tetradactyla*, vol. 1. pl. 33. f. 7. p. 68.

Family: MELOLONTHIDÆ.

Areoda lanigera, vol. 1. pl. 34. f. 6. p. 70.

Melolontha occidentalis, vol. 2. pl. 32. f. 2. p. 62.

Hoplia cœrulea, vol. 2. pl. 32. f. 4. p. 63.

Family: CETONIDÆ.

Trichius (Archimediæ) Delta, vol. 2. pl. 30. f. 1, 2. p. 57.

—— *fasciatus*, vol. 1. pl. 36. f. 2. p. 75.

Goliathus Drurii, vol. 3. pl. 40. p. 54.

—— *Giganteus*, vol. 1. pl. 31. f. 1. p. 61.

—— *micans*, vol. 2. pl. 32. f. 3. p. 62.

Gymnetis Lanius, vol. 1. pl. 33. f. 8. p. 68.

—— *nitida* & Var. vol. 1. pl. 33. f. 5, 6. p. 67.

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—— *capensis*, vol. 1. pl. 33. f. 3. p. 67.

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—— *marginata*, vol. 2. pl. 32. f. 1. p. 61.

—— *torquata*, vol. 3. pl. 44. f. 1. p. 60.

Section: SERRICORNES.

Family: BUPRESTIDÆ.

Buprestis (Chalcophora) Virginiensis, vol. 2. pl. 30. f. 3.

Family: ELATERIDÆ.

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—— *(Tetralobus) flabellicornis*, vol. 3. pl. 47. f. 1. p. 68.

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Family: GEOMETRIDÆ.

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* I believe this species to belong to the genus Magasoma. Bdv.

LEPIDOPTERA *continued.*

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 ———? *flaveolus*, vol. 3. pl. 43. f. 3. p. 58.
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- Pyrrhocoris Princeps*, vol. 3. pl. 43. f. 5. p. 59.
Largus Lineola, vol. 3. pl. 46. f. 3. p. 65.

Family: REDUVIIDÆ.

- Reduvius* (*Conorhinus*) *variegatus*, vol. 1. pl. 45. f. 5. p. 103.
Arilus serratus, vol. 3. pl. 36. f. 6. p. 73.
Diaspidius scapha, vol. 3. pl. 43. f. 4. p. 59.
Ectrichodia barbicornis, vol. 3. pl. 45. f. 1. p. 61.
Hammatocerus conspicularis, vol. 3. pl. 45. f. 8. p. 64.
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Suborder: HOMOPTERA.

Family: CICADIDÆ.

- Cicada maculata*, vol. 2. pl. 37. f. 1. p. 74.
 ——— *Stridula*, vol. 2. pl. 37. f. 2. p. 75.

Family: FULGORIDÆ.

- Fulgora Diadema*, vol. 3. pl. 50. f. 4. p. 78.

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Flata ———? pupa, vol. 3. pl. 48. f. 1. p. 71.

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- Tettigonia sanguinea*, vol. 2. pl. 38. f. 5, 6. p. 81.

Order: DIPTERA.

Family: TABANIDÆ.

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- Mydas clavatus*, vol. 1. pl. 44. f. 1. p. 97.

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- Bombylius plumipes*, vol. 2. pl. 39. f. 3. p. 83.

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- Eristalis cinctus*, vol. 1. pl. 45. f. 6. p. 103.
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Family: MUSCIDÆ.

- Echinomyia hirta*, vol. 1. pl. 45. f. 4. p. 102.
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Family: LEPISMIDÆ.

- Lepisma collaris*, vol. 2. pl. 37. f. 5. p. 76.

Order: CHILOGNATHA.

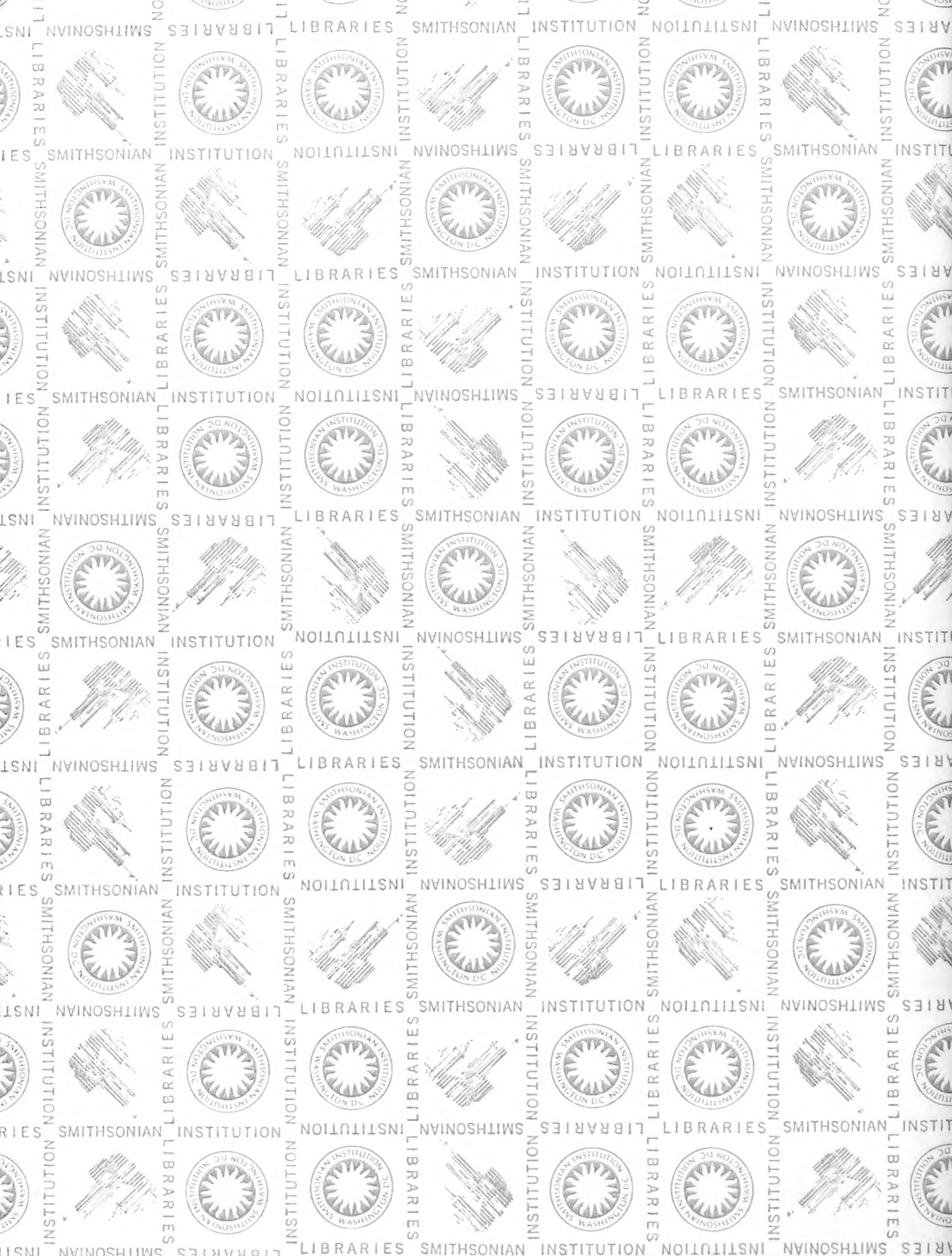
Family: JULIDÆ.

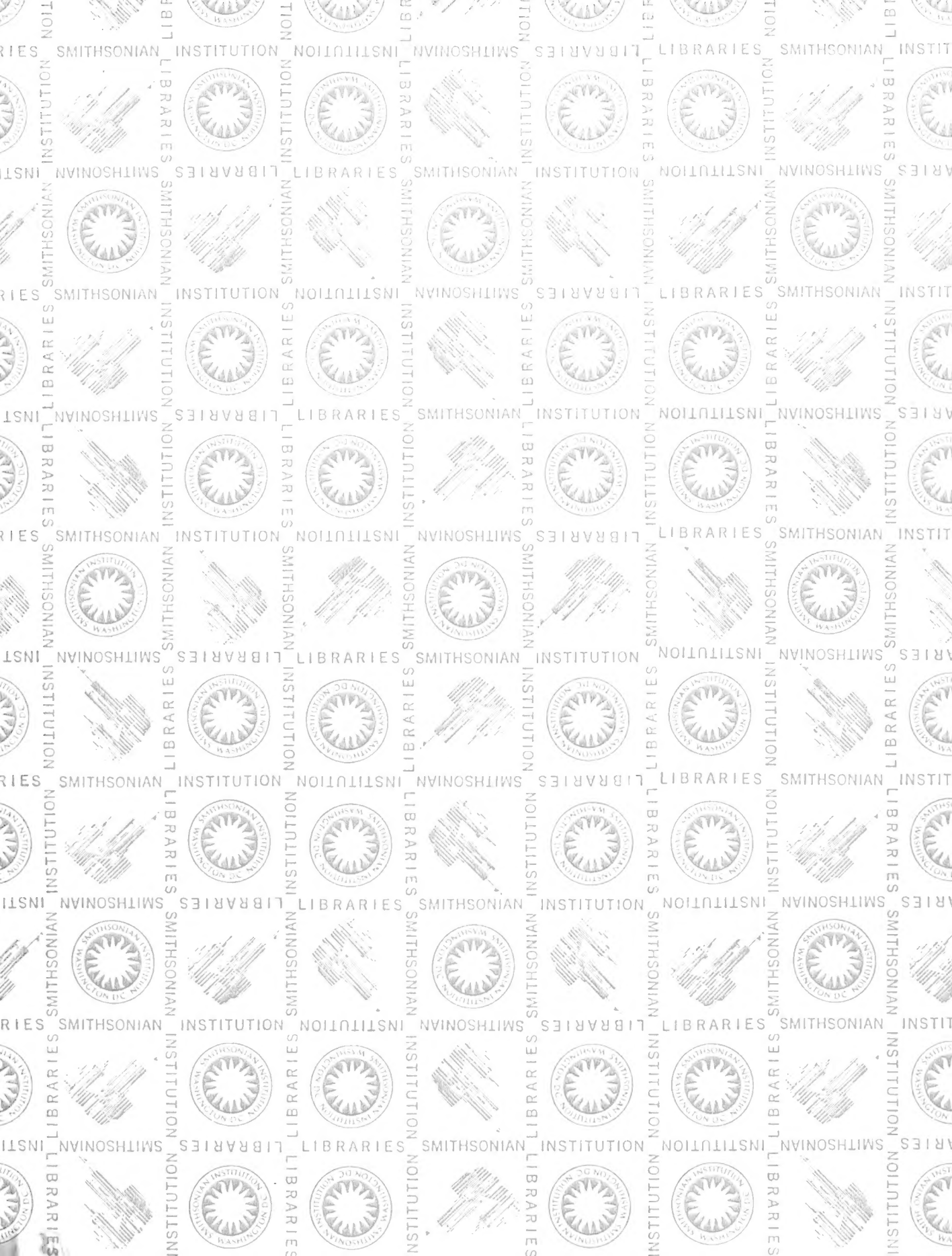
- Polydesmus* (*Fontaria*) *virginiensis*, vol. 1. pl. 43. f. 8. p. 96.

THE END.

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- Vol. I. p. 2. *Note.* The African species here alluded to is *Nymphalis* (*Charaxes*) *Pollux* figured in Vol. 3. pl. 30. fig. 1, 2.
p. 40. *Glaucopis Polymena*, Plate XXVI. fig. 1.
p. 71. *dele* *Copris*—*lege* *onitis*.
—— *Syn. Olivierii* et *Fabricii*, *et adde* *Syn. Onitis Nicanor*, *Fabr. Syst. Eleuth.* 1. p. 29. *Tabl. Col. 2. t. 15. f. 8.*
p. 89. *Sub. galerita Americana*. *Confer. Klug. Jahrb. der Entomol.* 1. p. 63. *et adde* *Syn. Galerita bicolor. Klug. loc. cit.*
p. 97. *Tabanus americanus*, Plate XLIV. fig. 3.
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 Myrmeleon americanum, Plate XLVI. fig. 4.
 Passim pro *Bauvois lege* *Beauvois.*
- Vol. II. p. 27. line 30. *pro* *Nolodontidæ lege* *Notodontidæ.*
p. 30. line 25. *pro* Plate XLV. *lege* Plate XVI.
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