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THE GIFT OF JOHN HENRY COMSTOCK
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GIFT OF STUDENTS IN ENTOMOLOGY
PART I.

OF A

DESCRIPTIVE CATALOGUE

OF THE

LEPIDOPTEROUS INSECTS

CONTAINED IN THE

Museum of the Honourable East-India Company,

ILLUSTRATED BY

COLOURED FIGURES OF NEW SPECIES

AND OF THE

METAMORPHOSIS OF INDIAN LEPIDOPTERA,

WITH

INTRODUCTORY OBSERVATIONS

ON A

GENERAL ARRANGEMENT OF THIS ORDER OF INSECTS.

BY

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TO BE COMPLETED IN SIX PARTS.

London:

PUBLISHED BY PARBURY, ALLEN, & Co.

LEADENHALL STREET.
TO THE

HONOURABLE THE COURT OF DIRECTORS

OF THE

Honourable East-India Company,

THIS WORK

IS, WITH THEIR PERMISSION, RESPECTFULLY DEDICATED,

BY THEIR GRATEFUL AND

OBEIDENT SERVANT,

THE AUTHOR.
INTRODUCTION.

It is proposed, in the following work, to give "a descriptive Catalogue" of a series of Lepidopterous Insects, which form part of a general entomological collection from Java, contained in the Museum of the Honourable East-India Company. Of this collection, and of the circumstances under which it was formed, a concise account is offered to the public in the preface to the Annulosa Javanica. The details there given, which are accompanied with many pertinent remarks on the nature of descriptive Catalogues in general, would effectually supersede all further remarks on my part, were it not necessary, on this occasion, to point out clearly the relation of the present work to that undertaken, from the same materials, by the distinguished author of the Horæ Entomologicæ. My highly respected friend, William Sharp Macleay, Esq., having noticed with commendation that part of the collection which relates to the metamorphosis of the Javanese Lepidoptera, I feel myself called on to give in this place a more minute account of the nature of these materials, and to add to the details already given some further notices regarding the collection in general. I am likewise desirous to declare, immediately at the commencement, the views by which I propose to be guided in the present undertaking.

When the plan of the Annulosa Javanica was first communicated to the public, it was the intention of the Author to include in his work all the orders of insects; and although his labours were in the first instance directed to the Coleoptera alone, yet he announced, both in the notice originally circulated and in the title of the work, that they consisted in an attempt to illustrate the natural affinities and analogies of the insects observed in Java, without limitation to any particular branch of entomology. It is not necessary, in this place, to show the interest and importance of a work of so enlarged a scope, conducted by the author of the Horæ Entomologicæ; for these must strike every person engaged in similar pursuits, whatever may be his opinion regarding that work or the peculiar views which it exhibits: the interruption of this enterprise, therefore, would have been a subject of deepest regret, if it had not been accompanied with an event highly advantageous to the distinguished author. While the second number of the Annulosa Javanica was anxiously expected, the appointment of Mr. Macleay to the office of his Britannic Majesty’s Commissioner of Arbitration at the Havana was announced to the public. The friends of Mr. Macleay, without exception, offered him their congratulations on
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an appointment, which enabled him to pursue a favourite science on a rich territory of immense extent, as yet but very imperfectly explored, and on his advancement to a station combining a liberal compensation of services with high respectability. Their sentiments, as far as regarded Mr. Macleay, were purely congratulatory, yet the disappointment occasioned by his removal, was to them, individually, a cause of unfeigned sorrow. They considered the beneficial effects of his past labours on natural history, and more immediately on zoology. A small association of members of the Linnean Society had been recently formed, for pursuing with more immediate purpose zoological inquiries. This association, established with the entire sanction of the parent Society, whose object embraces natural history in its whole extent, was under particular obligations to Mr. Macleay, and viewed his departure with peculiar solicitude. Its meetings, which had often been enlivened by a luminous exposition of his views and by his affable instructions, were to be deprived of this advantage. The opportunity of consulting his universal experience, in difficult and undetermined points of affinity and arrangement, not only in entomology but in zoology generally, was to be lost. But no individual belonging to this small association felt this privation more strongly, or was more immediately affected by the event, than the individual, whose province it now is to continue, a portion at least of the design which Mr. Macleay had proposed to himself. The expectation of seeing the result of my entomological labours in Java brought before the Public under the favourable circumstances above mentioned, and receiving the illustration of the comprehensive views of Mr. Macleay, had been an object of sincerest gratification; and the suspension, if not the entire interruption of his original design, had caused me proportionate concern. Several months elapsed before I was able to form any determinate resolution. At length I was roused from my reluctance to engage, in any manner, in a work, which had been commenced by Mr. Macleay with such distinguished ability, by the consideration of the necessity of bringing the result of my labours before the Public, however imperfectly I might accomplish it; and it is now my business to state explicitly, at the commencement, that the present undertaking, although compiled from the same materials, is not a continuation of the Annulosa Javanica; that it does not in any way interfere with the plan of Mr. Macleay, but forms a distinct work, in which I propose to give a Catalogue of the Lepidopterous Insects belonging to the entomological collection made by me in Java.

But although I have so distinctly declared that the present undertaking is not a continuation of the Annulosa Javanica, yet it will be conducted with a steady reference to that work and to the Horae Entomologicae. The plan of the former will be my constant guide, and the comprehensive views detailed in the latter will afford the means of regulating the arrangements suggested by the former, and of comparing...
ing and correcting my mode of proceeding. Accordingly, my principal aim will be to
discover the natural affinities, and to follow them in the arrangement. Wherever
my materials are sufficiently extensive, I shall trace the series through its whole
extent, and endeavour to show, that in this department also, the principle so clearly
developed by Mr. Macleay is exemplified, in the succession or chain of affinities
returning into themselves or forming circles. In the series which will thus be sub-
mitted to my close examination, I shall endeavour to discover and point out the
typical forms which indicate the subdivisions and distinguish the groups. But as
it may be expected that, in a local collection, many forms must be deficient, and the
thread of affinities often interrupted, I shall carefully notice these interruptions,
with the design of supplying them, as far as necessary, from other sources of infor-
mation. The analogies existing between objects of distant or of neighbouring groups
will also be pointed out, wherever they may have been satisfactorily developed.

Mr. Macleay announced the Annulosa Javanica with the remark, that his plan
would be best understood by a perusal of the first number. I would make a similar
remark, but under circumstances, and with sentiments widely differing from those of
my respected friend. If some of the details which regard the metamorphosis of
Javanese Lepidoptera should be found novel and interesting, the arrangement will
perhaps be reviewed with severe criticism. But I would request that it be received,
at least provisionally, with indulgence, until I may have been enabled to add the illus-
trations which will follow in the course of the work, and until it may have been sub-
mittted to a candid scrutiny, and to a careful comparison with the labours of others in
the same department; especially with those of Cramer in the continuation by Stoll;
those of Abbot published by Sir James Smith; those of Roesel, De Geer, Sepp, Hübner,
and above all those of the “Theresianer.” It will, at the same time, be considered,
that it is my lot to attempt an arrangement, in a great measure from my own ma-
terials, and under many disadvantages, as far as regards experience and means of
reference. Much of the knowledge and experience I require must be acquired by
study and comparison in the progress of the work. Mr. Macleay, on the contrary,
brought to his undertaking a minute acquaintance with entomology, and a confirmed
habit of investigation, the result of a calm examination of an extensive collection, and
matured by a severe and protracted course of study and meditation. I have already
expressed my opinion of the excellence of his views, and I shall have many opportunities
of repeating it. I may, perhaps, with peculiar propriety exercise the privilege of applying
them, as far as my materials may enable me, as it may naturally be considered
to be a wish on my part, to make the catalogue of the Lepidoptera as conformable as
possible to the more detailed description of the Coleoptera. But there are difficulties
of a peculiar nature connected with such a design. A local collection, as above stated,
will
will necessarily be deficient in many forms; and these deficiencies can be supplied by
general experience only. In the series I am proceeding to examine and describe, it
will occasionally occur that the affinities may not be apparent, that the typical forms
may be deficient, or indeed that my endeavours to discover them may lead me into
mistakes, from want of experience and more extensive means of reference than I pos-
sess. Such mistakes, however, I flatter myself, will be gradually developed and cor-
rected in the progress of the work, in proportion as my acquaintance with the subject
increases: I am persuaded, indeed, that they will be attributed to my own inexperience,
or to my want of information on the subjects under discussion, rather than to any thing
erroneous or defective in the principles developed by Mr. Macleay, with so much acute-
ness and force of reasoning, in the Horæ Entomologicae; for I have no hesitation in
declaring my opinion, that these principles not only give correctness to our views, but
have a very powerful tendency to promote the interest and importance of the study of
natural history. Their avowed object is to direct the mind to the plan of the creation
or to the natural system. With the same object continually in view, it will be my
endeavour to determine the disposition of the subjects submitted to my examination:
and while I wish to exercise a spirit of candid and unprejudiced inquiry, I shall, at the
same time, be ready to receive advice and to attend to instruction; and I shall more
especially acknowledge, with due consideration, every candid and liberal remark that
refers to the system, or to the order in which the subjects have been disposed.

In conformity with the intimation expressed above, I proceed to those details
regarding the materials to be described in the following pages, which the favourable
notice in the Preface to the Annulosa Javanica has in some measure made necessary.
These materials consist, in the first place, of a regular series of nearly nine
hundred species; and although not equally numerous in the different tribes, and by
no means complete in any of them, yet I am inclined to hope, that in the aggregate
they present a fair sample of the Lepidopterous productions of the island of Java.
In the second place, these materials consist of a series of drawings, representing the
metamorphosis of a considerable number of the species, accompanied with the per-
fected insects and chrysalides appertaining individually to the subjects delineated,
and with details concerning their food, number, and season. The former was made
at distant periods of time, and in very different parts of the island; the latter was
procured, almost exclusively, in the two years immediately preceding the year of my
departure from Java, when I was settled in a fixed residence in the interior.

Mr. Macleay has already noticed the occasion of my early attention to insects;
and that I was, almost imperceptibly, led to the collection of these beautiful and in-
teresting animals during my botanical excursions. My first collections were hastily
made and imperfectly preserved: they were little more than preparatory attempts,
which gradually led to skill in collecting, and to what is of greater importance in a tropical country, to experience in preserving. I was, at the commencement, in want of almost every convenience for the latter purpose. But these deficiencies were, in a great measure, compensated by the richness of the districts through which I travelled at this period; and my early excursions afforded me many subjects which, in subsequent periods, I sought in vain. I still observe, in the series arranged in the Honourable Company’s Museum at the India House, rare and solitary specimens, which were obtained at the very commencement of my entomological career. This I may date from Surabaya, the capital of what is called the north-east coast of Java: and as this place will always be memorable to me in an entomological point of view, I record it in these introductory remarks with grateful reminiscence. From Surabaya I passed successively through the districts of Passuruwang, Malang, Lamadjang, Pugar, and Blambangan; districts which aggregately form the eastern extremity of Java. From the capital of the last-mentioned province, Banyuwangi, I made a short excursion to the island of Bali. The hills, mountains, and uncultivated plains of these extensive districts, contain inexhaustible entomological treasures; and I have frequently, in the latter periods of my research, regretted my want of leisure, skill, and facilities for collecting, at this period. During the present calm review of my early peregrinations through Java, my imagination frequently returns to these remote, and, at the period of my visit to them, happy districts, combining the grandest natural scenery with the most delightful retreats of rural tranquillity and comfort.

In the island of Madura, which extends parallel to the districts of Passuruwang and Blambangan, I continued my research; and here first observed several of the more splendid oriental Papiliones, among which the most remarkable were *P. Peranthus* and *P. Agamemnon*. But it is not my intention, on this occasion, to notice all the places in the eastern extremity of Java which were interesting and productive, in this point of view: several, however, may be recorded here with propriety, as they will occasionally be referred to in the descriptive parts of the work. Having terminated my researches in the neighbourhood of Surabaya, I gradually proceeded, in a western direction, to Samarang, the capital of the entire eastern portion of the island, denominated by the Dutch, Java’s north coast, or simply Java, in contradistinction to Batavia. The geographical situation of Samarang is in the middle of the island, at an equal distance from the eastern and western extremity. The Prowotto hills, about twenty miles south of this capital, belong to the most important entomological stations. I devoted a large portion of the rainy season of 1809 to an examination of these hills, and increased both my botanical and entomological collections. I next proceeded to the southern coast of central...
central Java, and advantageously employed some months in the districts of Pajittan and Kalak, in which vegetation is luxuriant and insects proportionally abundant. I here added a considerable number both of Coleoptera and Lepidoptera to my collections. I returned by a northern route to the capital of Surakarta, the residence of the Susuhunan or emperor of Java, the first in importance of the native princes; and as I here found an opportunity for carrying on my pursuits with advantage, I formed a permanent residence.

Surakarta was, upon the whole, the most important station in my various researches into the natural history of Java; as, besides the facilities mentioned in the sequel, I here obtained, after the conquest of the island, the support and patronage of the Honourable East-India Company, by which I am also enabled, at this time, to bring the Catalogue of the Lepidopterous Insects before the Public. This capital is situated in an extensive plain in the middle of the island; and a concise description of it has already been given in the preface to the Annulosa Javanica. In selecting here a fixed residence, my objects were, in the first place, to have a secure dépôt for my collections, and secondly, to obtain the necessary facilities for visiting, from time to time, the various districts in the middle of Java, belonging to the native Princes, many of which were still almost entirely in a state of nature, and highly interesting in regard to their natural history.

During the year 1813 I was engaged in a visit to the island of Banka and the capital of Palembang, situated on the eastern coast of Sumatra. The mission, with which I was honoured, in conjunction with the Resident, and the account of my remarks which was required after my return, employed the greatest portion of that year and of 1814, in consequence of which my entomological pursuits were nearly suspended; but early in the year 1815 I resumed them with renewed energy. I had now acquired greater experience in collecting; a number of natives had been instructed for affording that assistance which in a hot climate was not only necessary, but greatly conduced to the enlargement of my investigations. I was amply provided with every convenience and facility for preserving what I had collected. Several draughtsmen had likewise been trained, under my superintendence, for botanical delineations, and the skill they acquired in those soon fitted them for the annulose department. I was, therefore, enabled to enter upon a history of the Metamorphosis of Javanese Lepidoptera: a design which had long engaged my anxious solicitude.

Although I did not, at this period, so fully conceive the paramount necessity of an acquaintance with the metamorphosis of Lepidoptera, towards the establishment of a natural arrangement, as I have been led to do in later periods, yet I was so strongly impressed with its essential importance in attempting a complete history of insects, that I commenced with a fixed determination to prosecute the inquiry with unremit-
ted industry and zeal, to collect all the larvæ of Lepidopterous insects which I might possibly obtain, and to trace them through the various periods of their existence. With this view, I fitted up a large apartment adjoining my residence with breeding-cages and receptacles for chrysalides. At the commencement of the rainy season, the period when in tropical climates the foliage of vegetables is renewed, I daily went out in search of caterpillars, accompanied by the most intelligent of my native assistants. The caterpillars thus collected were placed in separate breeding-cages, and several of the assistants were instructed to provide daily, at regular periods, the food the individuals required, and to secure the cleanliness of the cages. As soon as the caterpillars were approaching to perfection a drawing was made of them. The same individual which had been submitted to the draughtsman was then separately confined, watched with the most diligent care, and as soon as it had passed into the state of a chrysalis again made the object of the pencil. A determinate number was carefully attached to the drawing and to the cage of the chrysalis. As soon as the perfect insect had appeared and expanded its wings, it was secured, set, and numbered in accordance with the larva and chrysalis. During this period every possible solicitude was employed to prevent mistakes: the original series, consisting of the perfect insects and the chrysalides obtained by this mode of proceeding, and numbered in accordance with the collection of drawings made at the same time, is now deposited in the Museum of the Honourable East-India Company, and affords an authentic document of the accuracy of the details regarding the metamorphosis of Javanese Lepidoptera, which will be offered in the course of this work. During this process, the food, the date of appearance, the peculiarities as far as regards the abundance or scarcity of the species bred, were carefully recorded, with the intention of forming a regular "Raupen Calendar," according to the plan of Schwarz, as well as for the purpose of contributing to a general calendar of the Fauna and Flora of the island of Java. But I have in this place to regret the want of many details, which could only be supplied by a longer period of observation than was allotted to me.

The process thus described, afforded likewise the means of obtaining in great number perfect specimens of many of the Javanese Lepidoptera; and in this I had in view, not only the extent and beauty of the collection, but particularly the means of affording at a future period, by examination and dissection, a complete history of this order of insects as found in Java. The advantages of this plan will abundantly appear in the course of this work; for I hope to be enabled to illustrate many generic characters, in detail, from specimens possessing all their parts in a state of high perfection, and to contribute additional information on subjects, of which a very unsatisfactory account has hitherto been published. My plan, as before
before observed, embraced all the Lepidoptera of Java, particularly those of the central portions or the territory of the native Princes, and an essential part of it was to undertake, from time to time, journeys to the hills, mountains, and forests remote from the capital: during these excursions I was provided with breeding-cages, materials for collecting and preserving, and accompanied by my draughtsmen and native assistants. The excursions generally afforded new and interesting subjects: in many cases the larvae and chrysalides were carried to my residence, and there brought to maturity at their regular periods. Having continued this mode of research for two seasons, my labours were unexpectedly terminated, by the transfer of Java to another European power. The disappointment which this occasioned at the moment, arose principally from considerations of the unfinished state of my research, and from the abridgment of my original design. Although supported, in later periods, by a large portion of public liberality and patronage, my progress had been very gradual, and had depended in the commencement, in a great measure, on my own exertions. By a steady adherence to the same object, I had provided an extensive establishment for prosecuting inquiries of natural history in its various branches, among which the facilities above described were not the least. I therefore regretted to have been obliged to abandon a pursuit which had been an object of my early solicititude, and which soon after its commencement had been postponed in consequence of the visit to Banka abovementioned. These remarks were deemed necessary in order to account for the limited state of the collection, since it by no means corresponds with the richness of the territory or the length of my residence in the eastern islands. What is now offered to the public is little more than a fragment of a more extensive undertaking, which was intended to assemble, as far as possible, a complete series of Javanese insects, and especially to exhibit a comprehensive view of the metamorphoses of the Lepidoptera of the island. The sentiments of regret occasioned by the abrupt and unforeseen termination of my entomological pursuits, and the considerations arising from the unfinished state of my collections, were heightened by similar disappointments in my pursuits in botany and other branches of natural history, and my preparations for a departure, of which I am now to give a concise notice, were undertaken with many discouraging reflections. But a favourable series of events has in a great measure removed my former apprehensions: and although I notice at the present period, perhaps more forcibly, the unfinished state of my collections, and the deficiencies arising from their abrupt termination, yet the success in bringing the entire result of my inquiries into a place of safety, without any considerable loss or damage during the voyage, the favourable reception which I have met with in England, and the liberal patronage which has been afforded to my endeavours by the Honourable Court of Directors
Directors of the East-India Company, have alleviated a disappointment, which, under other circumstances, would have been peculiarly distressing and oppressive. After the second season devoted to observing and delineating the Javanese Lepidoptera, it became necessary to prepare my collections for transportation to England.

During the inquiries which I made in the early part of my residence in Java, to become acquainted with the best methods for securing what I obtained in my excursions, I noticed the plan described by Le Vaillant, in his travels in Africa, for the preservation of his entomological collections. It is the following: boxes or chests carefully made of light wood, of a convenient portable size, are provided with partitions or moveable shelves, each consisting of a simple board; these are fitted at the distance of two inches one from another, in grooves in the sides of the box, in which they are made to slide with accuracy and facility, and are therefore removable at pleasure. These boards or shelves have necessarily the exact dimensions of the ends of the chest, and are placed in a vertical position: a small vacancy is preserved between their lower extremity and the floor, and any object detached by accident, falls to the bottom without causing further injury. Each board or shelf, lined with cork or soft wood, supplies in some measure the place of a cabinet drawer. When taken out of the box and placed on a table, it rests securely and affords a plane surface, upon which insects may be fixed or examined with perfect ease and security: it is returned into the box in an instant, which if carefully made, when closed, secures most effectually the contents. A small quantity of camphor, at the bottom, spreads its influence over the whole. One large box may conveniently contain fourteen boards, answering the purpose of as many drawers; and being eighteen inches square, they have a manageable size. This plan I resolved to adopt. In the early period of my pursuits, the boxes which I provided were made of light wood, and to their use I must ascribe, in a great measure, the preservation of my collections. I found that they afforded a complete protection against the ants and other destructive insects which abound in the Island of Java, perhaps as much as in any other tropical region. They were peculiarly useful in travelling, and possessed the advantage of affording a ready access and reference to the subjects. As the ultimate object of my pursuits was to provide an extensive and well-conditioned collection, which might be useful and instructive in England, I had, soon after receiving the patronage of the Honourable East-India Company, directed my attention to the provision necessary for its safety during a voyage. My residence at Surakarta afforded me peculiar advantages in this point of view. Both materials and workmen are here obtained, perhaps more readily than in any other part of Java. Boxes, according to the plan described, were therefore provided, of more substantial materials than those employed in travelling, in proportion to the
increase of the collection. The wood of the Bombax pentandrum was employed for lining the boards and securing the pins; and I ascribe to an acquaintance with the peculiar property of this wood, which renders it an effectual substitute for cork, the preservation of the collection during its transportation. After having carefully packed the subjects, every necessary precaution that suggested itself was used in securing the boxes against accidents during the voyage. They were individually painted and covered with oil-cloth. Each box was then placed in an outer case, made of the same substantial materials, and secured in the same manner. By these various precautions, and by the care which the collection received from the commander of the vessel during the voyage, I enjoy the satisfaction of having brought the whole in safety to England.

When I had formed the plan of undertaking the description of the Lepidopterous Insects from Java, contained in the Museum of the Honourable East-India Company, I was naturally led, by the preparatory pursuits of which I have now given a hasty sketch, to inquire, in how far an arrangement might be effected, which should be founded primarily on their metamorphosis. The remarks which occurred on this subject, in various parts of the Hæ Entomologice, tended to confirm and enlarge my early and imperfect notions. It would be foreign to my present purpose to follow Mr. Macleay in his copious details and remarks on this point, but on the whole, they have encouraged me to persevere in the attempt. Thus, for instance, in one place, he is led to “inquire into the possibility of being enabled to show that the most distinguished among naturalists have united in expressing their conviction, that considerations founded on metamorphosis must ultimately produce the most natural plan of entomological arrangement;” and to state, “that he thinks it may be inferred, from a sketch he proposes to give of some of the most remarkable truths in Natural History, that this proposition ought not to be deemed incapable of demonstration.” Bearing in mind, therefore, this and similar remarks, I was anxious to ascertain what information had already been brought before the public regarding the metamorphosis of East-Indian Lepidoptera. My research, in this point of view, however, afforded me no satisfactory result. I found, indeed, in the work of Cramer, continued by Stoll, and in Abbot’s Georgian Insects, published by Sir James Smith, delineations of the larva and chrysalides of many Lepidoptera of the tropical countries of the new world; but these were only useful for comparisons. Subjects exclusively Indian, which alone were calculated to afford that precise information which I was in search of, and which would likewise practically confirm the faithfulness and accuracy of my own observations, did not occur to my research. I was, therefore, I may say, almost necessarily restricted to my own materials and remarks, and I determined to attempt their arrangement according to the principles above
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above detailed, even though I should obtain no other assistance of the same nature. In forming this resolution, I likewise considered that the series of perfect insects which had been arranged in the Museum at the India-House, soon after my arrival in England, would be of considerable use in regulating my progress. As far as regards this series, I would observe in this place, that in its formation I had enjoyed the advice and co-operation of my friends, William Swainson, Esq., now residing at St. Albans, and of Mr. George Samouelle, of the British Museum. Indeed, a large portion of the first tribe had been arranged exclusively by the former gentleman. The attention which he had bestowed on this subject during a long period of years, his general acquaintance with the arrangements of others, and his correct views and general experience in entomological pursuits, afforded him advantages for such an undertaking which are seldom possessed by one individual: and I embrace with peculiar pleasure the opportunity now afforded me, of thus publicly acknowledging his assistance, and of expressing my personal obligations.

Having, therefore, a well-arranged collection of perfect insects before me, I commenced my work according to the principles above stated, by placing the larvä and chrysalides, as far as I was able, in natural groups. It would, however, be foreign to my present purpose to enumerate the result of my first attempts, and the means by which I obtained, in my own opinion, more clear and correct views of the affinities of this order, as far as they appear in the first stages of metamorphosis. I may remark, however, with propriety, that these attempts laid the foundation for, and agreed essentially with, that plan of arrangement, which I propose to adopt in that great group, or tribe of this order which in the first part more immediately claims my attention. Having completed this preliminary arrangement of my own materials, I was naturally desirous of examining more in detail what had been done in the same department by others with similar materials, derived from different sources. This led to a circumstance which has had a decided influence on my whole undertaking. While I was prosecuting my inquiries on this subject at the Banksian Library, in the course of last summer, a book was incidentally mentioned in conversation, by a gentleman present,* which, I was informed, professed to be an attempt at an arrangement of Lepidoptera, according to their metamorphosis. The title of the book was new to me; as it had been published without the name of an author, it had escaped my research in my preparatory inquiries, and was not included in the list of books which I had noted for occasional reference, although it was contained in the library, and

* The author of the accurate and elegant Illustrations of the Genera of Insects found in Great Britain, &c., John Curtis, Esq. &c.
and was only hidden from my observation by its anonymous title. But I made a
diligent inquiry for a work, agreeing apparently in design with the plan which I had
formed for my own undertaking; and by the kindness of A. H. Haworth, Esq., of
Chelsea, I was made acquainted with the Systematic Catalogue of the Lepidoptera
found in the Neighbourhood of Vienna (Systematisches Verzeichnis der Schmetter-
linge der Wienergegend, herausgegeben von einigen Lehrern am k. k.—Theresianum.)
On further investigation I found that it was the production of the united labours of
Messrs. Denis and Schieffermüller, two distinguished officers of high rank at the
court of Vienna, who from their charge in the Imperial Academy, are known in
Germany by the name of "Theresianer," and their book by that of "Das System
der Theresianer."

On opening this book, I made a discovery which filled me with inexpressible delight.
Although the work was published more than half a century ago, I found, in the families
into which the larger subdivisions are distributed, clear indications of almost all the
genera that have been established in more recent periods, in the whole order of
Lepidoptera. In the tribe of Papilionidae, I observed the genera accurately deter-
mined and circumscribed, almost without a single modification, as they are now
universally adopted; and, to illustrate this statement, I proceed at once to the
following abstract of the families and species of the Linnaean genus Papilio, taken
from the body of the work, viz.

**Familia A. Larvē Torthriciformes.** Papiliones Plebeji.—Urbicolar, L. Wiener Ver-
zeichnis 159.

Species enumerated by Denis and Schieffermüller. Papilio Malvae, L. P. Tages, L.
P. Fritillum, Wien. Verz. P. Comma, L. P. Linea, Müller. P. Brontes, W. V. P. Ste-
ropes, W. V.

**Fam. B. Larvē Bombyciformes.** Papiliones Heliconii, L.* W. V., p. 160.

Species: P. Apollo, L. P. Mnemosyne, L.


Species: P. Polyxena, W. V. P. Machaon, L. P. Podalirius, L.

**Fam. D. Larvē Mediostriate.** Papiliones Danai candidi, L.

Species: P. Crataegi, L. P. Brassicae, L. P. Rapae, L. P. Napi, L. P. Sinapis, L.
P. Daplidice, L. P. Cardamines, L.

**Fam. E. Larvē Pallidiventre.** Papiliones Danai Flavi, W. V., p. 164.

Species: Sect. 1. *Die Flügel ein wenig zugespitzt,* indicating the Genus Gonepteryx of Dr.
Leach. P. Rhamni.

Sect. 2. *Die Flügel ganz rund mit schwarzem Auszenrande.* P. Palæno, L. P. Hyale, L.

* As originally employed by Linnaeus. By Gmelin, Fabricius, &c. this name is applied to a different group.
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Species: P. Iris, L. P. Ilia, W. V. P. Jole, W. V.

Species: P. Populi, L. P. Sibylla, L. P. Camilla, W. V. P. Lucilla, W. V.

Species: Sect. 1. Die Flügel fast nur gezähnt. P. Atalanta, L. P. Cardui, L.
Sect. 3. Die Flügel ein wenig zugespitzt. P. Prorsa, L. P. Levana, L.

Species: Sect. 1. Mit Silberstreifen. P. Pandora, W. V. P. Paphia, L.
P. Euphrosyne, L. P. Pales, W. V. P. Dia, L. P. Daphne, W. V.

Sect. 2. Mit zwey gelblicht weiszten und drey braungelben Querbändern. P. Lucina, L.

The remaining families are placed in a distinct subdivision, comprising the onisciform (vermiform Nob.) larvae; the chenilles cloportes, Reaum.

Species: Sect. 1. Die Menschen fast unbemackt, die weiben schwarz geflechet. P. Virgaurea, L. P. Hippothoe, L. P. Chryseis, W. V.
Sect. 2. Beydes Geschlecht geflechet. P. Helle, W. V. P. Phlaes, L. P. Xanthe, W. V. P. Circe, W. V.


Species: P. Rubi, L. P. Betulae, L. P. Quercus, L. P. Pruni, L. P. Spini, W. V.

After this detail of the families into which the authors of the Wiener Verzeichniss have divided the Linnean genus Papilio, I add, in justice to them, the following quotation from page 196, which shews clearly that they considered these families as representatives of genera. "Unsre familien werden vielleicht für das, was im Pflansenreiche die Gattungen sind, schicklich gelten können." Our families will, perhaps, properly represent the same which the genera do in botany! Let us now examine how this remark applies to the genera which are (almost universally) admitted at the present period; I request the reader to refer to the families above enumerated.

Fam. A. represents the genus Hesperia. (See Ochsenh. Schmett. von Europa, vol. iv. p. 33.)
Fam. B. represents the genus Doritis. (See Ochsenh. Schmett. von Europa, ibid. p. 29.)
Fam. C. represents the genus Papilio. (See Ochsenh. Schmett. von Europa, ibid. p. 28.)
Fam. D. represents the genus Pontia. (See Ochsenh. Schmett. von Europa, ibid. p. 30.)
Fam. E. represents the genus Colias, and the first section indicates the genus Gonepteryx of Dr. Leach. (See Ochsenh. Schmett. von Europa, vol. iv. p. 31 and 32.)
Fam. F. represents the genus Hipparchia, and its various subdivisions. (See Ochsenh. Schmett. von Europa, vol. iv. p. 19, &c.)
Fam. H. represents the genus Limenitis. (See Ochsenh. Schmett. von Europa, vol. iv. p. 17.)
Fam. I. represents the genus Vanessa. (See Ochsenh. Schmett. von Europa, vol. iv. p. 16.)

The last section of this genus comprises the Melitæa Lucina of Ochsenh, the Papilio
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Papilio Lucina of Linnaeus mentioned above. The authors point out the distinctive properties of this species in a note;* they are of opinion, that it leads to the next family. Their opinion is founded on the character of the pupa; the larva had escaped their research. This species has afforded the type of a new genus Nemobius to J. F. Stephens, Esq., who has thus confirmed the accuracy of the observation of Messrs. Denis and Schieffermüller.

The remaining families M. N. and O. embrace the Lepidoptera with onisciform larvæ; these constituted, according to the system of Fabricius, the genera Thecla and Lycæna. Mr. Stephens has lately, in his Illustrations of British Entomology, distributed them with more propriety into three genera, by which means,

Fam. M. represents the genus Lycæna.
Fam. N. represents the genus Polyommatus, and
Fam. O. represents the genus Thecla.

This abstract tends to show, in my opinion, that in the true Papilionidae, at least, the metamorphosis affords most clear indications, not only of generic distinctions, but also of a continuous natural arrangement. To illustrate the latter of these points will, as has already been stated, be my object throughout the whole of the present undertaking. As far as regards the former, it is evident that those genera, which are now universally adopted, were clearly indicated as early as the year 1776; and the quotation above given proves that the authors considered their families as representatives of genera. They appear to have been prevented from imposing appropriate names, and from offering them to the public, by a deference to the authority of Linnaeus, which at that time was paramount, and any interference with which was prohibited in them, apparently, by a sense of propriety, and by a modest reluctance to impede the general improvement in nomenclature, which had been just accomplished by that remarkable man. Denis and Schieffermüller, therefore, framed their system for the succeeding generation; and we shall see in the sequel how far their discoveries and suggestions were regarded. I shall, however, in this place merely advert in a general manner to the history of the nomenclature of the Papilionidae. Now it is well known that most of the names of the genera above enumerated were published in Illiger’s Magazin der Insectenkunde, in 1807, as a fragment of a large work of Fabricius, a Systema Glossatarum, which was found in an unfinished state at the time of his death: for instance, the names Melitea, Argynnis.

* ...... die letzte art (Lucina) unterscheidet sich wie man schon aus dem, was wir hier angesetzt haben, bemerken wird, noch deutlicher; vielleicht ist aber ihre Raupe mehr denen der drey folgenden Familien ähnlich: wenigstens sah ihre Pupe, die wir einst an eine niedere Wiesenpflanze angehäl tet fanden, wie die derselben aus. W. V. p. 179, Note.
Argynnis, Vanessa, Limenitis, Apatura, Hipparchia, Lycæna, Thecla, Doritis, Pontia, Colias, &c. are derived from the Syst. Glossar. above-mentioned. But before this period the works of Schrank and Ochsenheimer had appeared, in which a considerable advance had been made towards those determinations which are almost exclusively ascribed to Fabricius: it will therefore be necessary, in the sequel, to give a more detailed abstract of some of the divisions of Ochsenheimer. The genera of Schrank are, on the whole, of a higher and more comprehensive description, and many of them are equal in rank to the stirpes of Mr. Macleay; but all his minor subdivisions are founded on the families of the Wiener Verzeichnis, which are uniformly referred to by him. I propose in the sequel to give an abstract of his subdivisions, and I shall have frequent occasion to quote his authority. Various other writers point out the estimation in which the Wiener Verzeichnis was held, especially in Germany, and the manner in which it was received on the continent of Europe: of these I shall here cite Cramer, Borkhausen, and Illiger.

Cramer's "Papillons Exotiques" was concluded soon after the publication of the Vienna Catalogue. In the introduction to the fourth volume we find the following passage: "Il seroit a souhaiter que l'on pourroit suivre dans l'ordre du rang des Papillons et des Phalènes exotiques et Européens, le Système des Entomologues de Vienne, un système qui, pour ce qui regarde celles à ailes farineuses de l'Europe, et principalement dans la Famille des Sphinx, est de la dernière exactitude."

Borkhausen, who commenced in 1788, and continued in the succeeding years, a detailed description of the Lepidoptera of Europe, ascribes, in enumerating the writers on this order, the greatest merit to Denis and Schieffermüller. Among other commendations is the following: "not satisfied with an acquaintance with the insect in its perfect state, they examined it also in the early stages of its existence; they compared the various caterpillars with the butterflies which are produced from them, traced with indefatigable industry the plan of nature in these animals, and discovered the resemblance which was invariably preserved in the structure of species related to each other in affinity, in the different stages of their existence." He also points out their success in a natural disposition of subjects, in cases where the larva had not yet been discovered; and declares that experience had confirmed many combinations, established merely from the analogy of the perfect insect.

Illiger, in his preface to a new edition of the "Vienna Catalogue," in which copious descriptions and synonyms are added to the species, while many original remarks of the first edition are omitted, declares that this work, at the time of its appearance, had formed an epoch in entomology; and that in 1801 it was still considered as one of the most acute and instructive works ever published on Natural History.
History. He further declares, that the high estimation it had originally acquired was not diminished, mentions the regard in which it was held by Fabricius, and the use he had made of it, and states, that notwithstanding the labours of Knoch, Hübner, Brahm, Borkhausen, and others, its contents might be considered at the present period a faithful epitome of our knowledge in this department of entomology.

But no writer has so completely entered into the spirit, and applied the views of the Vienna Catalogue, as Ochsenheimer, whose description of European Lepidoptera is perhaps the most comprehensive that has yet been offered to the public. To show this it would be necessary to analyse the whole, but such is not my present object; I shall only remark with regret, that in the latter portions of his system, he has in many cases departed from the families of the Wiener Verzeichnis, and has been led into unsuccessful combinations, and the establishment of various genera which cannot be approved; in the whole tribe of the Papilionide he has however most faithfully followed his guide; and the remarks contained in the preface to the first volume, in which he declares his opinion of this work in general, are so pertinent, that I shall extract them at large. "A complete and universal system of entomology, according to a common simple principle, is probably reserved for succeeding generations; in the mean time, it is the duty of the naturalist to seize whatever he may be able to contribute towards the history of separate parts, and by this means to facilitate future endeavours to complete the science. The authors of the Catalogue of Lepidoptera found in the neighbourhood of Vienna were not inattentive to this while they were framing a system, which indeed comprises only a large portion of the indigenous German Lepidoptera, but which, by the precision of the characters employed, by the number of subdivisions, and by the fortunate disposition of affinities, has obtained the reputation of the most acute and instructive work in this department of entomology, and the justest claims on the gratitude of the present and of succeeding generations. Considering the manifest insufficiency of single characters to distinguish the perfect insects from the species most nearly related to them, they recurred to the first stages of their existence, and by this means established a mark of distinction, which, although common to all, is yet diversified in all, and which affords the advantage of distinguishing with facility genera and species."

In giving, on this occasion, an abstract of several of the families of Ochsenheimer’s system, I wish to direct attention to the period when the first part was published; and although it was in the same year in which the sixth volume of Illiger’s Magazin der Insectenkunde appeared, it probably took place before the general promulgation of the posthumous Systema Glossatarum of Fabricius, above-mentioned.
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Ochsenheimer’s first family is named **Schecken-Falter, Papiliones variegati**; **Scheindornraupen, Larvae pseudospinose**; Schmetterlinge von Europa, vol. i. pp. 17 to 51.

This is precisely the character of Fam. L. of the Wien. Verz., p. 178: and of eleven European species enumerated by Ochsenheimer, seven are found here, *viz*. *P. Phœbe, Maturna, Cynthia, Ductymna, Cinxia, Trivia, Lucina*. This family is now admitted as a genus with the Fabrician name of **Melithea**.

The second family is marked **Edel-Falter, Papiliones nobiles**; **Halsdornraupen, Larvae collossinose**; Schmett. v. Eur. i., pp. 52—100.

This constitutes the Fam. K. of the Wien. Verz., p. 176: and of twenty European species enumerated by Ochsenheimer, ten are contained in this catalogue, *viz*. *P. Pandora, Paphia, Aphipe, Aplaja, Niobe, Latonia, Euphrosyne, Pales, Dia, and Daphne*. This family is now distinguished as a genus with the Fabrician name of **Argynnis**.

The third family is marked **Eckfluegelige-Falter, Papiliones angulati**; **Scharfdornraupen, Larvae acutospinose**; Schmett. v. Eur. i. pp. 101—134.

It agrees with the Fam. I. of the Wien. Verz., p. 174: and of twelve European species enumerated by Ochsenheimer, eleven are contained in this catalogue, *viz*. *P. Atalanta, Cardui, Io, Antiopa, Polyehloros, Xanthomelas, Vau album, Urtice, C—Album, Prorsa, Levana*. This family now constitutes a genus with the Fabrician name of **Vanessa**.

The fourth family is named **Banpirte-Falter, Papiliones fasciati**; **Halbdornraupen, Larvae subspinose**; Schmett. v. Eur. i., pp. 135—149.

It constitutes the Fam. H. of the Wien. Verz., p. 172: and of five European species enumerated by Ochsenheimer, four are found in this catalogue, *viz*. *P. Populi, Sybilla, Camilla, Lucilla*. This family is distinguished as a genus with the Fabrician name of **Limenitis**.

The enumeration of these four families is sufficient to show, that the families of Ochsenheimer and the genera of Fabricius, in this tribe, agree with the families of the Vienna Catalogue, and both may be considered as derived from them. The remaining families of Ochsenheimer’s Papilionidae may be traced to the same source, and the comparison will be found highly conducive towards obtaining distinct views of the early merits of this catalogue. In the work of Ochsenheimer, each of the families is preceded by a precise and well-defined descriptive character; he considered them indeed as genera, although he neglected the opportunity of imposing a name. In the preface we find the following passage. “It has long been wished, and it has also been attempted, to divide the numerous host of diurnal Lepidoptera into several genera; I therefore entertain the assurance of not venturing too much, when I consider, and treat as a genus, each of the families employed in the sequel.” In the fourth volume, which contains a systematic arrangement of genera and species, these
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these families appear with the generic names of Fabricius, with a few modifications of Ochsenheimer himself.

From the preceding details it appears that the catalogue of the Lepidoptera found near Vienna is held in high estimation in Germany; and that the system it contains has been adopted partially by Borkhausen and Illiger, and more generally by Schrank and Ochsenheimer. It is less known in France; but it is quoted with great distinction by M. Latreille; it has also been referred to in several instances by Mr. Haworth, in his Lepidoptera Britannica.

I consider an acquaintance with the Wiener Verzeichnis of the first importance in my present undertaking: the information which it contains, and the numerous instructive views which it affords, will greatly facilitate my progress; and its families, in most of the subdivisions, constructed exclusively according to the larvae, will afford a constant standard for comparing my combinations, and correcting or confirming my views. But, independent of the merits of this work, as an abstract or epitome of almost all that has yet been observed regarding the metamorphosis of European Lepidoptera, it possesses excellencies of a higher order. Its decided object is the establishment of a natural arrangement; and, in this point of view, I consider it to have been, in the age when it was published, what the Horæ Entomologice are at present. There is a constant reference to the plan of the Creator in the structure of these animals. Whenever the authors indulge in any speculation, they display uncommon acuteness and depth of thought; and their unaffected modesty most advantageously sets off their learning and ability.

Having concisely stated the occasion of the present work, and in a very cursory manner described the materials from which it will be compiled, and the circumstances which influenced its commencement, I now proceed to some observations on the principles of arrangement and subdivision which will be adopted. I have already declared my intention of making the plan of the Annulosa Javanica my guide, and of adhering, as far as may be consistent with the plan and conduct of the present work, to the principles detailed in the Horæ Entomologice. In considering, therefore, the primary divisions of this order, I direct my attention, in the first place, to the former work, with this inquiry,—can the statement of Mr. Macleay regarding the division of the order of Coleoptera be applied to the Lepidoptera likewise? Making use, therefore, of his own words, I ask, "if we gradually limit our views, and descend from the consideration of the KINGDOM Animalia to the department or SUB-KINGDOM Annulosa, from this again to the CLASS Haustellata, and then to the ORDER Lepidoptera, thus leaving each group for one of its component minor groups, do we at length observe the last-mentioned, viz. the order Lepidoptera, to resolve itself into five minor groupes, or TRIBES?" Now it appears to me, that
it will not be difficult for any entomologist, of very moderate experience, to refer most of the Lepidoptera with which he may be acquainted to one of the following types of form or divisions, viz. Papilionidae, Sphingidae, Bombycidae, Noctuidae, and Phalacridae. To give a precise definition of these groups individually is not my design at present; perhaps it would not be a task very easily effected, according to their variations of metamorphosis. I propose that they be considered in this place abstractedly, without any regard to a rigid distinction, but as familiar types of form which may easily be called to mind. The designation of tribe will be applied to them individually, agreeably to the system of subdivision above enumerated. But it may, perhaps, be expected that I should give a comparative analysis of the divisions of this order, generally employed in systematic works; this will, however, be done with more propriety, as occasionally suggested, in the progress of the work: of the minor groups several will naturally find a place in the tribes above enumerated; the situations of others, according to their metamorphosis, require various comparisons and details, which I am not prepared at present to undertake.

I commence with some general remarks on the first tribe, the Papilionidae, agreeably to the order of subdivision which I propose to follow; I shall then give a rapid preliminary sketch of the other tribes; after which I shall proceed to a more detailed analysis of the Papilionidae, in which I shall consider the modifications of the metamorphosis in connexion with the structure of the perfect insect. Now I have to show, in the first place, that, in tracing the metamorphosis of the true Papilionidae, which constitute the first tribe, and which comprizes the Lepidoptera Diurna of Latreille, the genus Papilio of Linnaeus, the Falter or Tagschmetterlinge of Ochsenheimer and the authors of the Vienna Catalogue, I have observed several types of form, to which all the larvae and chrysalides which I have collected myself, or which I have found described and delineated in the works of others, can without exception be referred, viz.

First: a larva of a linear oblong form, attenuated at both ends, depressed or cylindrico-convex, of a sluggish appearance, with short and scarcely perceptible feet; distinctly marked above with transverse striae. A pupa nearly smooth, or with comparatively few protuberances, very obtuse at the anterior extremity, attached by the abdomen, braced, vertically suspended with the head upwards or tending forwards in a horizontal direction.

Examples of this larva are given in the third plate, in fig. 11, 12, and 13, and on the fourth plate both larva and pupa are figured in No. 1, 1.a. 2, 2.a. 3, 3.a. 4, 4.a. and 5, 5.a. The subjects represented will be referred to in the course of the work. This is apparently the most simple form in the tribe of Papilionidae: it is distinguished in the diagram with the name of vermiform.

Secondly:
Secondly: a larva of a cylindrical form, generally swelled or thickened at the fourth or fifth section of the body, attenuated towards the head and posterior extremity; in the typical genera naked or covered with short, obtuse, fleshy protuberances; in the extreme genera, at the boundary of the neighbouring groups, covered with a close silky down or with short scattered hair, most remarkably distinguished by a furcula or forked tentaculum, situated between the head and neck, which may be drawn back or thrust forward at pleasure. Pupa angulated and mostly tuberculated; in the typical genera, and in those at the confines of the first group, attached by the posterior extremity, braced, and vertically suspended with the head upwards; in the genera approaching the third stirps perpendicularly suspended, according to the habits of that stirps. The caterpillar of this division is distinguished in the diagram as the Chilognathiform or Juliform type.

Examples: Plate ii, fig. 14, 15, 16, 17, 18, 19, 20. Plate iv, fig. 6, 7, 8, 9, 10, 11, 12, 13. By an oversight the pupa, both in this and in the former stirps, has been placed in a vertical attitude, which the reader is requested to bear in mind; the natural attitude is exemplified in plate iii, fig. 1, a. 2, a. 3, a. 4, a. and 5, a.; but in some instances the head is downwards; these will be pointed out in the descriptions.

Thirdly: a cylindrical larva, strikingly characterized by its terrific or threatening aspect, being covered with sharp, rigid, erect processes, often of great length, but diversified in the different subdivisions, arranged in regular longitudinal lines along the body of the larva, and beset with numerous diverging spines disposed in a verticillate manner. It is distinguished by the designation of Chilopodiform or Scolopendriform larva. The attitude of the pupa is the reverse of that of the typical forms in the two former divisions: it is attached by the abdomen, while the head is directed perpendicularly downwards: in form it is greatly diversified.

Three examples only of this form are given with a view to show its general habit, in plate iii, fig. 21, 22, and 23; the remaining modifications, which are numerous, will follow connectedly on succeeding plates.

Fourthly: a lengthened cylindrical striated larva, somewhat smaller at each end, apparently of an agile habit, naked, or covered with a slight down, having a head of moderate size, armed with two erect spines, or provided with a moveable shield, often of great size and beset with erect hornlike processes: but the chief characteristic of this division consists in two very strongly marked lengthened filiform or spinous appendages from the abdomen. The pupa is attached by the tail and suspended perpendicularly as in the last division; it is in general terminated by two points, of various form and length. The illustration of this division will be given with that of the former in the course of the work. One specimen only is figured on the
diagram, to afford a comparison with the others, and to illustrate the denomination of *Thysanuriform*, which has been assigned to it. See N. 24, Plate iii.

_Fifthly:_ a cylindrical larva, nearly naked, with a very large head, often globular, and attached to the body by a long neck; characteristically distinguished from the other subdivision by its bluntness and abrupt termination behind: the metamorphosis resembles that of one of the divisions of the tribe of Phalænidæ, the *pupa* being covered by a convoluted leaf. Hence in the Vienna Catalogue the name of *tortriciformes* is assigned to the larva of family A of the third great subdivision, which comprises this form. In the diagram in the third plate are exhibited two forms of this larva; one of the Erycinidæ at the boundary of the fourth tribe, and one of the true Hesperidæ. In order to illustrate this preliminary sketch of the five types of form of the metamorphosis of the true Papilionidæ, I shall repeat the denominations which will be more fully explained hereafter: thus the first division, according to the larvæ, has been named *vermiform*, the second *juliform* or *chilognathiform*, the third *scolopendriform* or *chilopodiform*, the fourth *thysanuriform*, and the fifth *anopluriform*. These separate groups, agreeably to the plan of Mr. Macleay in the Annulosa Javanica, will in future be denominated _stirpes._

In the tribe of _Sphinigide_, I have distinguished the following types of form, which afford characters to the subdivisions or _stirpes_. As the entire metamorphosis will be detailed in the course of the work, I shall in this preliminary sketch give only a concise notice of the larvæ, without attempting their disposition in a natural order. We observe, then,

_First:_ a vermiform larva, sluggish, somewhat hairy, with a small retractile head, and minute obscure feet. This larva, in the Wiener Verzeichnis, constitutes the Family G of the genus *Sphinx*, p. 44, &c. _Larvæ phaleniformes*, *Scheinspinnebrauwen*, and the perfect insect the _Sphinxæ maculate_, _les Sphinx à cornes de belier_. Reaum. and Geoffr. It deviates more than the other _stirpes_ from the regular type of the sphingidæ, and if the _stirpes_ are arranged according to the principles of Mr. Macleay, it belongs to the aberrant _groupes_; but the determination of its affinity remains for a future investigation. Typical genus *Zygana* of Fabricius.

_Secondly:_ a cylindrical larva more slender and elongated than in the other _stirpes_; it is generally without lateral ocelli, and in one of the sections it is somewhat downy; the head is globular, and the abdominal horn short and rigid; the latter does not always exist, but in place of it is observed a specular mark. It comprises the families E and F of the Vienna Catalogue, p. 43 and 44. The former is characterized as having _larvæ elongatae_, _Langlebrauwen_, the latter _larvæ subpilose_, _Milchhaarbrauwen_; _Sphinxæ caudiberbes_ and _hyaline_. The _Sesia_ of Mr. Haworth, in his Lepidoptera Britannica, including both divisions, _sectæ_ and _denudatae_, constitute this _stirps_. The perfect insect
insect has short wings, and the abdomen is terminated by a broad or depressed brush-like appendage: in the latter group, Fam. F., the wings are transparent. The typical genera are *Macroglossum*, Scop., and *Sesia*, Latr.

**Thirdly**: a larva with a head almost triangular and acuminate above; the body obliquely striated, generally with yellow, naked and somewhat rugose: the abdominal horn of moderate size (smooth), generally marked with a peculiar colour. The perfect insect of this division is strikingly distinguished by its angulated or excavated wings. It constitutes the Fam. A of the Vienna Catalogue, p. 40 and 41. Larvae acrocephalae, Spitzkopfraupen; and the perfect insect the *Sphinges angulatae*. Typical genus, *Smerinthus*.

**Fourthly**: a larva with an ovate truncated head, nearly naked and even on the surface; the abdominal horn lengthened, tuberculated, curved. The perfect insect has entire lanceolate wings; the abdomen is marked with oblique lateral striæ. It constitutes the Fam. B of the Vienna Catalogue, p. 41. Larvae amblocephalae, Stumpfkopfraupen, and the perfect insect the *Sphinges fuscatae*. Typical genus *Acherontia*: species A, *Atropos*.

**Fifthly**: a larva with a small globose head, pale lateral spots on the sides of the body, or large ocelli behind the head, mostly with brilliant colours; abdominal horn generally simple. The pupa covers itself loosely with leaves. It comprises, as far as I have been able to determine, the Families C and D of the Vienna Catalogue, p. 42 and 43. In the former, larvae maculatae, Fleckeraupen, the perfect insects *Sphinges semifasciatae*, have the abdomen marked anteriorly with abbreviated fasciæ; in the latter, larvae ophthalmicae, Augenraupen, the perfect insects, *Sphinges caudacuta*, the abdomen is very acute. Typical genera, *Sphinx*, Ochsenh. (in part); *Deilephila*, Ochsenh. (in part).

These divisions do not embrace the genus Aegeria, and several other genera, commonly arranged among the *Sphingidae*: which, if my observations are correct, have a different metamorphosis, and will probably, at least in part, find a place in the next tribe; but this remains for future discussion.

In the tribe of *Sphingidae* the division is comparatively plain and obvious from various causes. The group itself is not very extensive, and being almost equally distributed through the temperate climes of Europe and through tropical countries, its metamorphosis is, comparatively, well understood. The divisions are therefore clearly determined, in the families of the Wiener Verzeichnis, and I have found them to apply so accurately to the results obtained with my own materials, that I have adopted them, with a few slight modifications which are obvious at first sight. But in the remaining tribes the metamorphosis is as yet not so perfectly known, at least in tropical countries: the divisions are moreover very extensive, the affinities very comp-
plicated, and often obscure, and the reference to the perfect insect does not, in many cases, clearly illustrate the series. I shall therefore, at present, attempt no more than a preliminary enumeration of the most prominent types of form in the Javanese collection, illustrating them by a comparison with those families in the Vienna Catalogue which I have been enabled to determine with accuracy. But the whole, as above stated, is merely an imperfect preparatory outline; and in the enumeration of the groups, no arrangement according to natural succession is attempted. My object is to point out the prominent forms, with a view to their relative disposal, in the course of the work. I trust, however, when the groups shall have been analyzed in detail, to be enabled, in most cases, to point out clearly the typical forms, from a comparison of the metamorphosis with the perfect insect; and to dispose the stirps in a continued series returning into itself.

The first form indicating one of the stirps of the tribe Bombycidae, I have denominated provisionally, after one of the families to be mentioned in the sequel, Fasciculata. I shall not attempt, in this place, a detailed description of its various modifications; this will follow more properly in the course of the work. Generally the larva is covered closely with silky hairs, arranged in fascicles or tufts, often of unequal length on different parts of the body, and always abruptly terminated. In some cases these tufts are beautifully variegated in colour. This stirp is naturally subdivided into two groups, one of which is exemplified in the genus Laria of Schrank (Liparis and Orgya of Ochsenheimer), the other in that of Arctia of Schrank, Eyprepia of Ochsenheimer. But this must be understood with some modification as to species. The families D, E, F, G, and H, of the Wiener Verzeichnis belong to this stirp. The family E more particularly corresponds with the genus Arctia: the designation according to the larva is Ursina (p. 52) Bärenraupen (hence the name arcticæ): "Larva tuberculis in quolibet annulo decem, que plerumque pilis longis densisque obtecta sunt." Fam. G illustrates the genus Laria: larvæ Fasciculatae (p. 54) Bürstenraupen. "Larva fasciculis erectis scopiformibus nonnullisque insuper tuberculis pilisque brevioribus armata." This is more especially typical of the stirps.

Another stirp of the Bombycidae has a larva, which may with propriety be denominated Verticillata. It consists of two principal divisions. In the first the typical genus is Saturnia of Schrank, Ochsenh., &c. Phalena Attacus, Linn.: in the second the genus Apoda of Haworth. The first comprises the Fam. B, larvæ verticillatae, and probably also the Fam. C, larvæ tuberosae of W. V., p. 49 and 50. Larva in singulis annulis verrucis sex, pilis stellatim divergentibus. Metamorphosis a terra remota, in folliculo pyriformi durissimo. The second comprises the Fam. U., W. V., p. 65. Larvæ pedibus haud conspicuis (Apoda Haw.): in Europais limaciformibus, in Javanis spinis rigidis prædætæ, quæ iterum spinulis verticillatis acutissimis instructæ sunt. Metamor-
Metamorphosis in folliculo ovato vel globoso duro. As an European example, I can only adduce the *Apoda Testudo*, Haw. Lep. Br. p. 137: in the Javanese collection are contained numerous species, which are considerably diversified, and of most of these the metamorphosis has been observed and delineated.

I place immediately after the stirps with verticillate larva another stirps, which I have denominated *Pilosa*: although I have not attempted a natural succession in this tribe, yet it appears to me that the structure of the folliculi or cocoons, with other particulars, indicates a relation of affinity between these two stirpes. The first typical genus may be considered to be *Lasiocampa* of Schrank: comprising part of the genus *Gastropacha* of Ochsenheimer; the genera *Odonestis* and *Eriogaster* of Germar, also belong to this stirps. I shall not at present attempt to define the relative limits of these genera; but I must remark that, in my opinion, Ochsenheimer deserves no commendation for deserting in the Lepidoptera Nocturna the plan of adhering to the system of the Vienna Catalogue, with which he commenced; and for declining to adopt several generic names of Schrank, which represent the structure of insects in the larva state, and among others *Lasiocampa*. Agreeably to this view he expressly states, vol. iii. Preface, p. vi.: "For this reason I left several names of Schrank, which were taken from the larvæ alone, unemployed."


A fourth stirps of Bombycidæ I have likewise named after one of the families of the Wiener Verzeichniss, *Lignivora*: it comprises the Fam. M, N, and O. In most of these the larva is naked, or has but few loosely scattered hairs, as appears from the characters of the families. Fam. M, *Larvae Subpilose*, p. 59. Larva mollis (nigro variegata) nuda, punctis nigris solis fere pilis solitariis. Fam. N, *Larvae Lignivora*: Larva levis pilis rarioibus, mandibulis validis: (in ligno putrescente victitae) p. 59. Fam. O, *Larvae Radicivora*, p. 60: Larva nudiuscula, capite thoraceque nitidis (sub humo degit), metamorphosis intra terram in tela oblonga granis terreis commista). The typical genera are *Pygæia*, *Cossus* and *Hepialus*. The metamorphosis of the Fam. O. has some resemblance to that of the genera *Psyche* of Schrank and of *Oiketicus* of Guilding: and these appear to be allied to *Hepialus*, &c., but the determination of their proper situation in the circle of Bombycidæ remains for future discussion.

In the last stirps of this tribe which I shall enumerate, the larva is greatly diver-
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diversified in form; but there is one character which exists in all the varieties, from which it has been named *Cuspidata*: this consists in one or more points, or lengthened tubercles, either at the extremity of the abdomen or on one of the sections of the body. I have not ascertained whether all these various forms constitute a connected circle, but their analysis will follow in the course of the work. The typical genera are *Cerura* of Schrank and *Stauropus* of Germar, but the stirps also embraces *Notodonta*, at least in part, and *Agilia* and *Endromis* of Ochsenheimer, and the genus *Bombyx* as defined by Schrank.

The families R, S, and T, of the W. V., p. 62, 63, and 64, most properly named, according to the larva, *Gibbose*, *Furcata*, and *Cuspidata*, and part of Fam. A, *Larvae Sphingiformes*, comprising the *Bombyx Mori*, belong to this stirps: the latter appears to be connected in affinity with the stirps first enumerated; but as it is not my intention to trace the circular disposition of this tribe at present, I have only transiently indicated several of the most obvious affinities.

The agreement between the forms of larvae which I have discovered in Java, and those described in the Wiener Verzeichnis is so striking in the tribe of Bombycidae, that I am induced to give in this place an enumeration of the families into which the section of Bombyces or Spinner has been divided, as they will illustrate most of the forms which will be described in the sequel. With one or two exceptions, the same forms of larvae have, in this tribe, been observed in Europe and in Java. The names employed are so characteristic, that I have selected from them those which indicate the stirpes.

The families are the following, *viz.*


They naturally resolve themselves, according to the views adopted in this work, into the following *Stirpes*, *viz.*

*Bombycidae.*
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<table>
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<th>Stirpes.</th>
<th>Familiae Catalogi Vienensi.</th>
<th>Exempla Typica.</th>
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<tr>
<td>Larvae Verticillatae.</td>
<td>** B.</td>
<td>Arctia, id.</td>
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<tr>
<td>Larvae Pilose.</td>
<td>* U.</td>
<td>Saturnia, id.</td>
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<td>**</td>
<td>** A.</td>
<td>Hepialus, Schrank.</td>
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In the determination of these stirpes I have availed myself, next to my own materials, of the families of the Vienna Catalogue, and the arrangement of the Lepidoptera Bombyciformia made by Schrank in the second part of his Fauna Boica. The genera here referred to have been established chiefly according to the larvæ. Several of them are of a very comprehensive nature, and will, in future, require subdivision: but the names can always with propriety be applied to the families or sections. They are judiciously chosen and highly descriptive, and should not unnecessarily be supplanted by others taken from the perfect insect, as has been done, in various cases, by Ochsenheimer.

In the two remaining tribes, the subdivisions which I am enabled to propose are still less determinate than in the Sphingidæ and Bombycidæ. I shall therefore, at present, give only a preliminary indication of the most prominent types of form, which I have observed in the Javanese series of metamorphosis; these I shall illustrate by a comparison with the families of the Vienna Catalogue: a more detailed analysis both of the metamorphosis and of the perfect insect is required for limiting the stirpes, and for indicating their relative disposition, according to the affinities of the subjects which compose them.

In the Noctuidæ, a term which I employ in a more extensive sense than is usually done, I shall exhibit, as the type of one of the stirpes, the following form: a larva cylindrical, smooth and naked, always obtuse behind, with a termination either abrupt, or prominent and rounded. In some of the minor subdivisions, there is, on one of the last segments of the body, an acute prominence with a broad base,
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in its disposition somewhat analogous to the horn of the Sphingidæ, but very different in form and appearance. The colours of this larva are generally green or brown; and in some of the subdivisions it is handsomely variegated: in all cases it is longitudinally striated, but the striae vary in number and breadth: it is occasionally marked with a single broad longitudinal lateral band; the surface is almost in all cases dotted, and sometimes variegated with large distinct white spots. Several of the forms in our series agree so strikingly with the families of the Vienna Catalogue, that they deserve to be enumerated, as affording an illustration of the identity of this stirps in Europe, and in the tropical regions of Java, viz.


The Fam. B, which with great propriety has been named Bombyciformis, because the larva resembles the verticillate stirps among the Bombycidæ, belongs also to this stirps, but not to the typical groups. The typical genus is Acronicta; and the peculiarity of the larva is noted by Mr. Curtis. It is also found in the Javanese series.

The distinguishing character of the larva of the next stirps of Noctuidæ which I shall enumerate, although without any regard to its affinity, is its being attenuated almost equally towards both extremities, and very slightly covered with a short down. The name of Fusiformis is therefore with propriety applied to one of its subdivisions, which constitutes the family C of the Noctœæ of the W. V. This family embraces several genera of the present systems; as Lithosia, at least in part, and Eulepia of Curtis, and Dezopeia of Stephens. I defer the analysis of its subdivisions to another occasion. I shall then endeavour to examine the somewhat extraordinary combinations of Schrank; if they are correct, many of the Tineæ will be here arranged. Schrank's genus Setina, comprises most of the species of the family with fusiform larvæ; and he unites in one family, which he denominates Lepidoptera Tineæformia, besides Setina, the genera Nemapogon, Tinea, Setella, Harpella, Plutella, and Stigmella. It remains to be ascertained whether these are indeed related by affinity, or whether he has been guided in this disposition merely by analogical relations. The habit of forming
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forming a case which belongs to many Lepidoptera with fusiform larvæ, is likewise observed partially in other tribes of this order. Among the Papilionidæ it exhibits itself in the Hesperidæ; among the Bombycideæ in the stirps with lignivorous larvæ and in Psyche, and in the Phalænideæ, most evidently among the Tortrices.

The third stirps appears to be strictly oriental; at least I have not found any family agreeing with it in character in the Vienna Catalogue. The larva is cylindrical, thinly scattered with short bristly hairs, abruptly terminated behind, and, as far as I have observed, uniformly marked with transverse bands, of a brilliant, mostly yellow, colour. In its metamorphosis it resembles some of the Bombycideæ; the folliculus is irregularly hemispherical, and partially rests on the earth. The perfect insect is generally marked with strikingly diversified colours, in which black, yellow, red, and white, are contrasted. The antennæ are lengthened and slender; analogous to those of several Papilionidæ; they also indicate an affinity to the last stirps of this tribe. Numerous samples of this larva are contained in our series.

In another stirps the larva has a very decided character: it is still provided with sixteen feet, but of the eight abdominal feet the two anterior are by far the smallest; there is a swelling and discoloration about the fourth segment of the body, and the last segment but one rises in a protuberance which is terminated by two points. In walking, the larva partially resembles those of the Geometreæ, and approaches in habit to the next stirps, but its attitudes are often more grotesque; the head is thrown back and the abdomen drawn inwards, so that it resembles a distorted letter S. Many of the larvæ resemble in colour the bark of wood. They are, in many instances, fringed along the sides of the body, hence the family name in the W.V. Ciliatae. They are very numerous in Java, and exhibit several apparently uncommon modifications. The perfect insect is distinguished by the striking colours of the posterior wings, and by its habit of flying into houses at night. The Fam. X. Larvæ Ciliatae, and Y. Larvæ Pseudogeometreæ, pp. 90, 91, W.V., belong to this stirps, and the typical genera are Catocala of Schrank, and Abrostala of Ochsenh.

The fifth stirps is distinguished, in the larva state, by having only twelve feet, and by bending the back in walking in a greater degree than the fourth; hence the vulgar name of half loopers. Their metamorphosis resembles that of the typical stirps of the next tribe. The perfect insect is well known by the silvery or golden spots or marks on the upper wings. They are denominated Noctua Metallica, and constitute the family Z, W. V. p. 91, Larvæ Semigeometrae. The typical genus is Plusia of Hübner.

Of the stirps enumerated, the first, provisionally named Nuda, from the complete nakedness of the larva in most divisions, is typical of the whole tribe. Schrank proposes the name of Noctua, by preference, for the Fam. M and N of the W. V. which
which belong to it: and two other families, O and P, he has united into the genus Hadena, which also belongs to the typical stirps. Another stirps is named Fusi- formis; a third from the transverse disposition of the marks Fasciata; a fourth Ciliata, and the last Semigeometra.

It will appear more fully in the sequel that the families of the W. V. have, with scarcely a single exception, been likewise observed in Java.

The passage from the last stirps of the Noctuidæ to the first stirps of the Pha- lenidæ, is one of the most gradual which we have yet observed. The tendency to that character which so remarkably distinguishes the typical stirps of the fifth tribe, has been indicated in the stirps alluded to, the Semigeometra of the last tribe. In the stirps which we are now considering, the habit of the larva is completely formed. It has, like the former, twelve feet, but its mode of undergoing the change approaches to that of the next stirps. It consists of the Fam. A of the Geometrae of the Vienna Catalogue, named (larvae) Seminoctuales. It constitutes the genus Phalaena, as defined by Dr. Leach (Samouelle's Entom. Comp. p. 232); the second sect. of the genus Phalaena of Latreille; Genera, vol. iv. p. 227; and the genus Ellopia of Treitschke's Cont. of Ochsenh. Schm. von Eur., vol. v. 2, p. 429. As typical species, P. margaritaria, prasinaria and fasciaria, may be adduced. The family name of Seminoctuales may with propriety be applied to the stirps.

The second stirps is typical of this tribe, and exhibits one of the most remarkable groups in the whole order of Lepidoptera, whether we consider the perfect insect or the larva. The latter have only ten feet: their movement in walking being compared to a loop, they are denominated loopers. Ingressus tanquam si longitudinem spithameis metiaris. They exhibit various very striking modifications of attitude and appearance, according to which they are named in the Vienna Catalogue; and as these also occur in the Javanese series, I shall enumerate several as types of the subdivisions of this stirps, viz.


All these families, and several others which will be enumerated in their proper places, afford indications for generic distinctions, which are confirmed by the genera cited from Leach in Samouelle’s Entomologist’s Compendium.

I shall at present limit myself to a very general definition of the remaining stirpes of this tribe; their analysis will follow in the sequel, when I hope to be enabled to compare, in a more satisfactory manner, the result of the observations which I have personally made with those of Hübner and others, who have illustrated the metamorphosis of this order. I find, however, as well in my own materials as in the arrangement of the Wiener Verzeichnis, that the remaining groups of Phalaenidæ are connected mutually one to the other, and to the two prominent groups already enumerated by very evident affinities. I shall, therefore, consider these as types of stirpes, and endeavour to show in the sequel that they complete the circle of Phalaenidæ. Before indicating them, I shall extract a remark from the work just mentioned, as it not only illustrates the views entertained by the authors of these affinities, but also shows their constant endeavour to arrange their groups in a natural succession; to this they were led, by attending carefully to the metamorphosis of the insects. They place before the remark alluded to an apology for deviating in their arrangement from the order of Linneus, who had separated the Pyralides from the Geometræ by the intervention of the Tortrices; they then proceed: “the reason which has induced us to make this alteration, is, that by this means we believe we have adhered more closely to the regular connexion and gradual passage which nature appears to have observed, and this both in regard of the caterpillars and the perfect insects.” They then describe the larva of one of the groups, as far as they are acquainted with it, in the following words: “regarding the larva of the Pyralides, we remark that many of them want the first pair of the abdominal feet; they move, therefore, in some measure, after the manner of the Geometræ; they have uniformly a slender body, and they live uncovered on plants.”*

According to this intimation, I shall consider the Pyralidæ as the group following immediately after the Geometræ, and representing one of the stirpes of the Phalaenidæ, but without at present defining its limits. In the Vienna Catalogue they

they are divided into two families, one of which is represented by the genus *Herminia*, the other by *Botys*.

Following the same work, we are led by a natural succession to the *Blattwickler* or *Tortrices*, which I shall consider as the fourth stirps of *Phalenide*: this is a very extensive group, the character of which is indicated by the name. The larvae in many cases are small, slender, mostly of a green colour, naked or slightly pilose, very active, and provided with sixteen feet. *They have the habit of contorting or rolling the leaves on which they feed, and in which they undergo metamorphosis.* This character will again be referred to in the sequel: many of the peculiarities of the larvae remain for future investigation. The authors of the Vienna Catalogue express themselves very decidedly as to the natural affinity of the Tortrices to the groups, between which they are now placed. They all greatly resemble each other in their manner of undergoing their change, and no satisfactory characters for *subdivision* have as yet been proposed. The whole stirps is at present represented by a few genera, the limits of which are not defined.

The last group of the *Phalænides*, which is placed immediately after the Tortrices, constitutes "*die Schaben,"* or *Tineæ*. They constitute one of the most diversified groups in the whole order. The caterpillars are generally small, and decrease to such a degree as to become almost imperceptible: *they have sixteen, fourteen, or even eight feet*. Their habits are also greatly diversified. No satisfactory subdivision has as yet been established. Schrank has united under his *Lepidoptera Tineæformia* as well *Lithosia, Eulepia, and Deiopeia, &c.* as the true *Tinea* or Schaben: the former constitute the stirps with fusiform larvae among the last tribe. In preliminarily indicating the fifth stirps of the *Phalenide*, the *Tinea*, I shall adopt the views of the Vienna Catalogue. In referring to various modern systems, we find the *Tineæform Lepidoptera* separated and arranged into distinct subdivisions: the true limits of this group remain therefore for future determination. The affinity of many of the *Tinea* to the *Noctuidæ* and *Seminocotuælæ*, will probably lead us to the point in which the circle of *Phalænides* is completed.

In reviewing this hasty sketch of the *Phalænides*, it appears that this tribe resolves itself into the following stirps, *viz. Seminocotuælæ, Geometræ, Pyralidæ, Tortrices*, and *Tinea*: the latter stirps, according to the views of Dennis and Schieffermüller, is again connected with the *Seminocotuælæ*. In the tribe, therefore, which we are now considering, the disposition of the stirps according to their natural affinities has been comparatively easy, from the indications afforded by the authors cited; while in the second, third, and fourth tribes, my attempt extended no farther than to indicate the prominent forms or types, leaving the definition of the stirps and their arrangement according to their natural relations to the progress of the
the work. Indeed my object in this preliminary sketch, has rather been to point out in a general manner at the commencement, the plan which I have projected for my arrangement, than to limit or define the groups permanently. I trust, however, that the confirmation afforded by the Wiener Verzeichnis to this first imperfect essay, will obtain for it an indulgent reception, until a more satisfactory elucidation can be afforded.

I have now traced the whole order of Lepidoptera in a rapid manner. I have attempted to show that it consists of five tribes, and that in the metamorphosis of each tribe, certain prominent or typical forms are manifested, indicating the subdivisions next in rank, which will be denominated, according to the plan of the Annullosa Javanica, stirpes. The gradual passage of one tribe into another, or the connexion of these higher groups by a natural affinity, has been only superficially stated; but it will be sufficiently apparent, I trust, that in the disposition of these tribes, I have attempted to follow the most gradual succession of nature; and I shall leave the proofs of this to the progress of the work itself. There is, however, one point regarding the connexion of the two principal tribes which presents itself for immediate notice. If the position above advanced be conformable to truth, we are now enabled to show with cogency, that the whole order of Lepidoptera constitutes a series returning into itself. The satisfactory illustration of this point will be given with greater advantages at the close of the work, when the subjects themselves shall have passed in review, and can be appealed to; and my present object will be chiefly to show the point of connexion between the tribe first mentioned and the last, in which the circle is completed. If we therefore return to the Papilionidae, we find the stirps which recedes farthest from the typical character, to exhibit a decided tendency towards the nocturnal Lepidoptera, both in its perfect state and in its metamorphosis; this in both stages is indicated by their names, viz. Hesperidae in the former, Tortriciformes in the latter. Nothing can more strongly prove this point than the following description of the different stages, from the Vienna Catalogue: Fam. A (Papilionum) Larva Tortriciformis; Larva nonnullis Phalaenarum larvis persimilis; subnuda; antice posticeque tenuior (subfusiformis); capite globoso paululum fissos; in foliis contextis habitare solut. Metamorphosis ad modum larvarum Tortricum, in tela. Chrysalis similis phalaenarum pupis. A similar approach to the nocturnal Lepidoptera is exhibited by the perfect insect of the Hesperidae; the body is generally short and thick, the head large, the anterior wings when the insect is at rest expanded; the hinder tibiae provided with two pair of spurs, one in the middle the other at the tip. They fly chiefly in the latter part of the day. Imago pedibus sex æqualibus; antennis brevibus; corpore plerumque brevi crasso, capite magno. Sedens alas, primi- mis posticas, suberectas gerit. In all these particulars the Hesperidae depart from the diurnal...
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Now if we turn to the last tribe of this order, the Phalaenidae, we find again in the stirps farthest removed from the typical group, or from the Geometrae, a stirps agreeing in many particulars with the Hesperidae. The individuals belonging to this group in the larva state, live in contorted or convoluted leaves; hence the name Tortrices is by preference applied to them. The perfect insect likewise resembles the Hesperidae, and this not only in such characters as are common to all nocturnal Lepidoptera, but in several in which it deviates from them and approaches the Papilionidae; of these I shall mention at present only the form of the antennae, and the distribution of the marks on the wings. On this subject striking illustrations are afforded by several Javanese Papilionidae, which will be given in the sequel; preparatory to which, I shall at present only refer to the figure of one of the insects on the second plate, fig. 1, genus Petavia, where the reader will find most of the characters of the Tortrices, viz. form of antennae, additional spurs to the posterior tarsi, marking of the hinder wings, &c. in an insect, which Latreille, Cramer, and other writers have arranged among the diurnal Lepidoptera. A reference to Mr. Curtis's genera Peronia and Sarrothripus, will further illustrate this subject, which I shall pursue more at large in the analysis of the fifth tribe. But there are various points of affinity, of a more general nature, between the Papilionidae and Phalaenidae. Both tribes are in a greater or less degree diurnal in their habits; while the Hesperidae fly in the evening and many of the Phalaenidae at night, we find that some of the typical insects of the latter tribe fly in the day. The habit of carrying the wings erect when at rest, is likewise observed in several of the typical Phalaenidae, while in the Hesperidae it is perfectly intermediate. Many individuals, more removed from the point of contact of the two tribes, indicate a partial approach either in their conformation or in their habits. Of these I shall mention in this place two remarkable South-American Lepidoptera, now arranged in the genus Helicopis of Fabricius, the Papilio Cupido and P. Gnidus of Linnaeus.

I shall conclude this inquiry with some observations, which give me an opportunity to introduce the only subdivision of Lepidoptera of any extent, which has not yet been mentioned, and to adduce the confirmation afforded by the Wiener Verzeichniss of the view I entertain of the union of the Phalaenidae and Papiliones. It is the genus Pterophorus of Fabricius, the Pterophores of Geoffroi. Regarding this remarkable group, we find in the work just cited, p. 143, this observation: "We place the Pterophores (or Geistchen) with Linnaeus, after the small nocturnal Lepidoptera; and here they form the passage to the Papiliones, according to our opinion, more properly than in the disposition made of them by M. Geoffroi, after the Papiliones and Sphinxes, and before the Bombyces." This remarkable group, the true situation of which I shall not attempt to investigate at present, greatly resembles the diurnal Lepidoptera,
pidoptera, in various peculiarities of its metamorphosis. The larva is small, oblong, sluggish, broad, and slightly hairy, and evidently allied to that of the Vermiform stirps of the Papilionidae: the change takes place without any cocoon, the pupa being suspended in the open air by means of two threads; the perfect insect is strikingly characterized by its plumiform wings, and long, slender, filiform antennae. M. Reaumur coincides with the authors of the Vienna Catalogue, in placing this group between the diurnal and nocturnal Lepidoptera.

In the concise enumeration of the stirps of the Papilionidae, premised to the general view of the subdivisions of this order, their analogical relation to certain primary annulose forms was very generally indicated. It may be useful, therefore, to give some further details on this subject, to show its more immediate bearing on my present inquiry, and to apply the analogy which directed Mr. Macleay in the arrangement of the Coleoptera, in the same manner to Lepidopterous insects. With this view I refer the reader to the sketch contained on the third plate, in which the principal types of form of the larvae of this tribe are disposed in groups, in the order in which Mr. Macleay has arranged the Ametabola in the Hora Entomologicæ; vid. pp. 350 and 351; and I hope to be able to show hereafter, that the passage from one group to the other is perfectly natural, that the affinities in this stage of existence are continuous and uninterrupted, and that they constitute a series returning into itself. The confirmation afforded to this position by the analogy of the Ametabola, will be more fully developed in the course of the work; and a final test of its correctness will be supplied by the insect in its imago state. If it shall appear that an adherence to the succession of the forms of larvae above described leads to a natural disposition of the subjects of this tribe in the perfect state, the principle of arrangement will be established on a firm basis.

Referring therefore to the diagram on the third plate, I request the attention of the reader in the first place to that type, which for reasons soon to be stated, and which indeed are obvious at first sight, I have denominated Vermiform. I desire him further to proceed in a direction to the left hand to the Chilognathiform or Juliform type; this will lead him to the Chilopodiform or Scolopendriform type; then changing his direction and turning again towards the right, he meets the Thysanuriform, and next to that, the Anopluriform type; and thus by a connected series he is brought back again to the Vermiform type with which he commenced. The forms of the larvae themselves are familiar to all entomologists, who have paid any attention to the metamorphosis of this order, and examples of them may be seen in various entomological works, exhibiting Lepidoptera in their different stages of existence. Most of those which are represented on the sketch, have been taken as they occurred, partly from the Javanese Collection and partly from works of science,

F 2
without being designedly selected for this purpose. The names defining the stirpes, as has already been stated, are the same which Mr. Macleay employs in the divisions of his class of Ametabola, and they follow the same order in which they occur in the Horae Entomologicae. (See p. 390, 392.) It is necessary, however, to state clearly, that these names, applied to the groups of the larvae of the Papilionidae, are merely indicative of analogies, or show that the larvae possess certain analogous relations to the forms enumerated. This cannot be better illustrated, than by the following observation of Mr. Macleay: in giving the analogous characters of Coleopterous larvae, (pp. 422 and 433 of Hor. Ent.) he says: "in terming larvæ Chilognathiformes or Chilopodiformes, it is not meant that they are Scolopendra or Iuli, or even near to them in affinity, but only that they are so constructed, that certain analogical circumstances attending them strongly remind us of these Ametabola."

It may be proper, while considering this subject, to call the attention of the reader more particularly to the class of Ametabola, as defined by Mr. Macleay, with consummate ability, as it is one of the most remarkable groups in entomology, especially, in regard to its analogical relations to other groups. This class not only points out the natural order or succession of various minor subdivisions, but it represents many of the annulose forms, in their simple or elementary state. Thus, for instance, it exhibits the Coleoptera and Lepidoptera in the first stages of their existence. In illustration of this, I again refer to the Horæ Entomologicae, p. 287, where, speaking of the Ametabola, the author remarks: "it is not absolutely meant that these animals do not undergo metamorphosis, but that, constructed on the same plan with the larvæ of true insects, they are rendered incapable by nature of completing their metamorphosis, and are able to perform the offices of adult life in all the various stages of an incomplete change of form." And then he proceeds to illustrate this remarkable arrangement of nature, by the following observation: "such a species of imperfection is not unique, nor confined to the Annulosa; for the Ametabola have their prototypes among the Vertebrata in the group Amphibia, where the genera Siren and Proteus are, to speak analogically, animals left imperfect in the first stage of metamorphosis." Now, although in comparing the larvæ of insects with the class of Ametabola, Mr. Macleay's remarks admit of an application to various orders, yet it is evident, that, in making the comparison alluded to, he had the larvæ of Coleoptera primarily in view, which indeed first directed his attention more particularly to the Ametabola.

Regarding the larvæ of Lepidoptera he expresses himself thus (p. 400): "If Lepidopterous larvæ sometimes imitate the more eccentric forms of the order of Chilognatha (alluding to the Chenilles-Cloportes, vermiform larvæ), every one knows that their ordinary shape is that of an Iulus." This indeed, as has been stated,
stated, is the typical form of the whole order. It will, however, appear from the figures of larvae, contained on the third and fourth plates, and from the more full details which will be given in the sequel, that their analogy to the Ametabola, is much more clearly exemplified in the Lepidopterous than in the Coleopterous larvae. The former are upon the whole much better known and more readily observed; and I trust their analogical relations will, on this account, be more satisfactorily elucidated. I make this remark with full deference to Mr. Macleay's superior merit, and with entire acknowledgment of his originality. It is very evident that I was led to the observation of these analogical resemblances by the study of his works, and the principle being once made known, its application and extension became comparatively easy. Mr. Macleay himself acknowledges some difficulties which presented themselves in completing the chain of these analogies, and particularly states his want of accurate information regarding the Thysanuriform larvae. Of the fifth group, indeed, he says, p. 285: "I could form but little judgment, as the larvae of it were but very imperfectly known."

It will appear, in the following pages, that numerous examples of all the types enumerated in the Papilionidae have been observed in Java; and it will be my endeavour, as I proceed, to extend my examination to all the larvae of this tribe, which have been described and published, in order to illustrate the position that they can, without exception, be reduced to the five stirpes enumerated, which are constructed according to the plan of the orders of the Ametabola.

I have endeavoured, in the diagram contained on the third plate, to illustrate by figures the order in which the stirpes succeed each other, and, finally, meet again and complete a circle. It is necessary, however, to bear in mind that this illustration is very partial and imperfect. It has not been possible, in the present attempt, to exhibit a great variety of forms, and to show the immediate connexion of the stirpes, although, in several instances, the passage from one to the other is clearly exemplified. My object has chiefly been, in the diagram, to show the maximum of the development of each type, while the remaining illustrations exhibit the gradual passage from one form to the other, which in most cases takes place, by an almost imperceptible variation. The diagram is intended to show those "typical eminences" on which, in the beautiful illustration of this subject afforded by Mr. Vigors, the character is most conspicuous, while the larvae and chrysalides disposed in a linear series, exhibit the almost imperceptibly varying forms which lead along the "basal extremes" to the neighbouring groups.

As I propose to give a tabular view of the divisions of the tribe of Papilionidae, agreeably to the principles now developed, I shall recapitulate and somewhat amplify the concise notices above given of the metamorphosis of this tribe, and add
add some details regarding the perfect insect. The first stirps in order has been denominated **Vermiform**, and if my views are correct, it is the most simple, both in the larva and imago state. In the circle of Ametabola, Mr. Macleay likewise considers the vermes, which consist of the *Epizoaria* of Lamark and the *Entozoa Nematoidea* of Rudolphi, as having the least complicated structure. The distinguishing characters of this stirps are an oblong body, attenuated at both ends, in some cases depressed or slightly convex, in others cylindrico-gibbous, appearing to consist of numerous scuta or shields, distinctly divided by transverse striæ, having a small retractive head, and very short scarcely perceptible feet, which are often concealed by the projecting scuta of the body. This form evidently indicates a strongly marked analogical resemblance to many of the *vermes*; but it is remarkable that the character of the osculant group, in the neighbouring circle of Crustacea, shows itself in many of these larvæ; this will suggest, in the progress of the work, some important observations on the analogical relations of the other tribes of this order. The genera among the Crustacea, in immediate contact with the Ametabola, are *Oniscus, Armadillo*, and *Asellus*. The resemblance of the larvæ of the vermiform stirps to these is indicated by their familiar names: *Onisciform larvæ, Chenilles-Cloportes, Asselförmige-Raupen, &c.* This larva occurs in Europe in the genera, *Polyommatus, Lycæna* and *Thecla*, or in the *Blues, Coppers* and *Hairstreaks* of our British nomenclature; and the three divisions of the Vermiform larvæ, which are established in the Wiener Verzeichnis, correspond with the groups indicated by these genera. They constitute the families M, N, **O**, of that work, named according to the modifications of the larvæ: *viz. Oblongoscutate, Gibboscutate, and Depressoscutate.*

I have observed in Java five varieties of the metamorphosis of this stirps, which belong to the genera above-mentioned, and indicate some modifications of the perfect insect; they will be referred to and described at large in the course of the work. They are represented in the order of their affinity on the fourth plate, in figures 1, 2, 3, 4, and 5. They are more diversified in their external appearance than the European larvæ of this stirps hitherto observed, and the corresponding modifications in the perfect insect will be the subject of future remarks. But many observations are still required to complete the deficiencies in the series. Of the subjects which are represented on the diagram, for the illustration of this stirps, fig. 11, is taken from Sepp, and belongs to the genus *Polyommatus*, as now defined; fig. 12 is from Abbot's Georgian insects, where it is named *Papilio Favonius*; (vol. i, p. 27, tab. xiv.) fig. 13 is from Esper, and belongs to the *Papilio Betulae* of Linnaeus; both the latter are now arranged in the genus *Thecla*. By the agreement of the metamorphosis of these insects, in the most distant parts of the world, in Europe, the Indian Archipelago, and North-America, the permanent character
character of this stirps is established. Many other confirmations may be found in
the works of Sepp, Abbot, Roesel, Esper, Cramer, and Hübner.

The *pupa* of the Vermiform stirps, some of the peculiarities of which have already
been mentioned above, is strikingly illustrated on the fourth plate, in fig. 1, a. 2, a.
3, a. 4, a. and 5, a. By an oversight in the arrangement of the plate, the subjects
are given in a situation the reverse of that in which they are in general disposed.
This the reader is required to correct. In their natural attitude the anal part is
underneath, the head above. This pupa has upon the whole that attachment and
mode of suspension, which characterises the typical stirps: it is fixed by the tail
and secured in an erect attitude by a brace. Its chief peculiarities are an obtuse-
ness of both ends, especially of the superior, and comparatively an even surface.

I have already remarked, that the *perfect insect* corresponds with the larva, as
far as regards simplicity of form. In the Linnaean arrangement the group we are
now considering forms the last of the divisions, and with the name of Plebeians of
the lowest rank, *Plebeji rurales*, terminates the series of diurnal Lepidoptera.
According to the observations of Mr. Jones, the structure of the wings, as far as
regards the nervures, confirms the comparative simplicity of this stirps. But
although diminutive in size, the Papilionidee with Vermiform larvae possess, in many
cases, a beauty of form and an elegance of colouring which is not exceeded by any
other insects of this order. Some of the exotic species of this stirps, belonging to
the genera *Myrine, Helicopis, and Polyommatus*, are distinguished from the whole
tribe, by the caudal extremities of their wings.

In enumerating some of the more characteristic peculiarities of the perfect insect,
I shall notice first the *palpi*: these are slender and of great length; the covering of
scales or hairs on the basal and intermediate joints is shorter and less in quantity
than in the other stirpes; the third, or terminal joint, is directed forwards, comparatively
of great length, and either naked or covered with minute scales. The genus
*Myrine*, belonging to the typical group, exhibits the greatest length of palpi that I
have observed in the whole tribe of Papilionides: they extend to the middle of
the antennæ. On the second and fourth plate the general character of the palpi
is exhibited; *viz.* Pl. ii, fig. 4, b. fig. 5, b. fig. 6, b. Pl. iv, fig. 1, b. fig. 2, b.
fig. 5, b.

The *antennæ* in the typical genera are clavate; their form is regular, being
small at the base, and gradually and uniformly thickened towards the extremity,
which is either obtuse, rounded, or terminated by a bristle. This form is strikingly
exhibited in the genus *Myrine*, and in the second section of the genus *Thecla*: see
Pl. ii, fig. 5, c. fig. 6, c. Pl. iv, fig. 5, c. In the genera *Lycæna* and *Polyommatus*
the antennæ are multiarticular, filiform at the base and terminated by a cylindrical,
compressed
compressed club, which is rather abruptly inflected or bent outwards. This form is exhibited in Pl. ii, fig. 4, c. Pl. iv, fig. 1, c. 2, c. and Pl. i, fig. 1, 2.

The anterior wings are generally regular along the posterior margin, which is either straight or slightly curved. The posterior wings are entire, dentated, or provided with one or more tails, the peculiar character of which consists in being slender and linear; in several genera the tails afford a very beautiful decoration.

The feet are slender, long, perfect in all parts, and alike in both sexes: the anterior feet are never spurious, and although in one section of the genus Thecla, they are somewhat shortened, yet all the parts are perfect. This partial abbreviation is observed in Fam. M. of W. V. Larva oblongoscutata, where the imago is described: "pedibus duobus anticis aliquanto minoribus." The anterior feet are without any appendage, but the intermediate pair have on the thighs, in all genera as far as I have observed, a short acute process, about the middle. The tarsi are small. The peculiarities will be stated in the generic characters. The body is, on the whole, small, slender, and compressed; the proboscis either short or moderately elongated, and in general provided with erect bristles towards the extremity.

The second stirps, which from the character it exhibits in the first stage of its existence, is denominated Chilognathiform or Juliform, is the principal of the whole tribe, and the larva is typical of the whole order of Lepidoptera. This has already been stated in the general remarks on the analogical relations, between the metamorphosis of the Papilionidae and the class of Ametabola, where it appeared that the Juliform habit of the larva of this order had already been pointed out in the Horæ Entomologicae. I therefore proceed at once to the description. The larva of this stirps is generally characterized by smoothness of surface, cylindrical shape, and great length of body; but it presents the following modifications of form, in tracing which I shall commence at the confines of the Vermiform stirps; here we find it attenuated at both ends and transversely striated; an example is given in the third plate in fig. 14, belonging to the genus Colias, which, if my conclusions are correct, determines the natural situation of this genus. Hence we pass, assisted by various corresponding indications, in the other stages of the metamorphosis, to a regularly cylindrical larva, in which the transverse striae are more obscure, and which is slightly hairy and marked with numerous small dots, uniformly disposed along the sides of the body. This group embraces the genera Pieris, Pontia, &c. In the typical groups, which follow next in order, the larva has a swelling or distension about the fourth or fifth segment of the body, from which it tapers more abruptly to the head, and in a gradual manner towards the anal extremity. This typical group consists of the true Papiliones as more rigorously defined and arranged in the genus Papilio, exhibiting, however, several modifications of form, which will be pointed out in the sequel as types for
for further subdivisions or subgenera. The modification of larva which follows in
the series next to the typical group, presents a smooth surface, from which short,
naked, fleshy, obtuse tubercles arise; as we proceed in the series towards the
boundary of the Chilopodiform stirps, we find the tubercles increasing in length
and produced to a point; the form first mentioned is exhibited in the third plate,
fig. 17, and 17, a, and in the fourth plate, fig. 13, and 13, a; and it passes by
very slow gradations to the second form, which in its larva state still preserves,
in a great measure, the character of the Juliform larva, from which it is often
distinguished with difficulty; but if we refer to the pupa and to the perfect insect,
we find unequivocal indications of the next stirps. The subjects belonging to it
afford, according to the comparisons which I have made, a very natural transition,
which will be discussed at large in considering the Chilopodomorphous stirps. I
shall, therefore, merely state, that it consists of the genera Euplæa and Heliconia:
to show this I refer to the illustrations which I have attempted in the regular series
of larvæ on the fourth plate, and in the diagram, preparatory to a future analysis,
on the third plate. I shall, on the present occasion, point out the facts, and
leave the inferences to the reader. The larva of Euplæa is represented only on
the third plate, in figures 6, 7, 8, 9, 10; it is placed here in order to admit of
a ready comparison with fig. 13 of plate iv, and fig. 17 of plate iii, belonging to
the genus Papilio, and with figures 18, 19, 20, in the diagram. The latter belong to
the genus Heliconia, and as I have not observed this family in Java, I have borrowed
the illustration of the larvæ from the continuation of Cramer, by Stoll, where they
are found on the first plate in figures 4, 5, 6; fig. 4 being Heliconia Euterpe, fig. 18
of our diagram, fig. 5, Heliconia Amphione, fig. 19 of our diagram, and fig. 6.
Heliconia Thalia, fig. 20 of the diagram.

I may, on this occasion, point out to the reader an analogical resemblance, which,
if correct, confirms the disposition of Heliconia in this part of the Lepidopterous
circle; it regards the larva immediately following the true Papilionide in fig. 18 of
the diagram; this appears to be analogous in habit to the genus Craspedosoma among
the Ametabola, which genus stands between the Chilognatha and Chilopoda. (See
Hœ Entom., p. 351). The Heliconiae form an extensive group which, perhaps, is
exclusively confined to the equinoctial parts of the New World; it is, in some mea-
sure, represented in India by Euplæa and Idea. The dissections of Heliconia, plate
iii, fig. 29, a, b, c, d; of Euplæa, pl. iii, fig. 27, a, b, c, d; of Idea, pl. iii-
fig. 28, a, b, c, d; and of Acrea, pl. iii, fig. 30, a, b, c, d; which latter, accord-
ing to the form of the larva (fig. 21, pl. iii), is decidedly chilopodomorphous, afford
a further illustration, and, I trust, a confirmation of this statement.

One remarkable character of the larva of this stirps remains to be mentioned,
which affords an additional indication of the analogy to the Chilognatha among
the Ametabola. This is a bifid fleshy organ or furcula, situated between the head and the first segment of the neck, which the caterpillar can protrude or retract at pleasure, and either employ as a means of defence or as an osmaterium. I have to regret that in the illustrations which I exhibit of the larvae of Javanese Papiliones, this character is not always expressed in its full development; while submitted to the draughtsman this organ was naturally retracted, but there is sufficient evidence of its existence in the individuals represented, and in fig. 13 of pl. iv, it is partially protruded. In a figure, borrowed from Abbot, it appears in a state of complete development. The analogy afforded by this organ to the Chilognatha is not obscure, and will be more particularly referred to in the sequel. Another peculiarity of the larva of the typical genera of this stirps, is the manner in which the head is attached to the body: it is by the intervention of a very small articulation, so that the head, when exerted, appears separated from the body. This peculiarity is introduced by Ochsenheimer into the general character of the Papiliones; it is indicated by the authors of the Vienna Catalogue in the following words: "Die Raupen haben den kugelichten Kopf merklicher vom Leibe abgesondert." See p. 158.

The pupa or chrysalis of the Chilognathiform stirps, agrees in its attachment and mode of suspension with that of the Vermiform stirps, but it has some peculiarities which indicate a greater perfection. The caudal extremity is firmly attached by a few threads or by a silky filamentose texture, which sometimes resembles a cord; (See fig. 13, a, pl. iv), while the anterior end is either free and detached, or leans slightly against some support, (a wall, a tree, &c.), in a perpendicular attitude, the thorax directed upwards; or it stretches forward nearly horizontally, being in both cases fastened and supported by means of a thread passing as a brace across the thorax. It is naked and angulated, but much diversified on the surface; the tubercles, always regularly disposed, vary according to the species; it is terminated, in the typical forms, at the upper extremity, by two processes; those species, however, which are at the confines of the Vermiform stirps, have only one short process, more or less acute: as the series approaches the Chilopodomorphous stirps, we find the same mode of suspension which prevails in that group; the chrysalis is attached by the tail, while the thorax is directed downward. An example of this is given in the fourth plate, fig. 13, a. Here the pupa has a perpendicular direction; but a fastening or brace still exists, by which it may, in some instances, preserve a partially horizontal attitude.

The imago or perfect insect of this stirps exhibits in the typical group the most perfect production of the whole order. The beauty of many of the large Papiliones is a subject of universal admiration: several of them are unrivalled in form and colouring. The stirps, as limited by the larva, embraces several of the first divisions made by Linnaeus in the genus Papilio: the Equites and Danae, and the Heliconii stand
stand at the immediate confines in the next stirps. The former, which have also
been named Nobiles, were divided into Equites Troes, and Achivi. But these
divisions rest entirely on artificial characters: it will appear in the sequel, that the
variations in the form of the larva, afford indications for subdivisions; and they will
eventually supply a test of the accuracy of the principles followed: my observations,
however, are as yet very insufficient. The view which is given of the wings of
Lepidoptera, by Mr. Jones, in the Linnean Transactions, vol. ii., p. 63, &c., in
which the nervures are displayed, tends to confirm the perfection of the genus
Papilio. No general description can be given of the form of the wings, which would
apply characteristically to the whole stirps. In Colias and Pieris the anterior wings
are upon the whole triangular, and the posterior wings short and obtuse: in the
typical group the anterior wings have generally a slight curve in the exterior margin,
which renders them somewhat falcate, and the posterior wings are lengthened and
provided with tails, which are generally spatulate or contracted at the base.

The palpi, which in the Vermiform stirps are long, slender, naked, and projecting,
have in this stirps a very different character. In the typical group they are shorter
than the head, closely applied and concealed, by a very dense covering of long
bristly hairs. The third joint is very minute, and, in the genus Papilio, the palpi are
never exserted. In Colias, the situation of which, in the series, according to the
metamorphosis is at the confines of the Vermiform stirps, these organs possess a
moderate length; but in Terias an evident diminution is apparent, and in the follow-
ing genera the decrease is more sudden. The Javanese series does not, however,
afford the means of tracing the gradual change of form from Myrina to Colias,
where these organs are most developed. The Polyommatus Phaedrus of Latreille, a
well-known Indian insect, which is also contained in the Javanese Collection, pos-
sesses a character intermediate between Myrina, of the Vermiform, and Colias of the
Chilognathiform stirps; it appears to supply a natural connecting link. In the
genus Terias, which follows immediately after Colias, the basal and middle joints are
short, thick, and closely covered with scales, the terminal joint is minute, naked,
and slightly projecting. The character of the palpi of the typical group is exhi-
bited in various figures on the fourth plate; the articulations here are short, compact,
closely beset with long hairs, while the last joint is not perceptible. The lateral
view of the perfect insects, given on the first plate, tends likewise to show the
comparative length, the position and attachment of the palpi in several genera. The
minute distinctions will be pointed out in the generic characters.

The antenneæ, in the typical group, have that form, from which Linnaeus con-
structed the character of the genus Papilio. They are multiarticulate and marked
with defined rings at the joints, elongate, filiform at the base, thicker towards the
extremity, which in the typical group consists of a cylindrical club attenuated at both ends. The subdivisions of the stirps exhibit, however, several variations of form according to their situation in the series. In *Colias* these organs are filiform at the base and gradually and uniformly thicker towards the extremity, indicating in this particular, an approach to the Vermiform stirps. In *Pieris* the club is more suddenly swelled towards the extremity, which is compressed. In the true *Papilionides* the Javanese collection exhibits the following varieties: 1st.—antennæ with nearly uniform articulations, marked with distinct, prominent, annuli or rings; plate iv, fig. 11, c; 2d.—antennæ with an oval compressed club, in which the annuli are closely arranged or crowded; plate iv, fig. 12, c; 3d.—antennæ with uniform lengthened articulations and more obscure annular swellings; plate iv, fig. 13, c. The variations of form in the metamorphosis, corresponding to these characters, will be pointed out in the descriptive part.

The feet in this stirps, are generally long and robust; all three pair are perfect and fitted for walking; in the insects which constitute the typical species, the anterior tibiae have near the middle a spine or short acute process, which is either naked or partially concealed by hair. The first tarsus is on all the feet of great length, and the claws are long, slender, naked, and in the typical group, exserted; in the subdivisions which approach the confines of the neighbouring stirpes, the claws present various peculiarities.

In *Colias* the anterior feet are comparatively slender, but they are complete in all parts. The posterior tibiae have a single pair of spines only at their union with the tarsi; which character is common to all the stirps of the first tribe, excepting the Anopluriform. The abdomen is generally cylindrical, of considerable length and attenuated at the extremity, but it is subject to several modifications of form; in one of the subdivisions it is provided with a hook at the extremity. In the female the abdomen is generally ovate and contracted near its union with the thorax. The proboscis in the typical species is very long and robust. The eyes are comparatively large and prominent.

I proceed to the *Chilopodiform* or *Scolopendriform* stirps, restricting my remarks at present to the notices required for the illustration of a general synoptic table of the true *Papilionidae*, which is given in the sequel. In describing the Chilognathi-form stirps I have already pointed out the characters in the genera *Heliconia* and *Euplea*, which, in their larva state, retain a striking affinity to this stirps. I therefore consider these genera as forming a natural transition from the Chilognathiform to the Chilopodiform larve. The genus *Acraea* was originally arranged in our cabinet after *Euplea* and *Idea*, from considerations of the perfect insect; this arrangement is now confirmed by the character of the larva, and in proof of it, I refer the reader to
to the diagram; he will observe that the larva of *Acræa* naturally finds a place
between that of *Heliconia* and that of the typical *Chilopodomorphous* larva; Plate iii
Diagram, fig. 21. The appendages arising from the body of the larva, which, in
*Euplæa* and *Heliconia*, were only simple and fleshy, are in the typical groups of this
stirps rigid and armed with transverse spines; and the threatening or terrific appear-
ance, which is the distinguishing feature of this stirps, is now completely established.
It is this peculiarity which naturally and strongly reminds us of the *Chilopoda* or
*Scolopendræ*; to which, among the Ametabola, they are related in analogy. It may
likewise be observed in this place, that these larva resemble the Scolopendræ in the
effects they produce, when their spines are accidentally touched: as in many
instances they cause an irritation or swelling, analogous to that which follows the
bite of a Centipede. The genera, in which this character exists, have already
been enumerated, as defined by the families of the Wiener Verzeichnis, the names
here applied are highly appropriate, and correspond with the gradual increase of the
peculiar character of this stirps. Thus the family L, *Larva Pseudospinosa*, consisting
of the genus *Melitæa*, has the spinose character in a comparatively small degree;
in family K, *Collospinosa*, it is already more strongly marked, and from this we gra-
dually pass to the family I, in which the development of the spines is at its maximum,
and which has been denominated *Acutospinosa*; it comprises the genus *Vanessa*,
which must be considered as the most perfect of the Chilopodiform stirps. This
genus contains some of the most beautiful Papilionæ which are found in Europe, viz.
*Vanessa Io*, *Antiopa*, *Urticæ*, *Atalanta*; and many of the foreign species are of
exquisite form and beauty. The importance of this natural group was clearly
observed by Schrank, who from the character of the larva, constituted it a distinct
genus, with the name of *Dornfalter* (or thorn-butterfly); long before the promulga-
tion of the Systema Glossatarum of Fabricius, and the genera of Latreille. He has
applied to it by pre-eminence, the name of *Papilio*, thereby corroborating the position
to be stated in the sequel, and which is also confirmed by the analogy of the Ameta-
bola, that the Chilopodomorphous is one of the typical stirpes of this tribe. It
likewise confirms the true character of the Chilopodomorphous stirps, which, in its
larva state is most clearly distinguished from the next or Thysanuriform stirps;
and attention to this statement is necessary, because, from considerations of the
perfect insect alone, these two stirpes have been united in one genus or family, by
most entomologists: whereas the character of the larva, as exhibited in the typical
subdivisions, points out an essential difference.

The union of the two stirpes is effected by several genera which have an interme-
diate character. One of these is *Limenitis*: it constitutes the family H of the
Vienna Catalogue. The typical character here gradually decreases in the larva
state,
state, as the name Subspinosa indicates. One of the subjects of the Javanese series is very remarkable as an osculat or intermediate form; it partakes both of the character of the Thysanuriform and of the Scolopendriform stirps: the processes are without lateral spines and the body has in the anterior parts appendages at the sides, which are also observed in the analogous group of Lepismæ; yet the perfect insect greatly resembles the various species of Limenitis. This larva is represented in the diagram, in fig. 23; but the indications which it offers, in a systematic point of view, remain for future discussion. The family G, W. V. Larve Cornuta, comprising the genus Apatura, is near the confines of the Thysanuriform stirps.

The pupa of the Chilopodiform stirps is naked and angulated, and greatly diversified on the surface in the different subdivisions: in some cases it is nearly even, in others it is marked at regular distances with tubercles and prominences, in others it is deeply notched or indented. The surface is occasionally ornamented with shining lines and dots, or covered entirely with a golden lustre. The pupa is either oblong or compressed, and attenuated posteriorly; the capital extremity being rounded in some cases, obtuse in others, and generally terminated by two broad, compressed, and somewhat diverging points. The pupa is generally suspended by the tail with the head precipitous or directed downwards: from several drawings in the Javanese series it would appear that the attitude is occasionally reversed, the head being directed upwards, by means of a curve near the posterior extremity. The mode of suspension is described in the Vienna Catalogue either as "gestürzt" inverse suspensa, or as "senkrecht" perpendiculariter suspensa. But it does not appear to me, that either of these is intended to indicate that deviation from the usual mode of suspension, to which I have alluded.

The perfect insect exhibits, in many of the typical species, a very peculiar character; the wings in these have a great expansion, the margins are angulated or deeply indented with irregular notches, leaving a short oblique line at the extremity. This character gradually decreases in degree until the borders terminate with simple indentations. The sub-divisions of this group have been made according to the development of this character. The appendages to the posterior wings are generally triangular, broad at the base and acuminate; differing in this particular from the linear appendages of the Vermiform stirps, or from the appendages of the Juliform stirps, which are generally contracted at the base.

No correct idea can be given of the palpi of the insects of this tribe, without detailed illustrations, as they vary in the different groups: I shall therefore limit myself to a few general observations. The dissections which are contained on the third plate, of the genera Eupleca, Idea, Heliconia, and Acraea, prepare us for that character which is exhibited in the typical species of this stirps. The palpi in these
these are not concealed as in the Papiliones, but project beyond the head: the third joint distinctly appears, not naked as in the Vermiform stirps, but closely covered with down. The basal and the second joints are generally broad and robust; they are covered with hair on all sides and are likewise beset underneath with long straggling bristles, which give them that peculiar roughness, which in these organs is characteristic of the stirps. In the typical species the third joints converge or are bent towards each other, from each side, forming, in the language of Latreille a rostellum. Near the extremity of the second joint, stands, in most cases, a tuft of lengthened hair, which gives the extremity of the palpi, in a lateral view, a forked appearance. This character exists in different degrees of development, in the subdivisions of the stirps. I refer for illustration of it provisionally to the 96th plate of Curtis's British Entomology, until the dissections shall have been given in the progress of this work.

The antenne of this stirps are of moderate length and filiform at the base, with a club rising abruptly, near the extremity, which, in the typical species is broad and compressed. In Argynnis it is nearly orbiculate, and has been compared with a target or shield. In the sub-divisions which recede from the typical groups and approach to the fourth stirps, the club, although still terminal, is very gradually capitate or swollen.

The gradual change of character which takes place in the metamorphosis of the second stirps as it approaches the confines of the third, has already been indicated: the transition is confirmed by the structure of the anterior feet. Several of the subjects which have been enumerated as situated near the union of the two stirps, have an intermediate character, which is illustrated on the third plate: I refer to fig. 29, d, and 28, d, the former exhibiting the anterior feet of Heliconia, the latter of Idea. In both, these organs are abbreviated towards the extremity: the tarsi are not distinguishable into five joints, but are united, and their situation is indicated by several spines which are crowded together. But on entering the stirps fully, we find the anterior feet, in both sexes, constructed on a different plan. They are not, as in Colias, and in several genera of the Vermiform stirps, partially reduced in size; but they are spurious and imperfect. Both the femur and the tibia are of slender dimensions, and the tarsus consists of a single member, which in the typical genera possesses neither joints nor claws: they are moreover very hairy, and have been compared to a tippet. Latreille, in his general remarks on this order, describes them thus: Pedes antici submutici, interdum hirsutissimi, inflexi, pectori adpressi, inde spurii. The intermediate and posterior feet, in the typical group, are terminated by claws and pulvilli with membranaceous pubescent bifid appendages at their base. See Curtis's Br. Entom., plate 96.
The abdomen is long, slender, and compressed, in the section which connects this and the second stirps; it is somewhat shorter in the typical species, and more robust and suddenly attenuated near the confines of the fourth stirps. The proboscis is generally long and robust.

Thysanuriform Stirps. The characteristic mark of the larva of this stirps is an appendage to the posterior part of the body, consisting of two rigid setæ or spines, pointing directly backward. These setæ vary, indeed, in length and size, but their existence, in the individuals of the stirps, is general and without exception. This appendage has also been denominated a bifid tail or a furcula, from its forked appearance in many cases; it is more developed in some subjects than in others; it likewise varies in its consistence, colour, and mode of attachment. In some cases these spines or setæ are an immediate continuation of the substance of the larva, in others they differ in colour and texture, and the union to the body is by an articulation. This larva is peculiarly abundant in temperate regions; it unites, in the European Fauna, more species in one group than any other form of larva. This will appear by reference to the Wiener Verzeichnis, where the family named from the larva Subfurcata, consists of twenty-three species, most of which are known in all stages of their metamorphosis. Nearly one hundred European species are described in systematic works. The Javanese series consists of a smaller number, and among this there are several which deviate considerably from the regular typical form. In the latter the larva is cylindrical, long, attenuated in a greater or less degree at both ends, but upon the whole, thicker anteriorly: the form of the head is greatly diversified, it is either simple and rounded, or depressed anteriorly with two lateral erect setæ or horns. In some cases the head is greatly distended posteriorly, in form of a shield, which is moveable and crowned with four or more horns, having serrate edges. Several of the larvae of this stirps have a tuft of hair on the head and two transverse hairy ridges on the neck, in consequence of which they have an analagous resemblance to the larvae of one of the stirps of the Bombycidae. Among the foreign individuals of this group, various very grotesque forms are observed, and the lateral appendages are sometimes greatly developed.

The peculiarities of the larva of this stirps, and more especially the two setæ or caudal appendages, strongly remind us of the Thysanura, and the character of the perfect insect confirms this analogy; we find in the Lepidoptera which belong to it, the long setiform antennæ, which are mentioned by Mr. Macleay, Hor. Ent., p. 351, as a peculiar property of the Lepismæ; their form is also, on the whole, more elongate than that of the larvae of the other stirps.

The pupa of this stirps is smooth, shining, often handsomely variegated with colours, but never gilt; its form is subject to many modifications, being regularly oval,
oval, angular, curved, gibbous, triangular, with a pyramidal base and point, and a few acute spinous processes near the middle. It is always attached by the tail and perpendicularly suspended, the capital extremity, which is described as "gestürtzt" or directed downwards, is, with few exceptions, terminated by two points, which are acute, approximated, or diverging. Figures of many of the European forms of this stirps are given by Sepp and others. Stoll has likewise represented various larve and pupæ, which afford a strong confirmation of its uniformity in all parts of the world.

The perfect insects of this tribe are characterized by the prevalence of a brown colour on the surface of their wings: although they have in temperate regions generally an obscure exterior, many of the tropical species are exquisitely adorned with a gloss of blue, of most transcendent brilliancy, which is spread over the surface in various shades of intensity. Many examples of this occur in the insects of the new world, and several of a similar character are likewise contained in the Javanese series. Near the boundary of the third stirps, many individuals are marked with waving lines or bands, which cross the wings from the extremity towards the base. The insects belonging to this stirps are likewise, more than all other diurnal Lepidoptera, ornamented with ocelli, by which nature appears to have supplied in some measure that comparative deficiency in beauty, arising from a want of brilliancy of tint. The ocellated subdivision of this tribe was named by Linnaeus, Nymphales gemmata. The wings have in most cases their greatest diameter from the exterior to the interior margins, by which means their extent is in the direction of the body of the insect, or from the head towards the tail. They are, in many cases, lengthened, in a posterior direction, to a short rounded tail, the lateral margins being either uniform or irregularly indented. In the European species the posterior wings are either simple, or provided with acute or rounded denticulations.

The palpi of this stirps agree in general character with those of the last, but at the confines of the fifth stirps they are more curved and ascending; they rise above the head and the third joint is naked and compressed. In the typical species the bristles, arising from the basal and intermediate joints are more lengthened and straggling, the palpi have in consequence a greater appearance of roughness and hairiness than in the third stirps, and the tuft, at the termination of the second joint, is greatly developed. The antennae are filiform, with a slender very gradually incrassated club, which occupies a large portion of the entire length of this organ. In the typical genera they are of a great length, and exhibit, as has already been pointed out, one of the characteristic peculiarities of this stirps. The anterior feet are small and hairy, with a single tarsal member: they possess the characters from which
which these organs have been termed *spurious*, in a higher degree than the anterior feet of the Scolopendriform stirps. The *intermediate* and *posterior feet* agree in most particulars with those of the former stirps of this tribe.

The *abdomen* is shorter, in proportion to the wings, than in the three former stirps; in some individuals it is provided, in the male, at the sides and extremity with fascicles of long silky hair, which extend themselves horizontally. The *proboscis* is of moderate length and size.

In the synoptic view of the first tribe, this stirps is designated in the perfect insect by the name of *Maniola*, which was introduced by Schrank; it is, in my opinion, more appropriate than that of *Nymphales*, which, by associating this stirps with the former, tends to keep up the erroneous idea of their identity.

**Anopluriform Stirps.**—The larvæ of none of the stirps hitherto enumerated exhibit an analogical resemblance to one or other of the orders of the Ametabola, in a more striking manner than those of the last stirps. Every Entomologist is acquainted with the larvæ of the *Hesperidæ*: they are characterized by *a head comparatively of excessive size*, and *by an abrupt termination posteriorly*, or in other words, *by the entire absence of every thing like a caudal appendage*. Who is not by this form, strongly reminded of the *Anoplura*? Here is an absolute want of tail, combined with a great development of the capital part of the insect. The form of the common pediculus with its large fore-end and blunt abdomen, readily occurs to the mind, and a similar external structure is exhibited by all Anoplura. At present I shall not pursue this comparison, but referring to the Ametabola, as disposed in the *Horæ Entomologicae*, shall remark, that by following the order there pursued, we have now completed the circle of the first tribe of Lepidoptera, namely that of the *Diurnal butterflies*, or *Papilionidae*, strictly so called. The affinity between the *Thysanuriform* and Anopluriform stirps in the larva state, is partially illustrated in the diagram on the third plate, by the twenty-fourth and twenty-fifth figures; the same relation between the Anopluriform and Vermiform stirps is likewise apparent in the figures exhibited at the point of contact in the diagram. These affinities are confirmed by various peculiarities in the perfect insect, which will be mentioned in the proper place. The approximate disposal of the *Plebeji urbicolis* and the *Plebeji rurales*, by systematic writers, may provisionally confirm this arrangement.

The metamorphosis of the Anopluriform stirps, in its *pupa*-state, exhibits a very peculiar structure. The *pupa* is not, like that of the former stirps, angulated, naked, and suspended in the open air, *but it is concealed by a folliculus*, or *by a covering of a convoluted leaf*, and *when separated it exhibits a smooth surface resembling that of the nocturnal Lepidoptera*. It has therefore been termed *Tortriciform*, and its relation to one of the stirps of the *Phalaenidae* has already been pointed out.
THE perfect insect of the Anopluriform stirps is, like that of the Thysanuriform stirps, characterized by a predominance of a brown tint, but it wants the defined ocelli of that stirps, and the markings exhibit great beauty and diversity of form. The principal subdivisions that I have hitherto observed are the Erycinae, the Uraniae and the true Hesperidae. The Erycinae are a very remarkable group, and several particulars regarding them will be mentioned in considering the structure of the legs in this stirps. The genus Urania is well known as containing several of the most striking Lepidoptera, both as to form and beauty of colours; but it appears to be confined to the New World. In the Hesperidae contained in our collection, the colour is almost uniformly of an intense brown, inclining to black; the spots are white and yellow, partially transparent, but not greatly diversified. The form of the wings is comparatively simple; the anterior wings are triangular, the posterior wings rounded and entire, rarely lengthened or angulated. The most interesting peculiarities of the Hesperide by which they are related to the Phalénidae, have already been mentioned.

The palpi in the Anopluriform stirps are greatly diversified in the various subdivisions, and depart more from one particular form of structure, than they do in the other stirps hitherto considered; they cannot therefore be defined by a general description; but they exhibit three principal modifications. In the true Hesperidae the basal and intermediate joints are robust, broad, depressed, and occupy a large portion of the head inferiorly, on each side of the proboscis; they are closely covered with hair or short bristles, which are in most cases truncated and even, resembling the surface of a brush; the second joint is abruptly truncated at the end; the third joint is naked, but of diversified structure; in some cases considerably projecting and approaching the character of the Vermiform stirps, in others short and nearly concealed by the brush-like covering of the second joint. In the genus Urania, the palpi are lengthened, slender, having the second joint greatly compressed and the third delicate, somewhat cylindrical and nearly naked. (Latr. Gen. Insector. iv. p. 207). In the Erycinae the palpi are characterized by shortness and by delicacy of structure; one modification of them is represented on pl. ii. fig. 3, b. The antennae vary considerably in the different subdivisions; in the true Hesperidae they are filiform at the base with a decided fusiform club, of various proportionate length and form, terminated by an elongated acute point, which is uncinate or hooked. They are, in many cases, marked externally with transverse striae; but I have not as yet determined the extent and generality of this character; The abdomen, in the typical species or true Hesperidae, is more robust than in the former stirps of this tribe; its resemblance to that of the Nocturnal Lepidoptera has already been pointed out. The proboscis is long, slender, and often partially concealed by the palpi.

The feet of the insects belonging to the Anopluriform stirps possess many peculiarities which at present I am not prepared to describe at large; but some remarks

H 2
on the anterior feet cannot with propriety be omitted. These are again perfect, being provided with five tarsi, and with claws as in the Vermiform and Juliform stirpes. But there exists, at the confines of the Thysanuriform and Anopluriform stirpes, an intermediate group, by which the transition from one stirps to the other is most strikingly exemplified. This is the small group of Erycinae. Here the anterior feet are spurious in the male, and perfect in the female. For an illustration of this most remarkable structure I refer the reader to pl. 11, where in fig. 3, the details of both sexes are exhibited in the dissection; fig. 3, e and f, exhibit the spurious feet of the male, and fig. 3, g, the perfect feet of the female; and the lateral view of the perfect insect, fig. 3, a, shows the relative proportion and situation of the spurious feet in the male, in a very striking manner. I consider it a fortunate circumstance that my Eastern collection has enabled me to illustrate this point, and to show in a satisfactory manner, the union of the two stirpes; for the true region, not only of the group of Erycinae, but of the whole Anopluriform stirps, is the New World. While I have discovered in Java three species of Erycinae and about thirty-five species of Hesperidae, the continent of America has hitherto afforded at least one hundred species of the former, and an innumerable host of the latter. The details regarding the Erycinae, as observed in Java, will be given in their proper place in the work, but I shall add in this place that the metamorphosis of this group, as far as it is yet known, confirms the station assigned to it; and the figure of the larva and chrysalis of Erycina Midas, from the sixth plate of the continuation of Cramer, by Stoll, gives an interest to the diagram, which I trust will meet with approbation. I shall only transcribe the remark of Hoffmannsegg on this group, contained in his remarks on the Erycina Oppelli, in Wied. Zool. Magaz. T. i, No. 2, p. 95. "Erycina gehört unstreitig, zu dem merkwürdigsten das in der Entomologie angetroffen werden kann."

I shall conclude these introductory remarks, with a recapitulation of the various references to the illustrations of the metamorphosis and perfect insect of the Vermiform and Chilognathiform or Juliform stirpes, given on the plates belonging to the first part, in order to exhibit them in a connected point of view.
INTRODUCTION.

Chilognathiform or Juliform Stirps.

\[
\begin{align*}
\text{Metamorphosis} & : \{ \\
\text{larva} : & \text{ pl. iv, fig. 6, 7, 8, 9, 10, 11, 12, 13. Pl. iii, 1, 2, 3, 4, 5.} \\
\text{pupa} : & \text{ pl. iv, fig. 6, a; 7, a; 8, a; 9, a; 10, a; 11, a; 12, a; 13, a. Pl. iii, 1, a; 2, a; 3, a; 4, a; 5, a.}
\end{align*}
\]

\[
\begin{align*}
\text{General form and habit, wings, body, head, &c. Pl. i, fig. 12, 13, 14, 15.} \\
\text{Palpi} : & \text{ pl. iv, fig. 8, b; 9, b; 10, b; 11, b; 12, b; 13, b.} \\
\text{Antennæ} : & \text{ pl. i, fig. 12, 13, 14, 15. Pl. iv, 8, c; 9, c; 10, c; 11, c; 12, c; 13, c.} \\
\text{Feet} : & \{ \text{ anterior: pl. iv, fig. 8, e; 9, e; 10, e; 11, e; 12, e; 13, e.} \\
\text{claws} : & \text{ pl. iv, 8, f; 9, f.}
\end{align*}
\]

\[
\begin{align*}
\text{Proboscis} : & \text{ pl. iv, 8, d; 9, d; 10, d; 11, d; 12, d; 13, d.}
\end{align*}
\]

All the preceding details are taken exclusively from Javanese insects, belonging to the series arranged in the Honourable East-India Company's Museum.

In the diagram on the third plate, the object has been to illustrate the most prominent forms of each of the five stirpes, several subjects have, therefore, been selected from the works of Sepp, Abbot, and Stoll's continuation of Cramer,

\[
\begin{align*}
\text{Vermiform Stirps} & : \{ \text{ Fig. 11. Polyommatus ———?…… Sepp.} \\
& \text{ — 12. Thecla Favonius ———— Abbot.} \\
& \text{ — 13. Thecla Betulæ ———— Esper.} \\
& \text{ — 14. Colias Marcellina ———— Stoll.} \\
& \text{ — 15. Pontia Brassicæ ———— Sepp.} \\
\text{Chilognathiform Stirps} & : \{ \\
& \text{ — 16. Papilio Ajax ———— Abbot.} \\
& \text{ — 17. Papilio Polydorus ———— Javan. Metam.} \\
& \text{ — 18. Heliconia Êuterpe ———— Stoll} \\
& \text{ — 19. Heliconia Amphione ———— Do.} \\
& \text{ — 20. Heliconia Thalia ———— Do.} \\
\text{Chilopodiform Stirps} & : \{ \\
& \text{ — 21. Acraea Vesta ———— Jav. Met.} \\
& \text{ — 22.*Biblis Leucothoë ———— Do.} \\
& \text{ — 23. Genus allied to Limenitis ———— Do.} \\
\text{Thysanuriform Stirps} & : \{ \\
& \text{ — 24. Melanitis undularis ———— Do.} \\
& \text{ — 25, 25. a. Erycina Midas ———— Stoll.} \\
\text{Anopluform Stirps} & : \{ \\
& \text{ — 26. Hesperia ————?…… Jav. Met.}
\end{align*}
\]

* In this species the spines are alternately long and short, in other respects it resembles the larvæ of the typical group. The genus Biblis is here applied strictly according to the views of Fabricius, who gives Leucothoë as one of the typical species. M. Latreille has placed in the genus Biblis several insects, which agreeably to the metamorphosis belong to different groups.

I regret that the plan of the diagram has not permitted me to exhibit various highly instructive forms, but the most important will follow in the course of the work.
A DESCRIPTIVE CATALOGUE.

&c. &c.

LEPIDOPTERA.

The station of this order in the sub-kingdom of Annulosa, is clearly indicated in the Hora Entomologicae. The Lepidoptera are here arranged in the class of Haustellata, between the orders of Diptera and Homoptera. In the diagram which exhibits a view of the classes of the Annulosa, they meet the order of Trichoptera, and thus form a connexion between the classes of Haustellata and Mandibulata. See Hor. Ent. p. 390. The relation of the Lepidoptera to the Homoptera is more particularly pointed out in page 375 of the same work; and that to the Diptera, in page 379. I therefore refer the reader, for a more detailed exposition of Mr. Macleay's views of the natural situation of this order, to the pages cited; where the analogy of the Lepidoptera to the other orders of Annulosa is likewise pointed out, in a tabular view; see page 392.

The Lepidoptera are chiefly distinguished from the other orders of Annulosa, by their mouth, wings, and metamorphosis. The acute observations of M. Savigny show that the mouth is provided with lips, mandibles, and maxillae. The latter by their union form the proboscis, and are thus described: mandibles, at their base, intimately united with the lower lip, elongated, canaliculated, forming together by the union of their plates, a tubular spirally-convoluted proboscis, which is concealed by the palpi. The mandibles are very minute, distant, slightly or not at all moveable, and unfit for mastication. There are four palpi, of which two are maxillary and two inserted at the base of
of the lower lip. The latter are denominated labial palpi. The wings, four in number, are membranaceous, more or less covered with minute imbricated scales. The metamorphosis is technically termed obtect.

Observation. — The metamorphosis of this order is the most remarkable, the most diversified, and the most intricate in the sub-kingdom of Annulosa. I have already stated my intention of deriving from it the basis of my arrangement. It shall be my endeavour to analyze and follow its variations, as my clew to a general subdivision of the whole order. In the first tribe the outline of a subdivision has been sketched; and I now submit it to the candid examination of Entomologists.

It might, perhaps, be expected, that I should, at the commencement, give a similar descriptive and discriminating analysis of the metamorphosis of each tribe, in all its details; but, on this subject, I must without reserve acknowledge my inability. In the first tribe, I had the advantage of being guided by analogical relations; and it appears to me that the stirpes of this tribe exhibit types of the modifications which take place in the metamorphosis of the remaining tribes. I shall observe, by way of illustration, that a similar state of things occurs among the Mandibulata. We here find, in the metamorphosis of one order, the Neuroptera, types of the diversified metamorphosis of the whole class. See Horae Entom., p. 433. But I am not prepared, at present, to show how the same principle applies to the Lepidoptera in general, or to analyze and describe the metamorphosis of each tribe, in the manner in which I have attempted to elucidate the metamorphosis of the Papilionidae. This would lead me into the very mistake I am anxious to avoid, and produce an artificial arrangement. It is true, there are many observations in the Wiener Verzeichnis, which assist in forming a general system founded on metamorphosis; and I have adopted them so far as I could with safety, and with the intention of pursuing them in the course of this work. I have no hesitation in stating in this place, that the indications given in the work just mentioned, lead to more accurate views on this subject than those generally found in Entomological works. We are directed to attend not only to the number of the feet of the larve, but to analyze them with rigorous exactness, to notice every particular of their structure, viz. the deviation from the regular cylindrical form, whether ovate, fusiform, oblong, depressed, &c.; the form of the segments, whether merely annular or produced into scuta, &c.; the adventitious appendages to the head, sides, tail, &c. whether provided with a furcula, a bicuspid anal appendage, &c.; the diversified form of the head and its appendages; the multifarious protuberances, excrescences, warts, and fleshy caudiform appendages; and particularly the external covering, whether smooth, hairy, villose, spinous, with the various modifications of the hairs and spines. It is probable, that as accurate observations are extended, these will assist in affording clear indications for permanent subdivisions. But, in the present state of our materials, I shall adhere to the excellent rules on this head contained in the Horae Entomologice. I shall examine principally the variations in the metamorphosis, and endeavour to obtain from them the indications of the higher groups. Wherever the modifications in the metamorphosis are numerous, I shall endeavour to ascertain whether they lead to the establishment of genera or further subdivisions. The first tribe affords an example of the assistance derived from a minute acquaintance with the metamorphosis, in the determination of natural groups, whether stirpes, genera, or further subdivisions. On this subject I have frequently referred to the authors of the Vienna Catalogue. Next to these, Schrank has most closely consulted metamorphosis, in its various modifications, in his arrangement, and on its importance as a guide to minor subdivisions,
subdivisions, he has the following ingenious observation: “Metamorphosis, in its larva state,” he says, “may, and I think must be, taken into the characters of genera, in the absence of other sufficiently distinctive notices. Those Botanists who have derived their systems primarily from the fruit, have nevertheless a regard to the flower, and by this means reciprocally elucidate existing obscurities. Caterpillars are the flowers of the Lepidoptera. They are indeed not always present when the perfect insects are before the examiner. But, is the case different with the Botanist?” The application is evident, and I shall conclude this observation with the following remark of the author of the Horae Entomologice. “As the knowledge of the whole life of an insect must make us better acquainted with its nature than a mere description of one of its forms, in the same proportion ought metamorphosis to outweigh every other principle of arrangement.” Horae Entom., page 448.

I proceed to the consideration of the first tribe of Lepidoptera, the Papilionidæ, consisting of the Lepidoptera Diurna of Latreille, the Tagschmetterlinge oder Falter of Denis and Schieffermüller, Ochsenheimer, &c.; the genus Papilio of Linæus, Les Papillons Reaum., Geoff., &c.

Character of the Tribe: Metamorphosis: Larva provided with sixteen feet, elongated, cylindrical, with a globose head, attenuated posteriorly, retractile, attached by means of a contracted articulation, so as to appear in the typical species, when exserted, disjoined from the body, of a slow, tardy habit. (It presents five principal modifications of form.)

Chrysalis naked, angular, attached by the tail, but variously suspended; in one stirps only folliculated, or covered by a contorted leaf, in the same manner as some of the Nocturnal Lepidoptera.

Perfect Insect: Antenne composed of numerous articulations, slender at the base, incrassated towards the tip, rarely filiform, but generally terminated by a club, which is variously modified in the different subdivisions. Wings erect when the insect is at rest, without hook at the margin of the lower wings; in one stirps the posterior wings only are elevated. Posterior tibiae, in most cases, with a single pair of spurs at the tip only. They all fly in the day.

Character Tribus. Metamorphosis: Larva pedibus sedecim, elongata, cylindrica, tarda; capite globoso retractili; exserto, a corpore disjuncto.

Chrysalis nuda, angulata, posticè alligata, sed vario modo suspensa; in stirpe anopliuriformi sulpfolliculata levis, et Lepidopterorum aliqurorum nocturnorum chrysalidi similis.


This tribe, according to the modifications of the larva, is divisible into five stirpes or races, a connected view of which is given in the following Table.
STIRPES.

SYNOPTIC TABLE OF THE STIRPES OF THE FIRST

Stirps I.

VERMIFORM.

The reader is referred to the diagram contained on the third plate, where several of the typical forms of the larves of the genera arranged in the sixth column are represented, with the view to illustrate the second column.

Stirps II.

CHILOGNATHIFORM or IULIFORM.

VERMES.

Genera,
in the order of their affinity, illustrating the analogy to the larvae of the Papilionidae.

- Entonoda
- Ascaris
- Strongylus
- Oniscus
- Armadillo
- Porcellio

(The three genera last enumerated have their natural station between the Ametabola and the Crustacea; it is remarkable that the analogy is more apparent in the osculant group of Oniscide than in many of the true Vermes.)

CHILOGNATHA.

Glomeris.

(As to the affinity between this genus and Porcellio, see Hone Entom., p. 348.)

IULUS.

Polydesmus.

Craspedosoma.

(At the confines of the next order.)

ANALOGY.

to the class of AMETABOLA, Macleay.

METAMORPHOSIS.

LARVA, transversely striated, oblong, attenuated at both ends, convex or cylindrico-gibbous, in some cases depressed; head small and retractile; feet short, and generally concealed by the scutiform segments of the body.

PUPA, smooth, obtuse at both ends, attached by the caudal extremity with the head upwards, and secured in an erect attitude by a brace.

PUPA, attached and suspended as in the Vermiform stirps, angulated, with two processes at the anterior extremity.

LARVA, elongated, cylindrical, attenuated at the ends, somewhat distended about the fourth segment, with the head attached by a small articulation, appearing, when exerted, distinct from the body, with a furcula or bifid, fleshy, retractile organ, between the head and neck.
TRIBE OF LEPIDOPTERA, THE PAPILIONIDÆ.

PERFECT INSECT.

**Antenne**, clavate, very gradually and uniformly incrassated, or filiform and terminated by a cylindrical compressed club abruptly bent outward.

**Palpi**, with the third joint very long, naked, and directed forward, the basal and intermediate joints slender, elongated, and sparingly covered.

**Feet**, mid-legs with a short spinous process to the tibia, anterior legs perfect, rarely slightly abbreviated. Claws minute, single in the anterior feet of the male.

**Wings**, erect, when the insect is at rest; anterior wings oblong or triangular, posterior wings entire, dentated, or provided with one or more linear or filiform caudal appendages. Nervures simple, delicate, discoidal areola not closed.—(Jones in Linn. Trans., vol. ii. p. 63, &c.)

**Abdomen**, small, slender, and compressed. **Proboscis**, moderately elongated, naked or provided with transverse bristles at the extremity.

**Flight**, comparatively slow.

**Antenne**, marked with prominent rings at the joints, elongate, filiform at the base, incrassated towards the club, which is cylindrical and attenuated at both ends, or oval, compressed with the annuli crowded towards the extremity.

**Palpi** (in the typical group), shorter than the head, the third joint very minute, the basal and intermediate joints concealed by a covering of bristly hair; (in the genera near the vermiform stirps the third joint slightly projecting.)

**Feet**, long and robust, tibiae of the anterior feet, in the typical group, with a short acute process near the middle; (in Colias slightly abbreviated.) Claws large and robust.

**Wings**, erect, when the insect is at rest; subfalcate, or simple and triangular. Nervures strong and prominent, discoidal areola closed, posterior wings cut out to receive the abdomen, often provided with spatulate caudal appendages.


**Names**, descriptive of the stirpes or of the subdivisions, in their different states.

**Schildfalter**—Cupido—Schrank.
**Plebehi Rurales**, Linn.
**Polyopthalmi**, Aldrov.
**Polyommatus**, Swainson.
**Lycænæ**, Stephens.

**Genera**.

**Normal**, in the regular Lepidopterous circle.
**Aberrant**, or departing from the regular series, (and genera of which the affinity has not been determined).

**Normal**

**Aberrant**

**Papiliones** (strictly so called).
**Edeffalter**—Pieris—Schrank.
**Equites**—Troes et Achivi.
**Heliconii**.
**Danaï candidi**.
**Parnassii**. Fabr.
**Larve variegata.** Fam. C, W. V.
**Larve mediostriatæ.** Fam. D, W. V.
**Larve pallidiventres.** Fam. E, W. V.
**Larve bombyciformes.** Fam. B, W. V.
**Larvae nuda.** (Equites) Esper.
**Larvae holosericea.** Heliconii—Esper.
**Larvae pilosa.** Swallow-tails.
**Black-seins.** Whites.
**Clouded-yellows.** Brimstones.

**Colias**.
**Terias.**

**Kolias**.
**Gonepteryx**.
**Pontias.**

**Papilio**.
**Leucophasia.**
**Sect. I. antennæ with prominent annuli. Licinia.**
**Sect. II. antennæ with an oval compressed club. Thais.**
**Sect. III. antennæ with obscure annuli. Doritis.**

**Myrina**.
**Lycaenæ**.
**Theclæ.**

**Petavæa**.
**This genus, nearly related to Hesperia, forms in our series the transition from the Anopluriform to the Vermiform stirps.**

**Myrina**.
**Lycaenæ**.
**Theclæ.**

**Polyommatus**.
**Lycænæ.**

**Polyommatus**.
**Lycænæ.**

**Theclæ.**

**Polyommatus**.
**Lycænæ.**

**Theclæ.**
**SYNOPTIC TABLE OF THE STIRPES OF THE FIRST 60 Stirpes.**

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<thead>
<tr>
<th>Stirpes</th>
<th>Analogy, to the class of Ametabola, Macleay.</th>
<th>Metamorphosis.</th>
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<tr>
<td>Stirpes III.</td>
<td><strong>Chilopoda.</strong></td>
<td>Larva, cylindrical, with rigid filiform appendages, (naked and few in number at the confines of the last stirps, in the typical group numerous,) disposed in longitudinal series along the body and armed with verticilli of acute diverging spines.</td>
</tr>
<tr>
<td>Scoliopendriform</td>
<td><strong>Litthobius.</strong></td>
<td>Pupa, angular, oblong, or compressed, diversified on the surface, even, tuberculated, or notched; the headcase obtuse, rounded, or tuberculated; ornamented with shining dots or lines, or entirely covered with a golden lustre: suspended by the tail, with the head precipitous or directed downward.</td>
</tr>
<tr>
<td>Scoliopendriform</td>
<td><strong>Scutigera.</strong></td>
<td>Pupa, suspended as in the Chilopodiform stirps, smooth, shining, often handsome variegated with colours; variously modified as to form, oval, angular, curved, gibbous, or triangular, with a pyramidal base and point; terminated by two acute points, which are either approximate or diverging.</td>
</tr>
<tr>
<td><strong>Thysanura.</strong></td>
<td><strong>Lepisma.</strong></td>
<td>Larva with a bifid tail or furcula from the posterior part of the abdomen, consisting of two rigid setae or spines, pointing directly backward; having an elongate cylindrical form, slightly attenuated at both ends; head emarginate above or provided with two erect setae or points in some species greatly distended posteriorly, forming a kind of moveable shield, which is crowned above with four or more membranaceous horns having serrate edges.</td>
</tr>
<tr>
<td>Thysanuriform</td>
<td><strong>Forbicina.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Podura.</strong></td>
<td><strong>Smyththurus.</strong></td>
<td></td>
</tr>
</tbody>
</table>
TRIBE OF LEPIDOPTERA, THE PAPILIONIDÆ.

PERFECT INSECT.

ANTENNAE, filiform at the base, with a club rising abruptly at the extremity, in the typical species broad and compressed, and in one of the subdivisions orbiculate.

PALPI, with the basal and second joints broad and robust, covered with hair and beset underneath with long straggling bristles, the third joint projecting beyond the head, covered with down; converging in the typical species and forming a rostellum or beak: a tuft of long hair at the extremity of the second joints.

WINGS, erect in the resting insect: anterior wings narrow and greatly expanded, with angulated, scalloped, or deeply indented margins; posterior wings with a deep abdominal groove, entire or dentated, rarely with short, acute caudal appendages; nerves distinct: discoidal areola closed.

ABDOMEN, either slender and compressed, or, in the typical group, robust and abbreviated.

PROBOSCIS, long and robust.

FLIGHT, strong and rapid.

FEET, intermediate and posterior, terminated by claws and pulvilli with membranaceous, pubescent, bifid appendages at their base: anterior feet spurious and imperfect.

FEET, anterior as in the last stirps.

ANTENNAE, filiform, surpassing in proportionate length these organs in all other stirpes of this tribe; club slender.

PALPI, curved, ascending, with the third joint naked, compressed, and rising above the head.

WINGS, generally of a brown colour, and, in many species, adorned with a brilliant gloss of blue and pre-eminently marked with large ornamental ocelli appearing often on both surfaces; with the greatest expansion from the anterior to the posterior margin, or in the direction of the body of the insect: hinder wings, with a deep abdominal groove, entire, dentated, or produced to a short round point. Discoidal areola not uniformly closed.

ABDOMEN, short; the male of some species provided with fascicles of long silky hairs.

PROBOSCIS, of moderate length and size.

FLIGHT, slow.

NAMES, descriptive of the stirpes or of the subdivisions, in their different states.

DORNFALTER—PAPILO—Schrank.

DANAI FESTIVI.

Nymphales phalerati. Linn. in part.

Nymphales gemmati.

Heliconia. Fabr.


Larvae pseudospinose. Fam. L, W. V.

Larvae collopinose. Fam. K, W. V.

Larvae subspinose. Fam. H, W. V.

Larvae spinose. Esper.

Papiliones angulati. Eckflügelichte Falter.

Papiliones variegati. Scheckichte Falter.

Papiliones nobiles. Silberreiche Falter.

Papiliones multifasciati. Fleckstreifige Falter.


Fam. F, W. V.

Esper.

Larvae pseudospinosa.

Larvae subfurcata.

Larvae bicaudata.

Papiliones versicolores. Schielende Falter.

Randaugigte Falter.


STUTZFALTER—MANIOLA—Schrank.

Nymphaides gemmati. Linn. in part.

Nymphaides. Swainson and Stephens in part.


Larvae subfurcatae. Fam. F, W. V.

Larvae bicaudatae. Esper.

Papiliones versicolores. Schielende Falter.

Randaugigte Falter.


GENERAE.

Normal, in the regular Lepidopterous circle.

Aberrant, or departing from the regular series, (and genera of which the affinity has not been ascertained.)

Euploea.

Idea.

Acraea.

Vanessa.

Cynthia.

Melitaea.

Argynnis.

Neptis (?)

Biblis.

(Strictly as applied by Fabricius.)

Limenitis.


Apatura.

Genus Novum.

Paphia.

Cethosia.

Amathusia.

Morpho.

Brassolis.

Malacitis.

Hipparchia.

Nemrodus.

(From the transition to Erycina?)
SYNOPTIC TABLE OF THE STIRPES OF THE FIRST

<table>
<thead>
<tr>
<th>STIRPES</th>
<th>ANALOGY, to the class of AMETABOLA, Macleay.</th>
<th>METAMORPHOSIS.</th>
</tr>
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<tbody>
<tr>
<td>ANOPLURA.</td>
<td>LARVA, with a head of excessive size attached to the body by a long neck, abruptly terminated behind and entirely deprived of a caudal appendage. (In some of the Erycinæ the head of the larva has two erect spinous appendages resembling those of the Thysanuriform stirps.)</td>
<td></td>
</tr>
<tr>
<td>ANOPLURIFORM.</td>
<td>PUPA, concealed by a folliculus, or by the covering of a convoluted leaf, resembling that of some of the nocturnal Lepidoptera.</td>
<td></td>
</tr>
<tr>
<td>Stipes V.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANOPLURA.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIRMUS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CECROPS.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CALIGUS.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This genus leads to Entomoda among the Epizoarie, with which we commence the circle of Ametabola. (See above, p. 58.)

In explanation of the second column of this table, which is intended to illustrate the analogies of the larva of the first tribe of Lepidoptera, I refer the reader to page 286, and to pages 350 and 351 of the Horæ Entomologicæ. Mr. Macleay here traces the Ametabola from the Chilognatha to the Vermes; hence to the Anoplura; further to the Thysanura and to the Chilopoda, whence he returns to the Chilognatha and completes the circle. He therefore pursues a circular course in a direction opposite to that of our table, but the succession of affinities is the same although here reversed. He commences with the Chilognatha; from these he proceeds to the most imperfect Annelide animals, with the following observation (p. 351): "Articulation is not very distinct in some of the Epizoarie of Lamarck, but sufficiently so to lead us to the Caligi of Muller and the genus Cecrops of Dr. Leach." (This genus, although generally arranged among the Crustacea, is placed by Mr. Macleay in the class of Ametabola; Lamarck had indeed already expressed a doubt as to its really being crustaceous.) "The genus Cecrops by its general form, antenne, structure of the feet, and want of posterior appendages, prepares us for the Anoplura. These we quit for the Smynthurus of Latreille, and by means of it enter among the Thysanura. Some of these, such as the Lepisme of Latreille, have an elongate form, long setiform antenne, various small appendages on each side representing false feet, together with articulated setæ terminating the posterior part of the body." "Thus," continues Mr. Macleay, "we come to the larva state of the Chilopoda, or Scolopendrea of Linnaeus, from which, bearing in recollection the form and structure of the genus Cresphosoma of Leach, we return to the Chilognatha and complete the circle of Ametabola."
TRIBE OF LEPIDOPTERA, THE PAPILIONIDÆ.

PERFECT INSECT.

Feet, anterior, at the confines of the Thysanuriform stirps, in the group of Erycineæ, spurious in the male, perfect in the female; in the Hesperideæ and Uranieæ perfect in both sexes; hinder tibiae provided with two pair of spurs, one in the middle the other at the tip.

Antennæ, diversified in the different groups: in the Erycineæ provided with an oval club attenuated at both ends; in the Hesperideæ filiform at the base with a fusiform club, terminated by an acute point, which is uncinate or hooked; in the Uranieæ lengthened and filiform, with a slender elongate club.

Palpi, in the Erycineæ very short, scarcely projecting beyond the head, third joint very minute; in the Hesperideæ the basal and intermediate joints broad, depressed, and closely covered with hair or short truncated bristles, the third joint naked; in the Uranieæ lengthened and slender, with the third joint delicate and nearly naked.

Wings: in the resting insect the hinder wings only are elevated; in the Hesperideæ the brown colour prevails, inclining to black, and the wings are marked with white or yellow semi-transparent spots; the anterior wings are mostly triangular: the caudal appendages, of the posterior wings, generally curved: discoidal areola not closed.

Abdomen, short and thick. Head, large. Eyes, prominent. Flight, strong and rapid.

NAMEs,

descriptive of the stirpes or of the subdivisions, in their different states.

Dickfalter—Erynnis—Schrank.
Pierella Urbicoli. Linn.
Hesperides. Latr.
Hesperideæ. Leach.

Antennæ.

Les Bourgeois. Seba.
Skippers and Grizzles. Haworth.

Larvæ Tortriciformes.

Afterwickleraupen.

Species, names, descriptive of one of our stirpes, or the sub-divisions, in their different states.

Normal, in the regular Lepidopterous circle.

Aberrant, or departing from the regular series, (and genera of which the affinity has not been determined).

ERYCINAE:

Emesis.

Danis.

Nymphidium.

HESPERIA:

Emesis.

Danis.

Heliocoris.

URANIA:

Emesis.

Danis.

Heliocoris.

Larvæ: in the resting insect the hinder wings only are elevated: in the Hesperideæ the brown colour prevails, inclining to black, and the wings are marked with white or yellow semi-transparent spots; the anterior wings are mostly triangular: the caudal appendages, of the posterior wings, generally curved: discoidal areola not closed.

Abdomen, short and thick. Head, large. Eyes, prominent. Flight, strong and rapid.

In the third and fourth columns, which exhibit a view of the metamorphosis and perfect insect, it has been my object to direct the attention of the reader to the typical characters, by marking them in italics; and some of the most prominent characters, which show the natural transitions from one stirpe to another, are placed at the point of connexion and indicated by a brace.

In the fifth column I have given the first place to the names employed by Schrank, as his general division of the Papilionideæ agrees with ours, and each of his names is descriptive of one of our stirpes. I have also extracted in each stirpe, the family names of the Wiener Verzeichniss, as they are, in most cases, highly appropriate. But I have not attempted to introduce all the names employed by authors for the subdivisions of the stirpes.

In the sixth column, I have endeavoured to arrange the genera according to their natural affinities, as far as my materials have enabled me: as however in an attempt of this nature, from a local collection, many interruptions in the series must necessarily occur, I have endeavoured to supply the connecting links from other sources; but many deficiencies remain to be supplied by future discoveries.
VERMIFORM STIRPS.

Typical Character.

Larva, as to form, either ovate, oblong, cylindrical, or linear; as to surface, convex, gibbous, or depressed: always marked with prominent transverse striae or divided into scutiform segments: most generally naked, in some cases villous, rarely provided with lateral appendages: underneath smooth: having a small head and minute feet, partially concealed by the abdominal segments.

Pupa, smooth, obtuse at both ends, attached by the caudal extremity by means of a slight filamentous texture, secured in an erect attitude by a brace, the head being directed upwards.

Observation.—The peculiarities of the perfect insect of this stirps have already been detailed in pages 38, 39, and 40 of the Introduction; they are likewise exhibited on the Synoptic Table. I shall, therefore, not recapitulate them in this place. The regular order of the plan of Mr. Macleay would require that I should proceed to the division of the Stirpes into Families; but this would require a more extensive examination of materials, and more numerous references and comparisons, than I am enabled to undertake at present. I shall, therefore, defer the attempt to a more favourable period. For my immediate purpose it is sufficient to state, that the genera Petavia, Polyommatus, Lycoenula, Thecla, and Myrina, are individually representatives of Families, for the precise subdivisions of which a general acquaintance with all the species hitherto collected, and to be found in cabinets of Entomology, would scarcely be sufficient.
Genus POLYOMMATUS.


Character. Larva gibboscutata, sublinearis, dorso elevato, capite parvo plurumque nigro.

Chrysalis oblonga vel ovata, nuda, maculis obscuris; in nonnullis tuberculis acutis singulariter notata, simiæ vultum simulans. Tab. i, fig. 2, b.

Imago: Antenne filiformes, articulis intermediis longioribus, capitulo ovali, abruptè refracto, compresso, sulcato, vel concavo marginibus subinvolutis.

Palpi capite longiores, porrecti, assurgentes; articulis basilari et intermedio nudisculis, squamis villisque sericeis tectis, hoc elongato, ultra medium capite soluto, tertio gracili, attenuato, nudo.

Proboscis palpis circa duplò longior.


Character. Larva linear or oblong; in form more elevated and rounded than in the other genera of this stirps, the back being, in the middle, cylindrico-gibbous. Chrysalis somewhat oblong or ovate, naked with obscure spots; in some cases singularly marked with short acute processes, arranged so as to resemble the face of a monkey. Antenne of moderate length, many-jointed, filiform and straight to the origin of the club, where they are suddenly reflected or bent outward; joints short and somewhat swelled at the base and apex, slender and lengthened in the middle; club, constituting about one-sixth of the whole length of these organs, ovate, compressed, or grooved in the middle, with the sides slightly involuted. Palpi longer than the head, porrected, assurgent; basal joint short, closely applied to the head, second joint lengthened, at the base adhering to the head, from the middle detached and curved upwards; both these joints being sparingly covered with minute scales and hairs; third joint slender, attenuated, naked, stretching forward or assurgent (rarely surrounded with a tuft of bristles arising from the extremity of the second joint). Proboscis, double the length of the palpi, but varying in different species. Head rather broad. Eyes prominent. Body slender and compressed. Wings: anterior simple and oblong; posterior entire and rounded, slightly grooved for the reception of the abdomen: the upper surface of the wings almost invariably blue in the male and brown in the female; the under surface in both sexes white or gray, and marked with black ocellated spots surrounded with a white iris. Feet all invariably perfect and provided with five tarsi: thighs of the mid-legs with a short, acute, often hairy, process, which is received in a corresponding socket of the tibiae: tarsi of the fore-legs in the male attenuated,
bearing at the sides short bristles, last joint mostly terminated by a single claw or by an obscure spine; in the female the tarsi are covered with short villi, and the joint has two strongly curved claws, which are concealed by tufts of short hair. The claws and pulvilli of the hind-legs are small.

* Wings somewhat elongated; hinder wings entire, regularly rounded and elliptical.

Subgenus Pithecops.

1. Pithecops Hylax. Ale supra saturate fusce, postice fimbria marginali argented; feminae antice maculae discoidae angulari albâ: subtus canescenti-alba, strigis duabus arcuatis flavo-fuscis, serie macularum fasciisque marginali contina nigris; antice punctis duobus costalibus, postice guttâ apicali saturâ maximâ et interdum puncto anali obsoletiore nigris. (Expansio alarum, lineae 10—14.)

Plate I, fig. 2; 2, a.


Wings above, in the male, deep blackish brown, the colour being uniformly spread over the whole surface to the border of the hinder wings which is silvery white; a very delicate gray fringe interrupted with brown, bounds the forewings: beneath white with a grayish-silvery gloss inclining to blue, and the scales covering their surface large and rough; anterior wings, marked near the costa, with two small irregular dots of an intense black; hinder wings, at the posterior angle with a large regularly circumscribed spot of the same colour; a minute dot is in some individuals obscurely perceptible near their anal angle: somewhat beyond the disk both pair of wings are traversed by a delicate, undulated, interrupted striga of reddish brown, exterior of this by a broader continued fascia of the same colour, undulated at its outer edge; next follows an interrupted series of oblong spots, and finally a regular narrow marginal line of intense black, exterior to which the wings are bounded by a silvery fringe: legs covered with lax villi of silvery-white; tarsi surrounded by a black ring; body brown above and white underneath; eyes uncommonly prominent, and bordered with white; antennae brown, annulated with white. In the female the wings are somewhat broader, and the disk of the anterior pair is marked with a rhomboidal white patch, more intensely coloured exteriorly.

There are four specimens of this insect, two of each sex, contained in the Honourable Company's Museum. The species, although but little known, appears to have an extensive range; Eastern India is mentioned by Fabricius as the native place on the authority of Dr. Kenig. The collection of A. H. Haworth, Esq., contains a female specimen from Bengal. Another species was bred from the caterpillar, and the chrysalis which produced it is represented on our first plate, fig. 2, b. The caterpillar feeds on a leguminous plant. The only individual obtained passed into the pupa state before an opportunity existed of delineating it, and I subsequently sought it in vain. The history of this species will be given after the description of Petavia, at the close of the series.

In many essential points, the form of the palpi and antennae, the peculiarities of the feet, &c. these insects agree with the character of the genus Polyommatus, but their habit and aspect are very peculiar; this is owing to the great length and lateral expansion of the wings, to their comparative narrowness, and to their being regularly elliptical and rounded in the anal region. The group to which this insect belongs, forms in my opinion a distinct subgenus, to which I have given the name of Pithecops, from the peculiar aspect of the chrysalis. Our insect, which is cited by Fabricius as "minima in hac familia," is represented in the European Fauna, by the P. Alect and by several other species which are described by Ochsenheimer with
with "ala integerrima;" namely P. Lysimon, P. Pheretes, and P. Damon: there are likewise indications of other foreign species, as the individual figured by Mr. Donovan, which, although the same in form and habit, appears to be specifically different from those in our collection: and the P. Hanno of Cramer probably belongs to the same group.

** Margins of the hinder wings at the anal extremity angular, and produced to a short rounded point.

** Polyommatus strictè sic dictus.

2. Polyommatus Akasa. Ale utrinqué albe, supra ad basin azureo irrorata marginibus exteriore et posteriore fuscis, antecarum marginie latiore: subtius serie punctorum margini postico parallela; antice serie lineolarum submarginali, postice arcu punctorum discoideo interrupto punctisque tribus basilaribus fuscis. (Exp. alar. 1 unc.)

Plate I, fig. 1; 1, a.

Disk of the anterior wings and almost the whole of the posterior wings white above: base of both pairs, and a broad belt along the anterior and posterior margins of the fore wings, blackish brown; hinder wings marked with a few scattered dots of blackish brown and surrounded by a streak of the same colour, interior to which is an interrupted series of delicate brown lines: both pairs are covered from the base to the disk with an azure iroration; (and in one of our specimens the disk is marked with an obscure curved fascia of brown:) beneath the milky white surface of the wings has the following marks: towards the posterior margin of the anterior pair, a series of five short brown lines is disposed in an interrupted curve, exterior to which a few faint marginal dots are observed, and a short transverse streak arises near the costa and extends to the middle of the disk; on the hinder wings the marginal dots of a more intense tint are continued in a regular series along the posterior margin; the disk is pervaded by a very irregularly curved series of about seven dots, commencing near the anterior margin, the first being disposed in pairs; three solitary distant dots are placed in the order of a transverse line towards the base. About eighteen dots, in all, may be counted on the lower surface of the posterior wings. Antenne banded with white. Thorax and abdomen agreeing with the adjoining tint of the wings on both surfaces.

As far as regards the habit, colour, and contour of the wings, this species agrees with the blues of our nomenclature; the antennæ, however, depart in a small degree from the regular type, and give it a peculiar aspect: the club is strongly compressed and semi-contorted at its base, in consequence of which a swelling appears at the point of union with the filiform portion, which is not usual in this genus. This species is not abundant, and two specimens only are contained in the collection. In its physiognomy and in the distribution of the markings of the lower surface, it resembles the P. Argiolus of the British Fauna.

3. Polyommatus Puspa. Ale supra maris azurea fusco marginata, disco albo; feminae palliatores disco cinerascenti-fusco: subtius sericeo-alba, strigis duabus marginalibus serie punctorum intermediâ fascicule maculari discoidei fuscis; postice ocellulis pluribus basilaribus nigris albo cinctis duobus margini exteriore approximatis, apicali insigne. (Exp. alar. 1 unc. 1—4 lin.)

Wings above blue with a defined border of blackish brown, and a large white patch on the disk: in the male a deeper tint extends from the base to the edge of the brown margin, varying according to the direction of the light, being either intensely azure or diluted, and transmitting a ground colour of brown; in the female the blue colour is confined to the base. Underneath the
the wings are white with a blueish cast; they have, on both pairs, along the posterior margins, two parallel brown strigae, of which the interior is undulated, enclosing an interrupted series of oblong brown spots, gradually assuming a deeper tint as they approach the anal angle: interior of this follows a macular band, originating by two successive ocellate dots, from the margin of the fore wings and extending in an irregular curve through both pair: the disk of the fore wings bears a short curved streak, and a similar angular mark, but more obscure, stands on the hinder wings: the latter are further marked, in their basal portion, with numerous black ocellate spots bordered with white, of which five are more prominent; two of these stand near the exterior margin, the apical one being larger and of a more florid tint; two, less conspicuous, are disposed near the anal interior margin, and a fifth intermediate not far from the base. Antennæ annullated with white. Tufts of grayish blue hairs at the sides of the thorax and abdomen.

This species is abundant. About twenty specimens are contained in the collection. It appears to be the representative of the Lycena Arion, in the eastern tropical regions. Among Indian species which have recently been added to our systematic catalogues, it most nearly resembles the Pol. Duponchellii, from Timor, described by MM. Latreille and Godart in the Encyclopédie: but it differs by the deep azure tint diffused over its upper surface, and by the number and arrangement of the ocellated spots underneath. It forms a natural transition, by its marks and habit to the next following genus.

Genus LYCÆNA.


Character. Larva oblongoscutata, oblongior quam in ceteris generibus hujus stirpis, lateribus quasi impressa; plerumque pallide viridis, nuda aut pilis brevissimis tenerrimis tecta; capite brunneo aut pallescente.

Chrysalis antice posticeque admodum obtusa, fuscescens. (Tab. iv. fig. 1; 1, a.)

Imago: Antennæ filiformes, articulis intermedii longioribus, capitulo ovali subrefracto, saepius compresso vel compresso-concavo marginibus subinvolutis.

Palpi capite longiores, parum porrecti, subassurgentes, articulis basilari et intermedio squamis villisque elongatis tectis, secundo elongato ultra medium capite soluto, tertio gracili attenuato nudo.

Proboscis palpis circa duplo longior.

Caput latiusculum. Oculi prominuli. Corpus gracile, compressum. Ale antice subelongatae angustæ, postice ad angulum anaelem productæ vel caudate; caudæ subfiliformi, in pluribus brevi, abrupto: subitus sepius strigāe marginali aut maculis contiguis aurantiaci prædite. Pedes omnes tarsi quinque; femora cadem que Polyommato; tarsi anticorum maris attenuati uinge solitario, vel interdum setāe cornēe terminali, spinisque rigidis accessoris lateralibus; femoræ semper unguibus duobus arcuatis villis brevibus interpositis. Ungues et pulvilli posticorum parvi.

Character. Larve more oblong than in the other genera of this stirps, hence named oblongoscutata—elevated along the back, but laterally compressed, generally of a pale-green colour, naked or covered with very short delicate hair; head brown or yellowish. Chrysalis obtuse at both
both extremities, of a brown colour. Antennae filiform, of moderate length, straight to the origin of the club, where they are rather suddenly refracted or bent outward; joints, short and gradually thickening at the base and apex, slender and elongated in the middle; club ovate compressed, or grooved with slightly involuted margins. Palpi longer than the head, slightly corrected; basal joint and posterior part of the intermediate joint closely applied to the head, anterior part of the latter and third joint bent upwards; basal and intermediate joints covered solely with minute scales and lengthened hair; third joint short, slender, attenuated, and naked. Proboscis nearly double the length of the palpi, but varying in different species. Head rather broad. Eyes large and prominent. Body slender, compressed. Wings: anterior, rather elongated and narrow, bounded by a regularly defined posterior margin; posterior wings somewhat lengthened at the anal angle, (and dentated) or provided with short, filiform, abruptly terminated tails. Feet invariably perfect in all parts. (In the Wiener Verzeichnis, the anterior feet are described as somewhat reduced in size.) The tarsi of the fore legs, in the male, are attenuated, and terminated by a a single claw, or by a corneous bristle, which is met at each side by a series of acute spines; in the female there are two strongly curved claws partly concealed by tufts of hair. The spine arising from the thighs of the mid-legs and the general character of these, as well as of the claws and pulvilli, are the same as in Polyommatus.

This genus is illustrated, on the second plate, by the dissections of the Lycena Roxus; fig. 4; 4, a; 4, b; 4, c; 4, d; 4, e; 4, f; and on the fourth plate by those of the Lycena Elpis; fig. 1, b; 1, c; 1, d; 1, e. The larva and chrysalis of Lycena Etianus are also represented on the fourth plate; fig. 1, a.

It appears from a review of the generic characters of Polyommatus and Lycena, that, if my views are correct, the distinction depends primarily on the variation of the metamorphosis; the larva, in the former, being regularly rounded or cylindrico-gibbous, in the latter more oblong and impressed at the sides; of the latter the Javanese Collection contains one example; I have been less successful in the discovery of the former. Although our acquaintance with the metamorphosis of the subjects belonging to the two genera now described, is still very imperfect, enough is known to confirm us in the expectation of finally obtaining a natural arrangement, which can only be accomplished by a knowledge of the entire history of these animals. In the antennæ and palpi of these two genera, no tangible difference can be pointed out. The distinction derived from the wings is more decisive; in each of the genera these organs have a peculiarity of habit, which, though not easily described in words, is readily seized by an experienced eye. The Blues are altogether without tails, and their character is well preserved in the Oriental tropical regions, but it is remarkable that in this part of the world, as far as I have observed, no true Coppers have been discovered, which in Europe chiefly constitute the genus Lycena. The feet and claws of Polyommatus and Lycena have not, as yet, been examined and described with the accuracy and minuteness which they require, and I offer with diffidence the modifications which I have proposed, in the characters of these genera, to the candid consideration of Entomologists. They are founded chiefly on the examination of Pol. Puspa and of Lycena Roxus and Elpis: of all these, numerous specimens have been submitted to repeated microscopic observations, the result of which is that in the male the tarsi are attenuated to a point, provided at the sides with rigid bristles, and terminated by a single claw, or by an obscure corneous spine; while in the female the last joint of the tarsus is uniformly broad, and the claws are partially concealed by lateral tufts of hair; when these are removed, two short claws become apparent, which are strongly curved.

In all the Indian species of Lycena contained in our collection the posterior wings are entire, and they are provided with short filiform tails, agreeing with the division D. s. established by MM. Latreille and Godart,
Godart, in the genus Polyommatus. (Enc. Méth. Hist. Nat. ix, p. 653.) They may be subdivided by artificial characters, into the following groups.

* Wings underneath with simple ocellate spots; anal ocelli without metallic irrorations.


Wings above blackish brown, with a large white central area, extending obliquely from the middle of the fore to the disk of the hinder wings: colour more intense on the fore wings, the posterior margins of which are surrounded with a delicate white fringe, which is continued along the inner border of the hinder wings, by a series of elongated silky hairs: tails black, tip with white: underneath the wings are pure satin white; anterior wings, near the costa, marked with four regular, equi-distant, minute brown dots, and on the disk, with a short curved line: towards the posterior margin follows a curved striga, consisting of short lineole or arcs, not touching each other, but disposed obliquely between the nervures; then, parallel with the margin, two narrow strige, the interior one being undulated, including a series of oblong, attenuated, dark brown spots: these strige and dots are continued uniformly through the hinder wings to the anal region; anterior to these is an interrupted macular fascia, resembling the curved band of the fore wings, but with broader lineole; then a short, transverse, discoidal arc: the hinder wings are further marked beneath with five intensely black spots, two marginal and three basal; the former are large, regularly round, of an intense black tint, one is placed near the outer, the other near the inner apical angle, opposite to the caudal appendage, being separated from the anal angle by two small dots: near the base are three transversely disposed equi-distant dots of an intensely black tint.

This species is comparatively scarce; two specimens only are contained in our collection. In its habit and markings it greatly resembles the individuals of the genus Polyommatus, and particularly the species last enumerated.

** Anterior wings underneath with an elongated oblique fascia at the base; posterior wings, in most cases, with metallic irrorations on the ocellate spots in the anal region.

5. **Lycena Roxus.** Ate supr:i nigre, vitâ obliquâ latissimâ albicante margine exteriore sinuato : subtus albo, fasciis tribus nigris, primâ continud obliquâ basilari, secundâ interrupta submaculatet, pone discum, tertiâ margini, in antice continud serie macularum albarum fretâ, in posticis lunulis nigris margini parallelis efformatâ. Exp. alar. 1 unc.—1 unc. lin. 3.

Plate II. Fig. 4; 4, a, b, c, d, e, and f.


The male.

Wings above blackish brown, with a very broad band of yellowish white, situated on the posterior edge, arising on the disk of the anterior, and passing obliquely over the disk and base of the posterior pair; marginal fringe grayish; underneath the wings are white, inclining to pale yellow,
LEPIDOPTERA.

low, with a broad fascia of blackish-brown, extending from the middle of the costa of the fore wings obliquely over the base of the hinder wings to the thorax; at the point where it meets the costa commences a curved, irregularly interrupted macular fascia, consisting of diversified spots and patches of blackish-brown; exterior to this is on the fore wings a narrow brown margin, regularly waving at its inner edge, bearing a row of oblong yellowish spots, which is continued in the hinder wings by a series of uniform lunule directed outwards, touching a narrow black marginal streak and inclosing a series of white lineole. Head, thorax, and body, deep blackish-brown above, yellowish underneath; abdomen banded with yellow at the sides: antennae marked with delicate annuli. Tails filiform, black, tipt with white. In the female the transverse band of the fore-wings approaches nearer to the costa than in the male, its posterior edge is more deeply sinuated, and the hinder wings have an interrupted row of obscure yellowish lineole, parallel with the margin: the wings, in this sex, are also broader and more expanded, and the abdomen is more robust.

The first notice of this species is given by MM. Latreille and Godart, in Encyclop. Méthod. article Papillon, p. 659. Male specimens only had been examined by these authors. Hitherto this species has only been found in Java; it occurs, in considerable numbers, in the skirts of large forests; but from the great delicacy of the wings it is not easily obtained in a perfect state. Our collection contains about sixteen specimens, several of which are females. One of the latter is represented on our plate. This species departs slightly from the regular type: the wings are proportionally narrow and of great lateral expansion: in its habit and marking it is analogous to the genus Nymphidium of Fabricius, but it cannot, in our opinion, be separated from Lycaena. The dissection contained in our second plate was prepared by Mr. Charles Curtis with great care from a male, and affords an illustration of this particular form in the genus Lycaena. Fig. 4 and 6, a, exhibit the exterior peculiarities of the female; fig. 4, b, palpi of natural size and enlarged; 4, c, antennae of natural size, and with the extremity enlarged to show the excavation of the club; 4, d, proboscis male of natural size: the latter as well as the antennae and palpi are alike in both sexes; 4, e, fore leg of the male; 4, f, mid leg, with the spinous process of the femur.

—1 unc. 3 lin.)


Wings above white, with a grayish-blue base, over which a brilliant silvery iroration, varying according to the light, is thinly spread; anterior margin of both wings blackish-brown, a border of the same colour passing along the posterior margins, broader on the hinder wings, indented at the inner edge, and bearing a regular series of white rings formed by crescents applied to each other, the exterior being in many cases so obscure, that merely a series of lunules directed outwards is apparent: a very irregular series of square or oblong macules passes along the inner edge of the marginal border, and several macules, more elongated, are scattered over the disk and along the anterior margin of both wings. Beneath the wings are white; in the anterior wings an oblique band of black extends from the base to the anterior margin, the interrupted macular fascia and the transverse marks of the disk and anterior margins appear more prominently
DESCRIPTIVE CATALOGUE.

... on the lower surface; and parallel with the posterior margin extend three rows of small oblong spots, of which three, in the posterior series, near the anal angle, are covered with a bluish-silver iroration. Head, body, and abdomen, black above and white underneath, the latter banded at the sides: antennae with white annuli. The female is of larger size, the posterior border is broader, and the black colour is more intense.

This species extends through the southern regions of Asia and through the Eastern Islands. It is abundant in Java, more than twelve specimens being contained in our collection. There are also individuals from the continent of India in the Honourable Company's museum. It is found in Timor, according to the notice of MM. Latreille and Godart; and Cramer mentions the coast of Coromandel as well as the Cape of Good Hope as its habitation. The Banksian cabinet of Insects, preserved at the Linnean Society of London, contains two individuals of Lycanis Rosinon, labelled by Fabricius himself; and the collection of Mr. Haworth is likewise provided with several specimens.

7. Lycanis Plinius. Ala supra maris violaceae nitore rubescente, feminae albentes, limbo fusco in posticis ocellato, disco maculis oblongis nigris, basi caruleo irrorata: subetis albae strigis duabus margine postico parallelos serie punctorum intermedii; antice fasciis fuscos oblique-transversis vel dimidiatissimis expudis oblongis vel attenuatis maculatae subrotundatae discoidae; postice regione anali maculis duabus viridi-argenteo irroratis, basi discoque omni maculis pluribus difformibus fusciisque exterioi margine postico radiatis. (Exp. alar. 1 unc.—13 lin.)


Wings above, in the male, pale violet blue, with a purple reflection, surrounded by a very delicate brown border fringed with white; beneath both wings are white and variegated (panachées) with oblique transverse or semi-transverse bands irregularly sinuated at their edges, oblong or tapering, of unequal breadth, and arranged in the following succession: at the base a broad longitudinal band extends with a slight obliquity to the middle of the costa; between this and the interior margin is a triangular mark, and before this a transverse mark gradually attenuated towards the costa; an obscure evanescent band next extends from the exterior margin to the disk, and immediately exterior to this, a prominent band gradually increasing in breadth and terminated by a short point, passes over the disk; the band next in order is short, and near its termination a nearly circular or oblong spot is placed; two obliquely transverse bands now extend from the costa half across the wing, the first being oblong, the other attenuated or pyramidal: the posterior margin is bounded by two regularly continued strigae, the anterior of which is broader and slightly waving, enclosing a series of oblong marks; these are continued uniformly through the hinder wings to the anal region, where the two last are of a deep black tint, with a yellowish iris, and covered with greenish resplendent irrorations; to the last a very minute black spot at the extreme anal angle is applied: the marginal spot in the anterior apical angle is more pronounced than the rest. The disk and base of the posterior wings are variegated with very irregular oblong marks, with sinuated margins, transversely arranged, the posterior one being most conspicuous and decorated with acute radiant points directed to the margin. The tails are very slender and grayish at the base; the antennae and abdomen banded. The female agrees with the male in the disposition of the marks underneath, but the surface is whiter,
whiter, the bands are more intensely coloured, and their edges more regularly defined. In the upper surface this sex greatly resembles *L. Rosimon*: the borders of the wings throughout are brown, bearing in the hinder wings a series of ocellate spots; the surfaces of both pairs are covered with transverse patches, and the blue tint, which is purely azure, is confined to the base.

Our Collection contains two males and one female of this species in high perfection. In the female the radiated band in the hinder wings is less distinct, but the marks generally are more pronounced. In the upper surface this species is with difficulty distinguished from *L. Rosimon*. The comparison of two female specimens contained in Mr. Haworth's collection, and of one preserved in the Banksian cabinet, has enabled me to illustrate, in some measure, by an intricate description this hitherto imperfectly known species. In our specimens the transverse bands are more interrupted than they appear in Donovan's figure. Several other species, enumerated by systematic writers, belong to this small group, which is also found at the Cape of Good Hope and in Brazil: the *Papilio Lingueus* of Cramer is from the former, and Mr. Haworth has one or more species from the latter country.

8. **Lycaena Theophrastus.** *Als suprâ maris cerulescenti-violacee limbo fusco; feminea singula basi cerulescentes, antice disco atrum maculatum, postice serie macularum albarum ocellorumque margini postico parallela: subtus albae strigis plurimis macularibus atris; postice insuper ocellis quinque macularibus aureis, penultimo puncto nigro freto, anali didymo.* (Exp. alar. 1 unc. 1 lin. feminae.)

*Hesperia R. Theophrastus.* Fab. Ent. Syst. em. tom. 3. pars. 1. p. 281. No. 82. (The female.)


Fabricius has described the female only, but in the Encyclopédie we have a delineation of the male also. I have not examined the latter sex. The museum at the India-House contains a single female specimen, derived from Dr. Russel, whose brother Claude Russell presented the result of his Entomological researches to the Honourable Company; it was probably from the coast of the Mediterranean. I have not found it in Java. Mr. Haworth possesses two female specimens. In its upper surface it greatly resembles *L. Rosimon* and *Plinius*: the disk of the fore wings is strikingly marked with quadrangular black spots, the hinder wings bear a continued series of white spots, and beyond that, a series of brown ocelli, parallel with the hinder margin. This species is most clearly distinguished from the others belonging to this group, by a series of ocellate spots, covered with aureous irrorations, along the posterior border of the hinder wings underneath, of which the anal one is reniform or double, and the adjoining ocellus marked with a pronounced black dot.

***Three continued strigae parallel with the posterior margin passing uniformly through all the wings underneath; hinder wings further marked with six, rarely seven, successive parallel strigae, and with three anal ocelli, the posterior one large and regularly orbicular, the second transverse and reniform, the third at the extreme anal angle, small and obscure; the large ocellus bordered internally with an orange or rufous lunule, and externally with a silvery streak, the other ocelli united at their inner edge by irrorations and a rufous band.***

9. **Lycaena Helianus.** *Als suprâ lacteae limbo postico fusco; subtis canescenti-fusce albo strigosae; strigis tribus continuis ad marginem posticum; antice insuper strigis quatuor in disco L paral-
parallelis postice interruptis, in paribus duobus interiore abbreviato punctis tribus coste inter-
jectis; postice strigis sex, paribus primo basilari, secundo discoideo, tertio submarginali, intervallis
strigarum interdum saturatioribus; ocellis analibus tribus, exteriore maximo iride angusto annu-
lari, secundo subreniformi, interiore minimo absque iride. (Expans. alar. 1 unc. 2—6 lin.)

Plate iv. fig. 1, Larva; fig. 1, a. Pupa.

Hesperia R. Ælianus. Fab. Ent. Syst. em. tom. 3. pars. 1. p. 280. No. 79?
Papilio Alexis, Stoll Suppl. à Cram. pl. 38. fig. 3 and 3, c.

Wings above, in both sexes milk-white; in the male the anterior wings have a narrow brown pos-
terior border, the hinder wings are surrounded by a delicate black striga, interior to which is an
obscure interrupted brown band, in which the large ocellate spot at the anal angle distinctly
shows itself; in the female the wings have a broad brown border, in which the fore wings is sim-
ple and more extended near the tip, in the hinder wings waving internally and bearing a series of
brown spots of a deeper tint towards the anal extremity; these spots are enclosed individually by
two white crescents applied to each other from the opposite sides and forming a white ring, exte-
rior to which is a deep brown marginal streak, terminated by a grayish-brown fringe. Wings
underneath grayish-brown, varying in intensity of tint: anterior wings with seven, posterior wings
with nine, transverse white strigæ, of which three are marginal, extending uniformly through both
pairs: the remaining strigæ in the anterior wings are discoidal, regularly parallel, with a slight
inclination to the posterior apical angle, arranged in two pairs, the first, on the disk, short and
separated from the costa by three dots, disposed as the points of a triangle; the second extending
nearly half across the wing, each with a dot at its contact with the costa slightly deviating from
the regular course. On reaching the middle of the wing these strigæ are all abruptly terminated
at one of the longitudinal nerves, and each pair is continued by a single streak to the posterior
margin; in consequence the strigæ appear divided, resembling in some cases two successive
figures of the form of the letter Y. The posterior portions of the strigæ have undefined, spreading
edges, and in many individuals the whole of the posterior portion of the wing is milky and
discoloured. Of the three marginal strigæ, the interior is broadest and most prominent; reaching
the posterior part of the wing, its inner edge expands in a diffuse radiant border, gradually
mingling itself with the clouded milky surface; the intermediate one is undulating, and com-
posed of a connected series of lunules directed outward; the exterior striga is continued, regu-
lar, parallel with the margin, and exteriorly defined by a narrow black line, beyond which is
a grayish fringe: these marginal strigæ preserve in the hinder wings the same character, until
they are partially interrupted in the anal region; the surface of these wings is further marked
with six transverse strigæ, disposed in three pairs, one near the base, a second across the disk, a
third intermediate between this and the marginal ones; the basal strigæ are delicate and regu-
larly transverse, with a slight curve at the interior margin; the discoidal pair is not continued
quite to the exterior margin, but has, at its commencement, a short intermediate lineola; at the
interior margin it is inflected inwards, so as to form, abruptly, an acute angle; the third pair
extends only half across the wing, having a short intermediate lineola at its posterior termination.
In both wings the ground colour assumes, in some individuals, between the transverse strigæ a
deeper tint, so that these appear to be marked with broad, transverse, brown bands: but this is by
no means uniform; some of our specimens have these brown bands very distinct, in others,
equally well preserved, the ground colour is uniform, and the white transverse strigae preserve the character above described. In the anal region there are three ocellated spots; the largest, situated on the posterior margin just without the caudal appendage, is ovate, bounded internally by a narrow orange crescent, and externally by a streak covered with greenish silvery irrations; at its internal edge is a reniform spot, intensely black towards the anal angle, surmounted by a silvery lunule and a small orange crescent, and touching at the extreme anal angle a minute, dark coloured, blind ocellus: the tails are lenthened, slender, brown above, and white underneath and at the extremity. The antennæ are black and regularly fasciated with white externally; the body pale blue above, white underneath. The larva and pupa are figured on our fourth plate: the former feeds on the Butea frondosa, and was observed in the month of February: numerous specimens of the perfect insect in high perfection, bred from the larva, are contained in our collection. This species, according to the authors of the article Papillon in the Encyclopédie, is also found in Timor. Stoll mentions, perhaps erroneously, Surinam as the native place.

10. **Lycorea Celerio.** Ala supra maris azurew nitore argenteo, femine dilutiores nitore canescenti, limbo latissimo nigro posticorum strigis tribus undulatis albis: subtès canescentis fusca albo strigosa, strigis tribus marginalibus continuis; antice insuper strigis quattor mediis imparibus, duabus interioribus costam non attingentibus singulis puncto interjecto, secundâ brevissimâ quartâ dimidiât; posticæ strigis sex, duabus basilaribus completis, duabus mediis ad angulum analem inflexis, duabus submarginalibus posticè abbreviatis; ocellis analibus tribus posterioriè insigniè in tenuis aurantio-fusci latissimâ nidulante. (Expans. alar. 1 unc. 3—5 lin.)

*Papilio P. R. Celerio.* Fab. Mant. Ins. tom. 2. p. 66. No. 625?

*Papilio Celeno.* Cram. pl. 31. fig. c. p. (the male.)


Wings above in the male, azure with a whitish silvery reflexion; anterior wings with a narrow blackish border along the posterior margin, gradually spreading and more intensely coloured at the outer apical angle: the posterior wings have a delicate black marginal striga, narrowly bordered with white along its internal edge, and, at the anal angle, interior to this, between the caudal appendage and internal margin, a short undulated fascia of black: in the female the azure tint is paler, shaded into brownish, and the wings have a broad brown posterior border, which in the hinder pair is crossed by three white strigae parallel with the margin, the outer being regular and continued, the next formed of crescents directed outward, the third undulated: the surface of the wings underneath is grayish brown with a rich silvery gloss, bearing seven strigae in the anterior and nine in the posterior pair, of which three are marginal and continued through both; the anterior wings have besides, between the basal portion which is plain, and the margin, four strigae of unequal length; the first and second arise at a small distance from the costa, and two minute white dots, respectively opposed to each, stand in the intermediate space; the first striga passes across the surface to the interior margin, the second is short and terminates exactly on the disk; the third is united to the costa by a dot obliquely applied and extends entirely over the wing; the fourth arises from the costa, and is regularly continued half across the surface: in the posterior wings the strigæ are regularly disposed in pairs,
pairs, two are basal more delicate than the others, reaching entirely across the wing and slightly inflected at the interior margin; the two next arise parallel to each other from the costa, pass regularly across the disk and have a sudden angular inflexion inwards at the anal region, the two following are somewhat broader, of a more vivid tint and terminate abruptly at the anal ocelli, the exterior one being somewhat abbreviated. The anal region is ornamented with three black spots; the largest, in the posterior margin, without the caudal appendage, is oblong, of a very intense tint, disposed in a very broad rufous-orange crescent indented along its inner curve: within it is a transverse reniform mark, the interior portion of which is more deeply coloured, supplied with an orange crescent, and placed in contact with a small blind ocellus at the extreme anal angle: the intermediate ocellus has internally and the large one externally, a few silvery irrorations disposed in a short line. The antennae are rather obscurely banded along their internal surface, the body agrees above in colour with the wings and the abdomen is laterally banded.

11. Lycena Elpis. Ale supra dilute azure, fœminæ limbo latissimo nigro, posticarum strigis tribus fuscis intermedii maculari: subtilis canescenti-fuscæ albo strigose, strigis tribus margini postico paralleli; antice insuper strigis quatuor mediis in paribus duobus, interiore continuo intervallo brevi ab margine exterior incipientem, arcuato-angulato ad marginem interiorem ducto, pari exteriore ex lineolis interruptis efformato, costam attingente, dimidiato, in disco impari terminato; ocelli anales tres, posteriore maximo iride latissimi tripli, posticè tenui argento irrorati, intermedio transverso oblongo-reniformi lobo exteriore obscuræ altero saturato, ocello interiore parvo punctulari sepium plicis alari recondito. (Exp. alar. 1 unc, 2 —8 lin.)

Plate 1, fig. 4.


Wings above, in the male, pale azure with a silvery somewhat lactescent gloss; anterior wings with a narrow blackish-brown posterior margin; hinder wings with a broader border of the same colour, consisting of three parallel strigæ, one exterior narrow and continued; the second intermediate, composed of a series of oblong spots more intensely coloured towards the anal angle; the third and interior one broad, waving and evanescent: in the female the azure tint is somewhat diluted; the anterior wings have a very broad dark brown posterior border, stretching obliquely to the middle of the costa, in the posterior wings the border has a blackish tint, and the oblong spots of the intermediate series are encircled with white. Underneath the surface of both wings is grayish-brown, and in well preserved individuals the tint is deeper, and a rich silvery reflexion is spread over it; the anterior wings have seven, and the posterior ones nine white strigæ, three of which are marginal and agree with those of the two former species; on the medial and submarginal portion of the anterior wings, are four white strigæ arranged in two pairs; the strigæ of the interior pair are continued, they arise, parallel to each other, at a small distance from the costa, pass in a somewhat angular curve across the disk, and come in contact with the interior margin near the inner one of the marginal strigæ: the next pair consists of interrupted short linear fragments, arises from the costa, having near its point of contact two or three small lateral dots, stretches half across the wing, and is terminated on the disk by a short lineola, disposed intermediately between the two or along the interior striga.
The arrangement of these strigze is permanent and affords clear characters for a specific distinction. The *hinder wings* are marked between the base and margin with six transverse strigae, agreeing generally with those of the two last described species *Ælianus* and *Celerio*, the only apparent difference is that they are somewhat broken and interrupted in their course. The *anal ocelli* are not in any degree different from those of *L. Celerio*. The *thorax* and anterior part of the *abdomen* are covered with a grayish or light blue and silvery down: the sides of the abdomen and the *antennae* are annulated.

Our collection contains one specimen of a variety on which a pure azure extends uniformly over the upper surface.

12. **Lykêna Pavana.** *Aile suprâ maris violaceo-caeruleâ argenteo submicantes, fœminæ saturatores marginibus exterioire et posterioire fuscis: subhis canescence-fusces albo strigose, strigis tribus continuâs ad marginem posticum; alicate insuper in dimidio anteriore strigis quatuor parallelis, pari interioire punctis duobus costae interjectis; postice strigis septem aequidistantibus interruptis basilari obscurâ; ocellis analibus tribus exteriore maximo iride angustâ rufâ postice viridi argenteo irrorâtâ. (Exp. alar. 1 unc.)*

*Wings above,* in the *male,* pale violet-blue, which tint being almost equally diffused over a grayish, brown ground, has, in a certain position, a pale silvery reflexion; margin terminated by a very narrow brown thread and a grayish fringe; in the *female* a defined brown border extends along the exterior and posterior margins of the *anterior* wings, on the base and disk the violet colour is deeper than in the male, and the silvery gloss is more intense; the *hinder wings* have a series of dark brown spots parallel with the posterior margin, of which the penultimate one, opposite the caudal appendage, has a deeper tint: these spots are bounded exteriorly by an intense white thread, and interiorly by a series of obscure lunules directed outward. Underneath the *wings* are grayish brown with a pale silvery reflexion, the *anterior pair* having seven, the *posterior* pair ten white strigae, of which three are marginal, continued uniformly through both pairs to the *anal ocelli,* and bounded exteriorly by a deep black thread. On the *anterior wings* the medial portion is marked by two pairs of strigae, extending half across the surface, being here terminated abruptly at one of the longitudinal nerves; their direction is regularly transverse and they are slightly undulated; the interior pair is short, and arises at a small distance from the costa; in the intermediate space a small dot is regularly opposed to each striga; the second pair touches the costa and reaches regularly to the disk; in the posterior portion of the surface one striga opposed to each of these pairs, is continued parallel with the other to the interior margin. In the *hinder wings,* the strigæ, seven in number, are not arranged in pairs, but follow nearly at equal distances, broken and interrupted by obscurer lines, without any curve in the anal region: the basal one is minute, close to the thorax, and in some individuals very obscure. Three ocellated spots of an intense black colour, but very unequal in size, are placed in the anal angle at the posterior margin; the exterior one is very large, regularly orbicular, bounded interiorly, and at the sides by a very narrow yellowish brown iris, and exteriorly by a crescent of silvery irrorations; adjoining to this is an excavated irregularly reniform spot, which touches a minute ocellus at the extremity of the anal angle; the intermediate spot is marked interiorly with silvery irrorations and a rufous crescent, and the extreme ocellus is also slightly spangled. The *tails* are brown, tipt with white; the *body,* brown above, and white underneath; the *antennae* brown, very obscurely banded with gray.

13. **Ly-**
13. **Lycêna Atratus.** *Ale suprà femine violaceo-azuree; antice disco albente marginibusque laté nigricantibus; postice ad marginem serie punctorum nigrorum strigisque alternis albis et fuscis: subtès fuscâ albo strigose, strigis tribûs continua ad marginem posticum; antice insuper strigis sex marginem non attingentibus, quartâ et sextâ breviorebus, punctis quatuor in serie costae interjectis; postice strigis septem interruptis, lineolis alternè intermediiis, ocellis analîbus tribus.* (Exp. alar 1 unc. 3 lin.)

*Papilio Atratus.* Cram. pl. 365. fig. A. B.?

*Wings above,* in the female, shaded with violet-blue from the base towards the margin, on a brownish ground transmitting a white patch on the disk; exterior and posterior margins of the *fore wings,* dark blackish brown; *hinder wings* along the posterior margin marked with a series of oblong brown spots, enclosed by two undulated white threads, the interior one being bounded by a deep brown fascia, and the exterior one by a blackish margin fringed with grayish brown. *Wings underneath* brown, with a shade of silvery gray; *anterior* with nine, *posterior* with ten white strigë, three of which are marginal extending uniformly through both pairs; in the *anterior* wings these strigë follow each other, after nearly equal intervals, from a small vacancy at the base to the marginal series; they do not arise in contact with the costa, but a small intervening space is occupied by four marginal dots, in irregular succession, of which the two posterior ones are most distinct; the first three interior strigë are parallel and nearly regularly transverse; the fourth is very short; the fifth extends across the surface with a slight obliquity inwards; the sixth terminates in the middle of the surface; in the *posterior wings,* seven transverse strigë occupy the whole surface to the marginal series; the basal one is short and obscure, the remaining are broken, and a short lineola is placed in some cases, intermittently between the successive strigë; they have a very slight curve towards the anterior margin: there are three anal ocelli, agreeing in character with those of the last described species; one exterior, near the margin large and regularly orbicular; the next reniform, with a more saturated tint at the lobe which touches the interior ocellus situated at the extreme anal angle, and more pronounced than in the allied species; the two anterior ocelli are connected by a short streak of silvery irrorations covering their inner border, and bounded by a short rufous fascia. The *antennae* and *abdomen* are obscurely banded with white: the *thorax* and the *body* anteriorly are covered with gray hair.

14. **Lycêna Nina.** *Ale suprà maris cyanee, vel pro vario ad lucem objectu thalassino relucentes, nitidissimae; antice limbo lato, postice strigâ marginali nigra: subtès flavido canescentis strigis tenuissimis albidis pallidè aureis, tribus posticis consecutis margini paralleliis; antice insuper strigis quatuor in paribus duobus ordinatis, anteriore brevissimo imo disco sito altero submarginali ex lineolis interruptis subflexuosis transversè ducto, dimidio posterior quadrâ infracto anticum versus spectante; postice strigis sex in paribus tribus, primo subasiliari altero mediano tertio submarginali, omnibus ex lineolis parallelis interruptis efformatis; ocelli analis tres nigerrimi, exteriore maximo orbiculari iride angustâ annulari rufâ postice transversè terminatâ et tenuil argenteo-irrorâtâ, intermedio reniformi lobo interiore saturatiore ocello interno approximato, horum marginie interiore tunulâ irrotâtâ et deusque tenuil rufâ obducto. (Exp. alar. 14 lin.)

*Wings above,* pure deep blue with a rich metallic lustre, changing according to the light to a brilliant sea-green; *anterior* wings with a broad black posterior border stretching towards the middle.
middle of the costa; posterior, surrounded by an intensely black marginal thread; fringe of both pairs grayish brown, near the anal angle, at the caudal appendage a lunular-oblong black spot, bordered externally by an obscure white thread extending to the anal angle: underneath the wings are yellowish-brown with a straw-coloured shade and transversely marked, in the fore wings with seven, and in the hinder wings with nine very delicate yellowish strigae covered with a faint golden lustre; three being marginal and continued through both pairs; the anterior wings are further marked, in the space comprised between the middle and the marginal series with two pairs of strigae, one short consisting of two lines parallel to each other immediately on the disk, the other extending across the whole surface in an angular curve, composed of short lines somewhat flexuose between the longitudinal nerves, with a sudden inflection on the disk, by which the posterior portion is directed towards the short pair; viewed together as arranged on the wing, these strigae exhibit a figure somewhat resembling the letter Y: the surface of the hinder wings bears also three pairs of strigae; the first at a small distance from the base, the second in the middle stretching across the disk with a curve at the interior margin, the third posterior to this and terminated at the anal ocelli; they are individually composed of parallel interrupted portions; three ocellate spots are at the posterior margin near the anal angle; the exterior one large, nearly circular, abruptly terminated behind by a streak of silvery irrations and surrounded interiorly and at the sides with a narrow rufous iris; intermediate ocellus reniform, of a most intense tint on the lobe touching the extreme ocellus, which is larger and more distinct than in the related species; the two last ocelli are united at their internal edge by a silvery lunule bordered with a rufous streak. Tails black, tipt with white; antennae obscurely banded, body, blackish above, white underneath.

The species last enumerated is strikingly distinguished from all others belonging to this group, by the brilliant blue or sea-green tint on the upper surface; our collection contains two male specimens.

The species named Lycaena Atratus, although clearly distinct from the other species contained in this catalogue, and, agreeably to my examination, from all the individuals enumerated in the 9th volume of the Encyclopédie, cannot be identified with Cramer's figure of P. Atratus, without some uncertainty; it agrees with that species in the arrangement of the subcostal dots, which afford a permanent distinction in all the species of this section which I have examined, and in the direction and character of the strigae of the forewings; but its final determination requires further comparisons. P. Atratus is cited in the Encyclopédie, as the female of Pol. Celerio; but since we have several individuals of both sexes of that species from Java, and since P. Atratus possesses various characteristic peculiarities, I have been reluctant to adopt that opinion.

Of Lycaena Pavana, a single pair, in perfect preservation, is contained in our museum; this species is readily distinguished by the regularly transverse arrangement of the strigae in both wings.

The species first enumerated in this section have required, on account of their near resemblance and similarity of upper surface, a more copious description than will generally be found necessary. Albiclis and Celerio are two original names of Fabricius; but his descriptions are not sufficient for the clear discrimination of the species at the present period. Some uncertainty therefore remains, as to the real application of these names, to the species contained in this catalogue, and I have consequently annexed a query. One specimen contained in the Banksian cabinet, with the name of Celerio, in the hand-writing of Fabricius, belongs to Albiclis of this catalogue and of the Encyclopédie. I have been more minute in the description of Lycaena Albiclis, as it is subject to greater variations in the marks on which the specific distinction is founded, than either Celerio or Elpis. My observations on this species are chiefly founded
founded on specimens in high perfection, obtained by allowing the larva to undergo its change. At least twelve specimens are contained in the Honourable Company's museum. In the more simple specimens the underside of the wings is of an uniform grayish tint, through which the transverse strigæ are distributed; but there is a marked variety, in which the portion of surface included between the strigæ has a dark or brownish tint, and in this the wings appear as if marked with broad brown bands edged with narrow white threads. This is the character of the Papilio Alexis of Stoll, which is cited in the Encyc. Méth. as a Synonym of Αelianus: but in the specimens of this variety, which are contained in our collection, the character of the strigæ and of the submarginal dots agrees with the description above given; I have therefore considered it a mere variety, and the correctness of this conclusion remains for future examination.

Of Lyccena Celerio about ten specimens are contained in the Honourable Company's museum in a perfect state of preservation, but I did not succeed in discovering the larva.

Of Lyccena Elpis the collection contains at least fifteen specimens; it appears to be, on the whole, the most abundant of the three nearly related species. It is first named in the Enc. Méth., and described as a native of Java, but the authors were unacquainted with the female. It has not before been figured; the illustration given on our first plate is not quite satisfactory, and I shall endeavour to afford a comparative view of Αelianus and Celerio as now defined and described. The anal ocelli agree in all the species arranged in this section; the three strigæ parallel to the posterior margin extending through both wings, and the strigæ on the lower surface of the hinder pair having likewise the same character, with very slight modifications; and the species can only be clearly discriminated by the markings of the lower surface of the anterior wings, on which the specific character will eventually be founded.

Wings underneath bearing undulated or catenulated marks, consisting of single or of compound parallel bands, of a more saturated tint than the ground colour, bounded by white marginal strigæ: posterior wings in many cases marked with prominent black dots; anal ocelli often two in number, and nearly of equal size.

14. Lyccena Boetica. Ale supra maris pallidé violacee nitore in fuscum vergente limbo fusco; postice ocellulis analibus duobus nigris altero orbiculari altero oblongo angulum analem attingente: femina fuscæ basi discoque argenteo irroratis, ocello anali postico satiratisimo iride serico-albi insigni: subitus cinereo-flavicantes strigis tribus albis margini postico parallelis in posticis interiore latiore et vividiore; singula insuper strigis undulatis quinatim fasciculatis, strigâ intermediae albi proximis fuscis latioribus marginalibus tenuesissimis albis; horum fasciculorum in anticus tres, duo in disco siti brevissimi, tertius submarginalis completus, in posticis duo completi insigniores, duo insuper abbreviati, ad basin et in disco intermediae ocelli anales duo in taniæ rufi transversi nidulantes exterieure orbicullari posticè lamuli argentei cincto, altero oblongo puncto irrorto ad marginem posticum. (Exp. alar. unc. 1.)


Wings above, in the male, dull violet blue on a brownish ground colour, with a narrow defined brown margin, and grayish fringe; hinder wings, bearing in contact with the posterior margin opposite to the caudal appendage, a regularly orbiculate black spot, an oval one notched at the
### EXPLANATION OF THE PLATES

#### PLATE I

1. Polyommatus Akasa. H.  
5. Thecla Chitra. H.  
6. Thecla Vidura. H.  
8. Thecla Narada. H.  
10. Thecla Sugriva. H.  
11. Thecla Ravindra. H.  
13. Terias Drona. H.  
14. Papilio Arjuna. H.  

#### PLATE II


#### PLATE III

1. Papilio Polites: Larva; 1, a: Chrysalis.  
2. Papilio Pammon: Larva; 2, a: Chrysalis.  
4. Papilio Cresphontes: Larva; 4, a: Chrysalis.  
5. Papilio Pomphilus: Larva; 6, a: Chrysalis.  
7. Eupleea Juventa: Larva; 7, a: Chrysalis.  
8. Eupleea Plexippus: Larva; 8, a: Chrysalis.  
9. Eupleea Chrysippus: Larva; 9, a: Chrysalis.  
10. Eupleea Midamus: Larva; 10, a: Chrysalis.
EXPLANATION OF THE PLATES.

The figures from 11 to 26 are arranged in form of a diagram, which is explained on page 53 of the Introduction; they represent the larvae of the following insects:

11. Polyommatus ———— ?
12. Thecla Favonius. ———— Vermiform Stirps.
13. Thecla Betulae. ————
14. Colias Marcellina. ————
15. Pontia Brassicae. ———— Chilognathiform Stirps.
16. Papilio Ajax. ————
17. Papilio Polydorus. ————
18. Heliconia Euterpe. ————
19. Heliconia Amphione. ————
21. Acraea Vesta. ————
23. Genus allied to Limenitis. ————
25. Erycina Midas. ————
26. Hesperia ———— ?


PLATE IV.

1. Lycena /Eliaus: larva. 1, a: chrysalis. The dissections were made from Lycena Elpis: 1, b: Palpi. 1, c: Antennæ. 1, d: Proboscis. 1, e: Fore leg of the male.
8. Terias Hecabe: larva. 8, a: chrysalis. 8, b: Palpi. 8, c: Antennæ. 8, d: Proboscis. 8, e: Fore leg. 8, f: Claw and membranaceous appendage of the anterior tarsus.
9. Pontia Coronis: larva. 9, a: chrysalis. 9, b: Palpi. 9, c: Antennæ. 9, d: Proboscis. 9, e: Fore leg. 9, f: Claws and membranaceous appendage of the anterior tarsus.
11. Papilio Arjuna: larva. 11, a: chrysalis. 11, b: Palpi. 11, c: Antennæ. 11, d: Proboscis. 11, e: Fore leg. This species affords one of the types of the first section in the genus Papilio: antennæ with prominent annuli. (See Synoptic table, p. 59.)
Although the title exhibits a concise view of the object and proposed contents of this work, it may be proper, in accordance with established custom, to give some additional details, explanatory of the materials whence it will be produced, the method to be pursued in the treatment of the subjects, the extent of the work, and finally the mode of publication proposed.

The subjects which it will bring before the public are arranged in the Museum of the Honourable East-India Company. They consist principally of a general series of Lepidopterous insects from the island of Java, accompanied with an extensive set of drawings representing their metamorphosis, the history of which is detailed in the Introduction. To this will be added various subjects contained chiefly in a collection of insects from Ceylon, presented by M. Jionville, and in a smaller miscellaneous collection from continental India, presented by Claude Russell, Esq., the brother of Dr. Patrick Russell. It is likewise my intention to include such additions as may be made from time to time to the Museum during the progress of this work, from the territories of the Honourable Company in the Eastern World.

The work will be published in royal quarto, and consist of six parts, containing each about eighty pages of letter-press; the distribution of the subjects being the following:

Part I. Introduction: detailing the outline of a general arrangement of Lepidopterous insects according to their metamorphosis. Description of the first tribe, or of the Lepidoptera Diurna. Stirps the first, with Vermiform Larva, Genera Polyommatus and Lycena.

Part II. Conclusion of the Vermiform Stirps. Second Stirps of Lepidoptera Diurna with Chilognathiform or Kualaiform Larva. Third Stirps with Chilopodiform or Scolopendriform Larva. Fourth Stirps with Thyssanureform Larva.

Part III. Fifth Stirps of Lepidoptera Diurna, with Anopluriform Larva.

Part IV. Third Tribe of Bombycidae.

Part V. Fourth Tribe of Noctuidae.

Part VI. Fifth Tribe of Phaleniidae.

Each part will be illustrated by four plates consisting of highly finished engravings by artists of eminence. These three will be coloured with accuracy and elegance; the fourth more elaborate as an engraving will be given plain. A limited number of copies with proof impressions, and the whole of the plates coloured will be published at a proportionally advanced price.

The first plate is devoted to the illustration of new species, and such subjects will be preferred as are typical of the groups defined in the progress of the work; they will be arranged, as far as possible, according to their affinities. For the second plate, those subjects will be chiefly selected which form types of genera; and they will, in most cases, be accompanied by dissections. On the third and fourth plates the history of the metamorphosis will be elucidated, and they will likewise contain additional generic illustrations and dissections. The plates of the first part exhibit a specimen of the plan projected for the whole; and here may be added, that for the succeeding parts the materials are equally copious.

As to the plan of the descriptive part, a very concise outline can only be given in this place. The arrangement proposed to be followed and the constitution of the higher divisions, namely of tribes and stirps, are explained in the Introduction. These are defined from a review of the whole order; but the sections included either in the tribes or in the genera are provisional only, as they are regulated by the extent of the collection. A detailed generic character is given in the Latin language; this is followed immediately by a somewhat amplified description in English. Every species is distinguished by the generic and specific name at length. This is followed by a Latin description, in technical language, intended to exhibit a concise but accurate delineation sufficiently minute to afford the means of precise discrimination from all other species. In the English description of new species the object is to give a full history of the external character in all its details. It is not consistent with my present plan to give specific characters according to the Linnean models: these belong, in my opinion, to works in which a general comparison of species contained in extensive collections, enables the writer to define the characters with a precision and confidence which cannot be obtained in the examination of a mere local collection.

The detailed specific descriptions will be followed, in most cases, by a series of miscellaneous observations. In these is my chief object to illustrate the history of those individuals, which I have traced through their various stages of existence, and of which our collection contains representations in their larva and pupa states. The arrangement projected for this work being founded primarily on the metamorphosis of the insects of this order, this part of the subject will be found to have an important bearing on the whole. These observations will also afford the necessary explanations of the figures contained on the third and fourth plates, and they will lead to the detail of the remarks made on the food of the larva, the season of the year when found, their abundance or scarcity, and to such other peculiarities as may have been noticed in Java. Under this head I shall also give an account of the state of the collection regarding the materials from which the descriptions have been made, with the view to illustrate many doubtful or imperfectly known species. The public or private collections in this metropolis, in which the species described may have been observed, will also be indicated: and finally their range through other parts of India: and in the whole of these miscellaneous observations, as well as in the generic and specific descriptions, a principal object will be to render the work generally useful and interesting to the British naturalist.

The parts will follow each other with every degree of expedition consistent with the preservation of the style of publication, in which the work has been commenced. Those preparatory arrangements which are inseparable from every undertaking of this nature have in some measure retarded the first part, but the publishers are enabled to engage, with every prospect of success, a regular continuation of the work; accordingly we announce the appearance of the second part early in July next, of the third, at the commencement of the ensuing year, and of the remaining parts at intervals of six months. According to this plan, the whole will be completed within three years from its commencement.

Some objection may perhaps be made to the length of the Introduction and to the extent of the descriptions with which the work commences. In explanation of the former I shall observe that a general plan having been sketched, and the limits of the higher groups having been defined, the systematic details will be greatly abridged in future. Regarding the plan of the descriptions, it will be obvious to the careful reader that the subjects which presented themselves at the commencement were either new or imperfectly known, they therefore required a more copious detail than will be found necessary in less interesting cases. But I may be allowed to state clearly, that in the progress of the work, well known species will be introduced with a very concise notice, and the descriptions throughout will be accommodated to the plan and extent of the work proposed at the commencement of this Prospectus.
PART II.

OF A

DESCRIPTIVE CATALOGUE

OF THE

LEPIDOPTEROUS INSECTS

CONTAINED IN THE

Museum of the Honourable East-India Company,

ILLUSTRATED BY

COLOURED FIGURES OF NEW SPECIES

AND OF THE

METAMORPHOSIS OF INDIAN LEPIDOPTERA,

WITH

INTRODUCTORY OBSERVATIONS

ON A

GENERAL ARRANGEMENT OF THIS ORDER OF INSECTS.

BY

THOMAS HORSFIELD, M.D. F.R.S. L.S. & G.S.

MEMBER OF THE ROYAL ASIATIC, AND OF THE ZOOLOGICAL SOCIETIES OF LONDON, AND OF THE IMPERIAL ACADEMY

NATURAE CURIORAM;

CORRESPONDING MEMBER OF THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA, AND OF THE

HISTORICAL SOCIETY OF PENNSYLVANIA, &c.

TO BE COMPLETED IN SIX PARTS.

London:

PUBLISHED BY PARBURY, ALLEN, & Co.

LEADENHALL STREET.
the inner edge and somewhat smaller, at the anal angle, and a series of evanescent blackish bars parallel with the posterior margin; in the female the violet colour is confined to the base and disk of the fore wings, being covered with pale silvery irrorations, while the anterior and posterior margins, and the base and disk of the hinder wings, are pure brown; the anal ocellus in the posterior margin of the latter is of an intense black tint, and surrounded by a regularly defined narrow annular iris of a saturated silky white; the extreme anal spot, as well as the ocelli, forming the posterior series are surrounded by pale evanescent white rings; a faint macular band of dusky white also extends along the inner edge of the posterior series; the base of the hinder wings is covered with long silky hairs; underneath the wings, in both sexes, are gray with a shade of Isabella yellow, and marked with three strigæ, extending parallel with the posterior margin through both pairs, the interior one being more pronounced in the hinder wings and forming a broad white fascia; between the marginal strigæ and the base, the surface of the wings bears successive slightly interrupted marks, consisting individually of several contiguous undulated bands, of which the medial one is white, the next adjoining, on each side, brown, with a tint somewhat more saturated than the ground colour, and the exterior ones very narrow and white; of these compound marks there are three on the fore wings, the anterior one at a small distance from the base, the second on the disk, the third near the marginal series; the two former are very short, the latter extends entirely across the wing; the surface of the hinder wings bears contiguous fasciae similar to those on the fore wings, but touching each other by means of several additional intermediate strigæ; there are two anal ocelli corresponding in form and character with those on the upper surface; they are disposed on a transverse rufous-orange band, the posterior one being bounded externally by a narrow silvery lunule, the other bearing a silvery speck on the extremity which is directed to the other ocellus. Tails, dark above, gray underneath and at the tip. Body above and underneath corresponding in colour with the wings. Antennæ brown annulated with white.

Our museum contains a single female, and seven male specimens collected chiefly in the cultivated districts of the neighbourhood of Surakarta. The larva was once found, as far as I recollect, on a leguminous plant, but from its similarity in habit to the larvae of other Thecla, its peculiarities were not noted. With the exception of Cynthia Cardui, which has a still wider range, this is the only indigenous Javanese species of diurnal Lepidoptera, which is also found in Europe. From a careful comparison of individuals contained in Mr. Haworth's and my own collections, and of its representation given by Hübner, it appears, that in these distant countries, the species agrees, in the most minute particulars, as far as regards markings and form, but a slight diversity is observed in the colour. In the European specimens the under surface of the wings is gray or brownish gray, the brown strigæ are more saturated, the white marginal lines are more brilliant, and the anterior marginal band is broader and of a purer white. In the Javanese specimens the ground colour has a tendency to Isabella yellow, and the strigæ are more faint and delicate. In size the specimens from both countries entirely agree.

16. Lycaena Damianæ. Ale suprâ mari pallide violacea limbo fusco; feminea fusce basi discoque cyanæ argenteo irroratis; strigæque sexus ocelli anales duo insignes iride serico-albâ cincti; feminea insuper serie posticâ ocellorum obsoletorum cum serie interiori macularum carneatarum: subâ cinereo-flavicantes strigis tribus marginales interiore latiore et viviâre, singula insuper strigis undulatâs quinâtâs fasciâtâs, fasciâ interiore anticarum obsoleti, loco ejus nonumquam annulo obseleto basilari; postice ocellis analibus duobus extus punctis aureis ornatis, exteriore
exteriore orbiculato lunule rufie insigni subjecto, interiore minore oblongo lunulad obsoletiore.

(Exp. alar. lin. 10-14.)

Hospitatur in Museo Domini Banks, nunc in Mus. Soc. Linn. Lond. asservato, cum inscriptione ipsius Fabricii.


Papilio Damoetes. Donov. Ind. Ins. (with a figure.)

This insect is so near Lycena Boetica, that it was first introduced into this catalogue as a smaller permanent variety of that species, peculiar to Java; by the examination of the Banksian Cabinet of Insects, however, I have been able to identify it with the specimen described by Fabricius, under the name of Pap. Damoetes, as a native of New Holland. Our insect agrees closely with the specimen here preserved in size and painting; it is labelled with a ticket in Fabricius' own hand-writing, and his description leaves no doubt as to the subject itself. The specimen is sufficiently perfect to exhibit its real character, the tails only have been lost, and hence it has been described with " entire wings," and arranged in the corresponding section in the Encyclopédie. In many specimens the painting, on both surfaces, agrees with that of Lyc. Boetica, to the minutest particulars; a slight modification observed in some individuals is exhibited in the Latin description. We have, in our museum, four males and one female, perfect in all points. The tails are black and tipt with white. In size, and in the appearance of the upper surface, our insect resembles Lyc. Telicanus; the latter forms a natural passage to the following species, in which the catenulated character of the bands is more distinctly exhibited.

17. Lycena Kandarpa. Alle sup'ra maris paginâ omni griseo violacee in certâ luce argento nitentes; postica puncto marginali ad basin caudae nigro; feminae de basi ad discum ex ruleo-argento nitentes limbis latissimis fascis, postica serie ocellorum marginali, ocello ad basin caudae saturatiore lunula rufâ cincto, ocellis exterioribus sensim pallidioribus arcubus angustis albis intus inductis, ocello interiore oblongo emarginato strigâ albâ obiecto; lunule circiter quinque huic serie parallele ad marginem interiorem limbi disposite et versus discum puncta aliquot obsoleta, in arcum; subtris pallidê grisee strigis tribus marginalibus albis, fasciisque catenulatis saturatiore albo marginati; strigâ exteriori linea nigra marginalia parallela continua obsoleta, interioribus duobus undulatis maculas oblongas includentibus, fasciis antecarum duobus alterè disoided brevi, alterâ posteriori completa, posticarum fasciis antecarum basali tenuiori, secundâ disoidid brevi, tertid submarginali in regione anali ex arcubus interruptis efformatâ; antica insuper puncto marginali ad medium costae, postica punctis duobus costalibus saturatis albo cinetis intervallo brevi distinctis; ocellis analibus quatuor, exterioire ad basin caudae maximâ saturatisimâ orbiculatâ postica aurea irrata, abrupte truncato, intus et ad latera arcu rufo maxima inducere, ocellis interioribus obsoletis angustatis, intimo minuto, intermedii ovaris transversis coadunatâs in maculum reniformem, penultimo strigâ aureâ ornato, omnibus intus strigâ undulatâ albd et denique tamiu rufî obsoleta marginatis. (Exp. alar. 1 unc. 2-3 lin.)

Wings above, in the male, pale violet blue, with a rich silvery reflexion, assuming in a certain light a dusky grayish shade, the colour being uniformly distributed over the whole surface: hinder wings marked exterioy to the caudal appendage with an ocellate spot of a deep black colour, surrounded anteriorly with a pale blue lunule; a very faint transverse brown marginal bar, bordered with white, occupies in some individuals the space between this ocellus and the extreme anal angle; the wings are all surrounded with a delicate black marginal thread and an extreme...
extreme grayish fringe: in the female the wings have a broad brown border, the blue colour being brighter than in the male, covered with a silvery gloss, confined to the base in the hinder wings, but spreading also over the disk in the fore wings; in the posterior wings the margin bears a series of ocellate spots, increasing in intensity of tint towards the caudal appendage, where the ocellus is intensely black and surrounded interiorly by a rufous crescent, the remaining ocelli have narrow white semilunar borders within and transverse marginal lines without; a series of lunular white marks passes regularly along the inner border of the marginal ocelli and a few obscure spots form an irregular arch across the disk. Underneath the wings are pale whitish-gray, and marked with catenulated bands, consisting each of two parallel undulated marginal threads of a brilliant white, including a broader fascia of a somewhat deeper shade than the ground colour; in the anterior wings a short fascia is placed transversely on the disk, the next posteriorly extends entirely across the surface; in the posterior pair three similar fasciae are disposed in succession, the anterior one is composed of two narrow interrupted portions, the second is short and stands transversely on the disk, the third is irregular and extends in an interrupted course entirely across the wing and in the anal region is suddenly inflected and composed of short arcs; three white strigae pass in both wings parallel with the posterior margin, the exterior one is obsolete and bounded by a brown marginal thread, the two next are waving, and include two undulated bands of the ground colour resembling the adjoining catenulated bands; the exterior margin of the fore-wings has in the middle a minute ocellate spot with a white annulet, and in the same margin of the hinder wings, near the costa, are two somewhat more saturated ocelli, separated by a small intervening space; in the anal region there are four ocelli, the exterior one, near the caudal appendage, is very large, nearly round, of a deep black colour, abruptly truncated and ornamented posteriorly with a streak of golden irrorations and surmounted interiorly and at the sides with a large rufous crescent; the remaining ocelli are narrow and obscure, the interior one consists of a small dot at the extreme anal angle; and the intermediate ones are ovate and united into a reniform spot, the penultimate one being ornamented with a streak of metallic irrorations; along their inner edge passes a white streak and interiorly of this a faint waving rufous band. The thorax and abdomen agree above and underneath, in colour with the wings; the eyes are bordered, the tails are tipt with white, and the antennae are marked with white bands.

The Lyceana Kandarpa has, both in habit and in colour above, a great resemblance to Lyceana Boetica; but in the forewings the outer apical angle is more acute in both sexes, while the hinder wings are slightly lengthened towards the anal extremity in the male, and more abruptly rounded in the female. Our insect exhibits clearly the typical character of this section; the bands on the lower surface imitate the appearance of chains or necklaces, in consequence of the margins which are strongly undulated, and the base of the hinder wings is provided with dark ocellate spots encircled with white; these two marks, on which the sectional character is founded, exist in all the remaining Javanese species of Lyceana. Four male and three female specimens are contained in our museum, several of which are from the continent of India, and illustrate the range of this species in the old world: Mr. Haworth's collection contains a male specimen, agreeing in all points with our insect, which was found in a box imported from Brazil.

18. Lyceana Cneius. Ale supra feminae ad basin, antice usque ad discum lacte carulea, argenteo nitide, limbis exteriore et posteriori fuscis; postice serie punctorum ocellatorum, ocellis duobus analibus saturationibus rufo annulatis, penultimo insignore, omnibus posticè abruptè terminatis;
The female. Wings above with a deep brown border; a light blue tint with a bright silvery reflection is, in the hinder wings confined to the base, in the fore wings expanded to the disk, but entirely evanescent in a certain position towards the light; posterior border of the hinder wings bearing a series of dark ocellate spots, of which two, at the anal angle, are of a deeper tint and surrounded internally with bright rufous crescents; the penultimate ocellus exceeds the last in size and brilliancy of colour; all these ocelli are abruptly truncated behind, and the exterior ones are surrounded internally with narrow white crescents; a row of angular or wedge-shaped marks of a brilliant white, having the points directed towards the disk, passes along the inner edge of the marginal series; the cilia are gray: underneath the wings are gray with a faint Isabella-yellow shade; each pair is marked on the disk with a short transverse stigma, which in the hinder ones is slightly curved; the anterior wings have further three ranges of catenulated bands of a brown colour, of which the two exterior are parallel with and adjoining the posterior margin, being confined by the marginal strige; the third, in which the catenulated character is more distinctly exhibited, is intermediate between the marginal series and the disk; this is continued through the hinder pair, where it is more curved and somewhat irregular and infracted in its course; in the marginal series of ocellate spots, the interior ones form two strongly marked anal ocelli; these are regularly round, nearly equal in size and brilliancy of tint, intensely black, encircled by a pale orange iris, bordered internally by a ring of yellow metallic irrations, which is partially interrupted at the internal edge; the hinder wings have further, four ocellate spots of an intense black colour with white iris, three of these are placed in a transverse series at the base, and a third, somewhat larger and more vivid, in the middle of the anterior margin close to the costa. The thorax above has a blueish cast and is covered with delicate hairs, the abdomen is brown; underneath the thorax and legs are covered with a delicate pure white down and the abdomen agrees in colour with the wings; the antennae are banded with white.

A single female specimen from Java is contained in our collection. Mr. Haworth possesses two males: the upper surface in these is uniformly pale violet blue, with a narrow grayish brown posterior border, and two oblong black spots in the anal region, within the caudal appendage.

19. **Lycena Pandava.** *Alte supra feminae omnes limbis latissimis fuscis cincta, antica ad discum usque late carula, argenteo irrorate, postico fusciscentes in disco, cerulescentes tantum ad basin, serie ocellorum marginali, ocello anali penultimo saturatoire lunulâ rufâ intus cineto, ocello interiore angusto transverso didyno, strictâ alba emarginâtâ indutâ; macula lanareus alba circiter quinque in ordine ad marginem interiorem limbi digesta: subtus flavescenti-cinereae nitore pallide fusco,
The female. This species agrees in size and in the markings of the upper surface generally with that last described; a slight difference is afforded by the interior anal ocellus, which here consists of two narrow, oblong, confluent spots, without rufous lunule, but bounded interiorly by an emarginate white line; the wedge-shaped marks along the inner border are replaced by a transverse series of lunules: underneath the wings are yellowish-gray, with a very faint shade of brown; in the number and disposition of the markings our species also resembles *Lyceena Cneius*, but it possesses a distinguishing peculiarity in the brilliancy of the white marginal strige, and in the greater breadth and deeper shade of the brown bands producing a striking contrast of colours: on the disk of both pair stands a short transverse stigma; behind this follows a broad catenulated band, regular in the fore-wings, with a few inflexions at the inner margin, but interrupted and irregularly curved in the hinder wings; the marginal white strige, three in number, are strongly pronounced; the most exterior passes without undulations, in contact with the brown marginal thread, through both pair; the two anterior strigae are waving in the fore-wings and flexuose in the hinder wings, embracing two series of catenulated bands, composed of oblong spots in the former, and of angular ones in the latter; the posterior margin of the wing is adorned with two anal ocelli; the largest being placed exterior of the caudal appendage, and the other in the space towards the anal angle; an obscure black dot stands between them and another at the extreme angle of the wing; the exterior ocellus is covered internally by a very broad rufous arc, slightly notched at each side; a rufous streak is continued to the inner margin, being of a more saturated tint above the interior ocellus; a small exterior lunule of golden irrorations, adorns the large ocellus, and the small ocellus has on the margin an interrupted golden ring; there are five black spots encircled with white on the anterior portion of the hinder wings; two of these, of a more saturated tint, stand in contact with the costa, the remaining form a transverse basal row, the penultimate spot being rather obsolete. The tails are slender and tipt with white; the antennae are brown with white rings and tip; the thorax and body are brown above and gray underneath, the former being covered with a blueish down and the latter annulated with white.

A careful attention is required in the discrimination of the two species last described; the most prominent distinctions of the latter are, in the upper surface, the character of the internal anal ocellus, in the lower surface, the breadth, intensity of tint, and general habit of the transverse bands, and particularly the basal sub-ocellate spots of the hinder wings, which are five in number and disposed in a peculiar manner. I have confirmed my views regarding the diversity of this species from the former, founded on the comparison of a single specimen contained in our Museum, by the inspection of Mr. Haworth's collection; an individual here
here contained, though not completely identical with our insect, proves that it must be considered specifically distinct from Cnejus.

20. **Lyccena Parrhasius.** *Ale suprà maris saturatè violaceæ pro vario ad lucem objectu in fuscum variantes, limbis angustis fascis albo fimbriatis; postice strigâ marginali punctorum ocellatorum, punctis duobus pone caudam sitis insignioribus, arcu angusto rufò intus cinctis lineâque albo postice marginatis, punctis exterioribus sensim obsoletioribus: subâs canae squamis subargenteâs obtectæ, singulis in disco stigmate transverso, tune fasciâ cætunâlata, in anticus continuâ in posticus interruptât; antice insuper fasciis duabus submarginalibus obsoletioribus, postice in serie marginali ocellis duobus, istis in paginâ superiore adversis, insignioribus orbiculatis nigerrimis in tami latâ transversâ aurantium nigrolunulâtibus, lunulâ argenteo extus inductis, intervallo denique angulum anali versus, maculis duobus oblongis angustis angustis strigâ flavicante obductis, freto; posticum insuper puncta quattuor nigerrima albo cincta quorum duo basilares tertium ad marginem anteriorem quartum ad marginem interniorem in medio disposita. (Exp. alar. lin. 10—11.)


**Papilio Parrhasius.** Donov. Ind. Ins. (with a figure).


*Wings above,* in the male, deep violet blue, varying according to the light, to dusky brown, with a narrow brown border and white fringe; *hinder wings* bearing on the posterior border a series of ocellate spots abruptly terminated behind; commencing at the outer apical angle, the spots are small and obsolete; they gradually increase in size and intensity of tint, and exteriorly of the caudal appendages two deeply saturated brown ocelli, surrounded internally by a narrow rufous crescent, are disposed; two small confluent spots, forming a faint emarginate transverse band, stand between these and the extreme anal angle. *Underneath,* the gray ground colour is covered with coarse scales of a silvery hue; both wings are marked on the disk with a short transverse streak, behind this is a catenulated band, stretching across the entire surface, which is nearly regular in the anterior, but slightly infracted in the posterior pair; the fore wings have towards the margin two somewhat obsolete catenulated bands, confined by the marginal strigee, and exterior to these a dark marginal thread, which is continued through the hinder wings; in the latter the series of marginal ocelli corresponds with that of the upper surface, but is more pronounced, and the two ocelli situated exterior of the caudal appendages, being regularly round and of an intense black tint, are bedded in a broad orange fascia, and marked externally by a lunule of silvery irroration; between these and the extreme anal angle are two narrow, obsolete, oblong spots, bordered internally by a faint yellow undulate streak; the hinder wings are further marked with four dots of an intense black colour, surrounded with a grayish ring, two of which are opposite to each other and at an equal distance from the base, the third is placed near the middle of the anterior, and the fourth near the middle of the posterior margin. The thorax and abdomen agree, on both surfaces, in colour with the wings; the tails are long, very slender, and tipt with white; the antennæ have a grayish extremity and white rings.

Our collection contains three male specimens of this species, and in that of Mr. Haworth I have examined a female, agreeing, as far as can be determined, from the condition of the individual, with our insect: in this female the colour above is brownish, and the submarginal line of ocellate spots is more distinct than in the male; the interior dimidial portion of the wing underneath has four black dots, agreeing in disposition with
with our specimens, and in the anal region two ocellate spots of equal size are also apparent. I conclude with the remark that, regarding the three species last enumerated, I have used every means within my reach to form a correct determination; but they are so nearly allied to each other that further comparisons are still required: several other species are found in collections, of similar habits, but each possessing an individual peculiarity. No. 19 of our list, agrees upon the whole with the *Parrhasius* of systematic authors; but I have some apprehension that further comparisons of perfect specimens will prove it to be distinct from the species described by Fabricius with that name.

Genus *THECLA*.


**Character.** *Larva* linear-oblonga, dorso plano, depresso; tota pilis brevissimis teneris solitariis obtecta (Tab. iv. fig. 3 et 4. Subgenus *Amblypodia*: *Amb. Apidanus*, *Amb. Helus*): vel interdum fasciculis pilorum ad segmenta transversim ordinatis praedita (Tab. iv. fig. 2. *Thecla Xenophon*): capite parvo retractili.

*Chrysalis* oblonga, utrinque obtusa, vel antici gibba postici attenuata, nuda, laevis, rarius transversè scutata. (Tab. iv. fig. 2, a; 3, a; 4, a; 5, a.)

*Imago* : *Antenne* mediocres, strictæ; vel basi filiformes capitulo subabrupto, elongato, cylindrico-ovali; vel, de basi usque ad apicem sensim incrassate, capitulo hau distincto, obtuso, rarius acuminé brevi prædicto; articulis intermedium longioribus.

*Palpi* capité longiores, articulo basilari brevi, capitii adpresso, latiusculo, squamis densis objecto, villis elongatis paucioribus vel creberrimis, intersitis; articulo secundo elongato, stricto, subassurgente, ultra medium capite soluto, apice truncato, undique squamis imbricatis teneris arté obiecto, villis, in quibusdam crebris, interpositis; articulo tertio abrupte imposito, porrecto, oblongo vel subattenuato, nudiusculo vel lanuginoso, nonnunquam squamis tenebrismis obiecto.

*Proboscis* palpis magis duplo longior, apice ciliato, villis brevibus patentibus.

*Caput* breve, obtusum, latum. *Oculi* planiusculi, pube brevi arcté obiecti. *Corpus* breve, attenuatum. *Alæ* antice oblonge, breves, obtuse; postice rotundate vel subelongatae, appendiculó anali et caudibus filiformis vel rarius appendiculis brevibus obtusis subdentiformibus, instructae. *Pedes* antici maris, tarsi articulo solitario, cylindrico, elongato ad latera spinoso, ungue brevi obscuro, infecto, vel omnino inerni, superficie planâ verticali abrupte terminato; feminae *tarsi* quinque, cylindricis, primo elongato, secundo, terto, quarto brevibus, quinto subincrassato, unguibus duobus brevibus arcuatis, villis densis reconditis, pulvillis minusve conspicuis, appendiculis duobus filiformibus brevibus intermediis; pedes medii et postici in utroque sexu conformes, singuli tarsi quinque articulatis, ultimo unguibus duobus minimis arcuatis sub pulvillis et squamis fere occultatis; femora intermedium eadem quæ *Polyommati*.

**Character.** *Larva* linear-oblonga, with an uniform depressed back, either covered with short, delicate, solitary hairs, as in *Amblypodia Apidanus* and *Helus* (Pl. iv. fig. 3 and 4); or with tufts of short bristles, arranged in transverse rows at the segments, as in *Th. Xenophon* (Pl. iv. fig. 2); or entirely naked, as in *Amb. Longinus* (Pl. iv. fig. 5); in this species the larva has a peculiar character, being distended anteriorly, excavated at the sides, contracted behind, and throughout transversely swelled at the segments: the head in all these subdivisions is small and retractile. *Chrysalis* oblong, obtuse at both ends, or considerably swelled anteriorly and tapering towards the posterior.
posterior extremity, smooth on the surface, in one subdivision only marked with prominent transverse scuta. In the perfect insect: Antenne of moderate length, straight, either filiform at the base, with an abrupt, elongate, cylindric-oval club, which is slightly attenuated at both ends; or gradually and uniformly increasing in thickness from the base to the point without distinct club, rarely terminated by a short abrupt point (as in Amblypodia Longinus, Pl. iv. fig. 5, c.); the intermediate joints being in all cases the longest. Palpi longer than the head; basal joint short, concave, somewhat broad, applied to the head, closely covered with scales, among which few or more numerous hairs are scattered; second joint long, straight, beyond the middle detached from the head, abruptly terminated, closely covered with minute scales, among which hairs are dispersed, varying in character, number, and density, in different species; third joint tending forwards, short, abruptly attached and smaller than the second, oblong or attenuated, nearly naked, downy or covered with minute delicate scales. Proboscis more than double the length of the palpi, beset at the extremity with delicate patulous bristles. Head short, obtuse, broad. Eyes moderately prominent, plane and covered with a delicate down. Wings: anterior oblong, short, obtuse; posterior elongated with rounded margins or narrower towards the anal extremity, slightly sinuated, tailed, and provided with an anal appendage, or bearing short, oblong, distinct lobes, resembling obtuse denticulations: discoidal areola not closed. Feet: anterior, of the male, with a tarsus, consisting of a single cylindrical joint, with two lateral, and an intermediate series of spines, longitudinally arranged underneath, either terminated by a single claw or altogether obtuse, with an abrupt vertical warty surface at the extremity; of the female, with tarsi, consisting of five cylindrical joints; the first long, the second, third, and fourth, short, the fifth somewhat thickened and armed with two short strongly arcuated claws; two short filiform appendages and a pulvillus, occupy the middle of the foot, the whole being covered and nearly concealed from view by numerous short villi. The tarsi of the middle and posterior feet are all provided with five joints, the terminal one being armed with two claws, which, in the mid-leg, are concealed by the extreme scales; and the femur of the same leg has a short acute spine, as in Polyommatus and Lycena.

This genus is illustrated, on the fourth plate, by the metamorphosis of Thecla Xenophon; fig. 2; 2, a: of Amblypodia Apidanus; of Amblypodia Narada; fig. 3; 3, a: fig. 4; 4, a; and of Amblypodia Longinus; fig. 5; 5, a: on the same plate the dissections of Thecla Xenophon, fig. 2, b; 2, c; 2, d; 2, e; and of Amb. Longinus, fig. 5, b; 5, c; 5, d; 5, e; are also given.

In the analysis of the Javanese species of Thecla I have continued the careful examination of the anterior feet, with the view to determine the accuracy of my former observations on the genera Polyommatus and Lycena. As far as regards the peculiarity of these organs in the sexes, my researches have not only essentially confirmed my former remarks, but they have led to the determination of two prominent types of form, which are confirmed by other organs, particularly by the antenna. The genus has accordingly been divided into two subgenera, the first comprising the true Thecla, with clubbed antennae, the second those species in which the antenna gradually and uniformly increase in thickness from the base to the point without any distinct club: the latter, from the structure of the feet, has been named Amblypodia. The metamorphosis, as far as it has hitherto been observed, confirms these subdivisions; and the illustrations given on my fourth plate (as referred to above) tend also to show the accuracy of the authors of the Wiener Verzeichnis. The family O (p. 185), comprising the European Thecla, has been named Depressoscutata; and this is also the true character of the larvae of the Thecla found in Java. As far as regards the structure of the anterior feet and the sexual modification of character assigned to them in the generic description, I have to state in this place,
place, that the details are founded on a careful dissection of Thalea Jarbas, Xenophon and Epicles and of Amblypodice Apidamus and Centaurus; I have also partially extended my examinations to European species, and as far as I have yet proceeded, I have been confirmed in my opinions. It is my intention to give the result on a future plate: I shall therefore only add, that my dissections have led to a determination regarding the individuals constituting the sexes in Thalea Quercus, the reverse of that of most English Entomologists; in this I have been since confirmed by a reference to several Continental writers, particularly to Messrs. Latreille and Godart, in the Encyclopédie, and M. Ochsenheimer.

Antennae capitulo cylindrico-ovali, utrinque manifeste attenuato: tarsi pedum anticorum maris articulo solitario, cylindrico, ungue incurvo haud exserto. Larva unius modo species haecenus a me observata est, nempe Thalea Xenophonis; haec verè depressoscultata, et insuper fasciculis pilorum ad segmenta transversim ordinatis, prædita est.

21. Thalea Kessuma. Ala suprâ feminae basi discoque albae caruleo-argenteae, praecipue ad basin, irrorata, postice funso fuscis nebulosis; singulae limis funcis cano simihratis, in antecis latioribus in posticis lineâ nigrâ intus albo marginâtæ cinctis; antecæ insuper stigmate nigro in disco: subtus fusco-canescentes albo strigose, strigis tribus marginalibus intermedia ex maculis sagittatis interiore ex maculis arcuatis efformatâ; antecæ insuper strigis quatuor medias, duabus interioribus in area intermediae parallelis strictis in area analis subundulatis oblique divergentibus, strigâ tertîâ per totam paginam ductâ undulâtâ ad marginem interiorem cum strigâ interiore connexâ; punctis tribus funtatis albis in area costali origine strigârâ interjectis; postice strigis quattuor in paribus duoibus, altero medio subinterrupto in regione analis abruptâ incravato, altero subdumidado ad strigem marginalem interiorem finito; ocellis analibus duobus nigerrimis, exteriore iride latissimâ fulvâ cincto, interiore in lobo anali sito et iride angustâ annulari albo praeulito, super quam tertia funta intus aureo irrorata flexuosim ad marginem interiorem ducitur. (Exp. alar. 1 unc. 3 lin.)

Anterior wings, in the female, above, bluish white, with broad exterior and posterior borders, and a short oblique black stigma on the disk; hinder wings, variegated white and brown with narrower borders, both pair being sprinkled at the base with a light blue silvery cloud of atoms, spreading on the hinder wings along the interior margin; fringe light gray, in the hinder wings bordered within by a black thread, edged interiorly with white; anal appendages black, surrounded externally with white, bearing at the inner edge a fulvous spot and a minute green silvery lunule; tails black and tipt with white: underneath the surface of the wings is brownish-gray and marked with white strigae, three of which pass close to, and parallel with, the posterior margin, through both pair, the intermediate striga, consisting of wedge-shaped marks, with the points directed inwards, and the interior one of lunular marks; the anterior wings have further between the middle of the surface and the marginal series four strigae, two of which form on the disk a short regularly parallel pair, with a fainter intermediate streak; they are continued in the anal area by two undulated slightly diverging strigae; the third striga extends, slightly waving in a gradual curve across the wing, being united posteriorly with the second, and the fourth reaches in a uniform character, half across the surface; between the origin of the three posterior strigae and the costa stand three minute white dots; the hinder wings are likewise marked
marked with four strigae, arranged in two pairs; the anterior pair, consisting of partially interrupted portions, crosses the middle of the wing, being suddenly curved inwards in the anal region, and bearing a faint intermediate streak on the disk; the posterior pair is more regularly transverse, and terminates abruptly at its contact with the marginal series; there are two anal ocelli, the largest, exterior to the caudal appendage, has in place of a pupil, an intensely black orbicular spot, and is surrounded by a very broad fulvous iris; the other occupies the anal appendage itself, and is surrounded by a delicate narrow white ring, between these is a roundish group of greenish silvery irrations, and along one-third of the inner margin passes a narrow fulvous streak, bordered with black and ornamented, as well as the inner edge of the anal appendage, with a faint metallic striga. The body is brown above, with an obscure greenish tint, and agrees underneath in colour with the wings; the antennæ are faintly banded with white; the tails are long, slender, black, with a white extremity.

In the markings of the underside this insect resembles the Lycane of the second section, particularly L. Celerio and Elpis; I have therefore placed it at the commencement of the genus; but in all essential points it it a true Thecla; the club of the antennæ, though not very prominent, is distinctly marked; the anal appendage is fully developed. A single female specimen is contained in our museum.

22. Thecla Malika. Ala postice maris subelongate, margine apicali levissimé sinuato, denti prominulo rotundato ad basin caude; supra antica nigra in certâ luce cyanæ rehuecens, postice saturatâ cyanæ margine externere et canali abdomen recipiendo fuscis; subtile alba in carulescentem vergentes, antice limbo postico apiceque ochraceo fuscis; singula litorâ latâ utrinque transversâ quadratâ obliquâ ante medium situâ, antice pone discum strigâ punctorum sex in medio interruptâ, postice strigâ subconformi pone discum ex maculis minutis subovatis in paribus inequalibus arcuatin per paginam ductâ, maculâ interiore insigniore transversâ; tunc serie macularum ad marginem posticum strigâ undulatâ interiore cinctâ et denique ocelli analis duo altero externo orbiculato nigro, in tenia flavâ subundulatâ marginali nidulante, altero in appendiculo anali sito fimbriâ albâ cincto, maculâque virescente-argenteo irrorata ocellis intermediis. (Exp. alar. 1 unc. 1 lin. maris.)

Hinder Wings, in the male narrow and somewhat lengthened, with a slight oblong excavation along the posterior margin, succeeded by an obtusely rounded tooth exterior of the caudal appendage; upper surface deep blackish brown, the anterior with a shade of dark blue from the base to the middle, which only appears in a certain light, the hinder wings covered with a rich cyanuous tint excepting the exterior and interior borders; the latter is gray, and constitutes a canal to receive the abdomen: under surface white with a bluish shade, and in the fore wings a yellowish brown, somewhat cupreous posterior margin, spreading along the tip; a short brown streak, transversely truncated at each end, stands a little before the disk on each of the wings; exterior to this the fore wings bear a transverse striga of six or seven oblong subconfluent dots, which is interrupted on the disk, the continuation from the medial area being somewhat posteriorly disposed; a similar series is continued, at a corresponding distance from the base, through the hinder wings, consisting of oval dots disposed in interrupted and somewhat unequal pairs, passing in an irregular curve across the wing, the terminal streak at the inner margin being transversely disposed, oblong and larger than the others; along the posterior margin passes a series of dots, decreasing successively in size and strength of tint from the outer apical angle towards the caudal appendage, being confined internally by an undulated brown band; of two ocellate spots in the
the anal region, the exterior one is bedded in an irregular rufous patch, which has an undulated interior margin, and tapers off at each extremity in a short striga; the interior one, situated on the anal appendage itself, is surrounded by a white fringe, the intermediate space being occupied by a greenish metallic spot, and the oblique portion of the anal angle is marked by a black stripe covered by a branch from the rufous band. The body is dark blackish brown, the eyes are bordered by a white streak; the antennae are black annulated with white and terminated by a grayish tip.

A single male specimen, in perfect preservation, is contained in our series: the narrowness and lengthened form of the hinder wings, with a slight posterior excavation, as represented in the description, obtains also in the two succeeding species.

23. **Thecla Nasaka.** *Ale antice maris supra nigrae in certa luce ad medium usque cyanoe refuscentes; postice subelongate margine apicali leviter sinuato: subtis cinereae limbo postico ochraceo-fusco subnitente in anticis saturatiore; singula brevi discoideae ex lituris duabus transversis, fasciis in superiori tenui fusco completae albo marginali et striga tenuissima flavâ illius medio innata, in anticus rectâ, in posticus interruptâ, in regione anteriore flexuosis ad marginem interni ductâ; appendiculo ocellisque analibus duobus nigris, exteriore orbiculato saturassimo maximo iride tenui rufa cincto, interiore oblongo punctis viridi-argenteis omnino tecto; striga denique irregulariter flexuosa, ortum ducens ab iride ocelli exterioris, oblique per medium ocelli interioris ad appendiculum analen descendit, et tunc ad angulum interiorem assurgit, linea nigra, extus viridi argentae irroratâ, limbatâ. (Exp. alar. 13 lin.)*

Wings of the male, above, agreeing in colour with those of the species last described; contour of the hinder wings likewise similar: underneath gray with pale ochraceous-brown posterior borders, spreading over the tip and more intensely coloured exteriorly; a narrow delicately striped band, consisting of two parallel brown strigae edged with white and an intermediate yellow thread, which is more distinct in the hinder wings, extends across the middle of both pair, being regular in the former and somewhat interrupted in the latter, until it reaches the anal region, where it passes, after an abrupt curve, irregularly flexuose to the inner margin; on the disk of each wing stands a short transverse double litura; the anal appendage is oblong, black on the surface, fringed with gray, and has adjoining to it, in the posterior margin, two ocellate spots of more than usual size; the exterior one presenting a regularly orbicular black spot in place of a pupil, and being bounded exteriorly by a narrow pale rufous ring, a more saturated narrow rufous arc forming the interior iris; this is continued in form of a narrow band in an oblique course through the middle of the adjoining spot to the anal appendage, from whence it rises again for a short distance along the extreme angle of the wing, being edged exteriorly by a black streak covered with greenish silvery irrorations: an obsolete series of three successively paler black lunules, of which the first is covered with a silvery crescent, stands exterior to the large ocellus in close contact with the posterior margin. The head and body are brown above. The thorax is covered with lax white hairs and the abdomen with shorter yellowish hairs underneath. The antennae are banded with white and tipt with rufous.

A single male specimen in a perfect state is contained in our series.

24. **Thecla Varuna.** *Ale suprà fusco-nigrantem, maris paginâ omni preter apicem cyanoe saturato feminae glaucino nitentes: subtis fusco dilito cupreo refuscentes et basin versus nitore purpureo...*
Wings above blackish brown, in the male with a saturated cyanous, in the female with an indigo blue or deep glaucous shining tint, which, in the fore wings, terminates obliquely at a small distance from the outer apical angle, but in the hinder pair covers the whole surface, to a very narrow posterior marginal thread; the anal appendage has a rufous ground, on which a black spot is bedded, and is surrounded by a whitish fringe: underneath brown with a purple shade on the basal portion and disk, and a slight cupreous gloss spread over the whole surface; a broad band of a more saturated tint than the ground colour, with a narrow exterior white edge, passes behind the middle of the fore wings, tending slightly to the inner apical angle; a similar band pervades, slightly undulating the hinder wings, changing its direction in the anal region by an abrupt curve, and tending in a flexuose manner to the middle of the inner margin; it has a narrow white edge on each side, which in the anal region becomes deeper and gradually changes to a bright sulphureous yellow; a very faint waving brown band passes exterior of these, parallel with the posterior margin through both pair, to the ocellus in the anal region, and on the disk of each pair stands a short longitudinally divided streak, resembling in character and colour the principal band, being in the hinder wings parallel with, and in contact with its middle portion; a very large ocellate spot, having a deep black regularly orbicular pupil, and a narrow rufous, almost completely circular iris, consisting at the inner edge of a more intensely coloured arch, stands exteriorly of the tail; the anal appendage is large oblong and transversely attached, intensely black and surrounded by a very delicate alternately white and blackish fringe; between it and the exterior ocellus is an obsolete black spot covered with minute white dots, which are continued over a short attenuated black streak along one-third of the inner margin: the antennae are banded and the tails are tipt with white; the body agrees in colour with the wings above, and the abdomen is yellow underneath.

We have three specimens, one male and two females, in our series: in the determination of the sexes, I was guided by the structure of the anterior feet, as they appear under the microscope. The male has a single incurvated terminal claw, the female has two minute curved claws, partly concealed by numerous villi. In the form of the posterior wings and in the habit this species resembles Thoeca Malika.

25. Thoeca Epicles. Ale suprâ fuscê, maris violaceo micantes; antice disco, postice limbo apicali aurantio-fulvis, in mare ex lunulis approximatis efformato, fimbriis alba nigro interruptâ antico-rum obsoléterum: subtûs annus latê sulphurea, limbo apicali sanguineo, posticarum lunulis albis intus marginato, maculisque cuneatis nigris in serie margini aea parâllelâ digestis; postice insuper puncto minuto nigro ante discum. (Exp. alar. lin. 13—15.)

Plate 1, fig. 3.
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Wings above blackish brown, with a violet reflexion in the male, which is of a deeper shade towards the base, the anterior bearing a large irregularly rounded rufous orange spot on the medial areola, the hinder being marked with a posterior border of the same colour; in the male the medial spot is smaller, consisting of a transverse cloud, and in the posterior pair the border is narrowed and undulated at the inner edge, being composed of confluent lunules; a narrow undulated black streak passes along the posterior margin; the fringe is white interrupted with black at the nervures, and in the fore wings evanescent towards the outer apical angle; the female has besides a short transverse black stigma before the disk of the fore wings, and in the hinder pair, near the middle, a faint orange dash: underneath the wings are bright sulphureous yellow; both pair have a sanguineous posterior border, which in the anterior wings is narrow and uniform, until it approaches the inner apical angle, where it is terminated by a short black streak edged on both sides with white; in the posterior wings it is broader and ornamented internally by a series of white arcs delicately edged on both sides with black; a series of small wedge-shaped black spots, bedded in an olong sub-marginal cloud of white irrorations, is arranged parallel with the black marginal thread, which is confined by the extreme fringe; a minute black dot stands between the disk and base, and two more obscure ones are distantly arranged along the inner margin; the fore wings have besides a very faint series of brown nitures, and the hinder pair of interrupted white streaks parallel with the post-marginal border; the anal appendage is terminated by a black spot and the tails have a white tip. The body is brown above and hoary underneath; the legs are alternately white and black; the antennae are black with delicate white bands to the commencement of the club.

This species is not unfrequent in the acclivities near the confines of the extensive medial plain of Java. Our museum contains eleven specimens, of which several are males. It was named and described by Messrs. Latreille and Godart in the Encyclopédie, but the figure has not previously been given. The anterior feet, of both sexes, have been carefully examined under the microscope, and confirm the details given in the generic description.

26. Thecla Jarbas. Ale supra maris sanguineo-fulvescentes, antice limbis exteriore et posteriori nervisque intermeditis, postice strigâ marginali tenuissimâ nigris; feminae saturatâ testaceae nitore cupreö, limis saturatioribus: subtüs canescentes nitore glaucino, singula nitore transversâ fuscâ albo-marginâtâ in disco, fasciâque insigni completâ pone medium fuscescente albo marginâtâ in posticis subândulatâ in regione anali saturatiori flexuosim ad marginem interiorem ductâ; ocello anali altero exteriore mediocrî orbiculato humili insigni aurantis intus inducto, alero maximo appendiculo anali imposito annulo albo in formâ fimbriâ circumscripto, plagâ subrotundâ migrantis ocellis intermedii albo irroratione, strigâ denique brevi obliquâ attenuâtâ versus marginis medium desinente. (Exp. alar. 1 unc. 5-7 lin.)


Papilio Jarbas. Donov. Ind. Ins. (with a figure.)

Wings above, in the male, brilliant reddish brown, inclining to scarlet, the anterior with broad blackish brown borders, more diffused towards the tip and the costal portion of the base, gradually diminishing in breadth towards the inner apical angle; medial nervures black and prominent;
nent; *hind wing* narrow and lengthened, the ground colour being uniformly diffused over the whole surface to a very narrow black marginal thread; *anal appendages* tipt externally with black, and surrounded, within the brown fringe, by a white thread extending also towards the tail; in the *female* the wings are saturated testaceous with a slight cupreous lustre, the colour being uniformly diffused over the surface, increasing in strength towards the margins, but without defined borders: *underneath* the surface is satin-gray, with a faint glaucous cast, varying in intensity of tint in different individuals; on the disk of each wing stands a short oblong double streak consisting of two parallel grayish brown lines with a medial and two lateral narrow white lines; between this and the posterior margin a more saturated brown band pervades both pair, being nearly regular until it reaches the anal region, where, after a sudden flexure, it stretches directly across towards the internal margin, being bordered with a white striga exteriorly in the anterior and on both sides in the posterior pair, the tint becoming more intense as the band approaches the anal region, having a bright silvery lustre in well preserved specimens; the extreme anal angle is ornamented with two regularly round deep black ocellate spots, the exterior one being bordered internally with a brilliant orange lunule, the interior one, somewhat larger in size, covering the anal appendage, and being surrounded by a delicate white ring ciliated posteriorly; the intermediate space is occupied by a roundish group of greenish silvery atoms, bedded on a blackish patch, which sends off obliquely a narrow streak towards the inner margin. The *body* is testaceous brown above, gray underneath, and covered on both sides with delicate silky hairs; the *antenna* are annulated, the club has a ferruginous tip, and the *tails* are black with a whitish extremity.

Our museum contains eleven specimens, of which five are females.

27. *Thecla Xenophon*. *Alæ suprà maris fulve in sanguineum vergentes, limbis omnibus fuscis, anticarum latissimis, limbo exteriore singularum ad medium cum angulo abrupto dilatato; foemine paginâ omni unicores brunnees: subtâs canescence-fusce nitore cupreo-ferrugineo lavate, literâ brevi transversâ simplici albicans fusce margiâtâ in disco, fasciâque insigni fuscescente completâ pone medium extus albo marginâtâ, in regione anâli satitatiore, hic urticâque strignâ argentoe nitente limbatâ et flexuosin ad marginem interiorem ductâ; ocellis analibus duobus, altero exteriori minore ovato transversa coco, in plagâ satitatiore fusce margiâtâ nidulante, absque iride distinctâ, altero appendiculâ anali ipso imposito maximo, dimidio exteriore strignâ albâ ad ocel- lum exteriorem productâ et denique fimbriâ nigrâ circumscripto; teniâ ocellis interiectâ fusci transversâ strignâque brevi obliquâ angulo anâli parallelât, albo irrurâtis. (Exp. alar. 1 unc. 2-3 lin.)

Plate iv. fig. 2, Larva; fig. 2, a. Chrysalis.


*Papilio Melampus*. Cram. pl. 362. fig. G. H. (the male.)

*Papilio Xenophon*. Donov. Ind. Ins. (with a figure.)


*Wings above*, in the male, deep fulvous inclining to red, the *anterior* having broad black borders on all the margins, the *posterior* very narrow black marginal threads exteriorly and posteriorly, and the nervures, in general, of the same colour; near the middle the exterior border of both pair has a sudden angular projection, from which the borders continue broader to the base; in the *female* the
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the surface of all the wings is uniformly deep brown; the anal region has in both sexes, within the extreme blackish boundary, a white thread, which encloses the anal appendage: underneath the wings are grayish brown with a slight cupreous reflexion; the disk of each pair is marked with a short oblique white streak, delicately bordered with brown, and intermediate between this and the posterior margin, a saturated reddish-brown striga passes the surface of both pair, being nearly straight in the anterior, and slightly interrupted in the hinder, until it approaches the anal region, where it makes a sudden curve, becomes flexuose, and terminates near the middle of the interior margin; it has a faint exterior edge of white, which, in the hinder pair, increases in intensity to the anal region, where it is of a brilliant satin white, and accompanied by a parallel interior striga of the same colour; the anal appendage is entirely covered by a round black spot; an oblong spot of the same colour stands exteriorly of the tail, in a marginal band of a more saturated tint than the ground colour, surrounded by a ferruginous ring, but without a distinct iris; a round group of white atoms occupies the space between this and the anal appendage; a brilliant white thread, commencing near the middle of the posterior margin, winds along the anal region and appendage, being edged by the extreme brown fringe: body covered with long delicate hairs, which are ferruginous brown above and grayish underneath; legs banded alternately white and black; tails black, tipt with white; eyes with a pronounced white edge posteriorly; antennae annulated with white, the club being tipt with brown.

It may be useful to bring into one point of view, the discriminating characters of the two last nearly allied species, and to annex a few remarks on their history. I have satisfactorily identified the species named Jarbus, by the comparison of a specimen in the Banksian cabinet, marked with a ticket in Fabricius' own hand-writing. The prior name of Jarbus, which the ticket bears, and which is also found in the Mantissa Insectorum, where the insect was first described, has been exchanged in the Entomologia Syst. Emendata, for the more classical name of Jarbas, which had been applied to another species. The specimen preserved in the Banksian cabinet is a male, from Siam, and accurately agrees with the individuals collected by me in Java. The species named Xenophon by Fabricius is distinctly figured by Cramer with the name of Melampus (Pl. 362. G.H.), and less accurately by Donovan in his Indian insects. The authors of the Encyclopédie, in the description of the Diurnal Lepidoptera (Hist. Nat. ix. 646), cite the figure of Cramer in illustration of Jarbas, but according to the preceding statements it should be referred to Xenophon. In all descriptions hitherto given which I have seen, one sex only is delineated: I am now enabled to illustrate both sexes, and by that means, through the comparison of numerous specimens of each species, exhibiting the modifications peculiar to the sexes, to remove the ambiguity remaining in systematic writers regarding these two species.

The peculiarities of Th. Jarbas are the following: it is at least one-fifth larger than Xenophon, the longitudinal extent is also proportionally greater, and the general outline of the surface of the expanded insect is more regularly triangular; the ground colour of the upper surface, in the male, inclines to fulvous, the exterior and posterior borders alone are brown, and the latter decreases gradually in breadth to the inner apical angle; the hinder wings are entirely without any black discoloration towards the base; in the female a saturated testaceous tint, with a slight cast of metallic yellow, extends uniformly over the surface, with a very gradual increase of strength towards the margins. Several minute peculiarities of the under surface in each species have been detailed in the preceding description; and here I have only to note the brilliant orange lunule over the exterior anal ocellus, which affords a permanent characteristic distinction to Jarbus. In Xenophon the anterior wings are slightly rounded at the external apical angle; the exterior margin has a very slight sinuosity, which is too strongly expressed in Cramer's figure, and the general contour is somewhat broader than
than in *Jarbas*; the ground colour of the upper surface is more saturated, with less of a fulvous shade; the anterior wings are enclosed with borders on all sides, the interior, as well as the exterior and posterior border is dark brown; the borders generally are broader, have a deeper tint, and the exterior costal projection is more prominent; the hinder wings have a large black spot in the middle of the exterior margin, extending to the base, and gradually diffusing itself over the nervures; on the under surface the exterior ocellus is comparatively small, obsolete, oblong, or irregularly defined, bedded in a circular ring of the marginal band, but never provided interiorly with a fulvous arch: the female has above an uniform deep blackish brown colour without any yellowish shade.

Both species were occasionally obtained by breeding, but I have only preserved the details of *Thecla Xenophon*. The larva feeds on *Schmiedelia racemosa*, and was found in considerable abundance. The larva and chrysalis are represented on the fourth plate: fig. 2; 2, a. The drawings of the larva in our collection, which were made at different periods of the age of the insect, vary in colour from yellow with a greenish cast, to dark ferruginous brown, and at one period the lateral bands are very obscure.

The Hon. Company’s Museum contains of *Thecla Jarbas* six male and five female specimens, and of *Thecla Xenophon* seven male and six female specimens, most of which were obtained by breeding.

28. *Thecla Nedymond*. *Ale superi maris nigrae, antice plagd cyanae mediamd maximad angulatd, versus marginem internem attenuatd, postice tinbo cyaneo apicd latissimo: subtus dimidiatim albe ac fusce limite intermedio recto, dimidia apicd anticarum ad medium strigd undulatd subdivise, plagd internodi ex rufo ferrugineo nitente saturatiori; postice in regione anali fascid brevi insigni transversd aterrimd notata, utrinque puncto minuto accessorio; angulo anali flavo, ferrugineo maculado, strigisque duabus obsolctis abbreviatis ejusdem coloris freto, maculisque insuper quatuor nigerrimis difformibus ornato, exterioe ocellari, medio duplici ex lunulis duabus oppositis, interioe brevi marginali; omnis nitidé argenteo irroratis. (Exp. alar. 1 unc. 4 lin.)

*Papilio Nedymond*. Cram. pl. 299. fig. E. F.

Posterior wings narrow and elongate, with a prominent notch in the anal region, whence they pass in a regular curve to the inner angle, bearing the tail in the middle, and the anal appendage, which is narrow, elongate, and contracted at the base, at the extreme point. **Upper surface** black; **anterior** pair with a deep cyaneous patch covering the whole discoidal area, broader anteriorly and gradually attenuated towards the interior margin; **hinder wings** with a broad posterior border of the same cyaneous tint, passing parallel with the margin over one-third of the entire surface, with a regularly defined inner edge: **underneath** the wings are white with a silvery gloss from the base to the middle and ferruginous brown posteriorly, the boundary between the basal and apical portions being regularly transverse, extending from the middle of the costa over the disk to the anal region; the apical portion is almost equally divided in the anterior wings by an undulating blackish striga, the inner portion being of a more saturated reddish brown tint; in the hinder pair the dark portion decreases in breadth towards the anal region, and terminates in a curve following the outline of the wings; a deep black streak, regularly transverse and tending to the inner margin, stands at a small distance from the anal curve, accompanied by a solitary dot at each extremity; the anal region is either entirely ferruginous or clouded with the brown ground colour of the apical portion of the wing, sending off two short evanescent ferruginous strigae, parallel with the margin; this region is likewise adorned with several irregularly defined black marks, covered with rich greenish metallic irrorations; the first of these is an ocellate spot, exterior of the tail near the marginal notch, bearing a broad shining lunule, next follow two short
opposite transverse streaks, tending to the anal appendage, and finally a short narrow attenuated line, parallel with the oblique portion of the anal angle; the posterior margin is confined by a black marginal thread, edged interiorly by a narrow white striga, which is more pronounced at the internal angle; the surface of the anal appendage is black, the tails are tipt with white; the body is black above, white underneath, the sides of the abdomen being annulated; the antennae are delicately banded, and the legs are marked with broad alternate rings of black and white.

29. Thecla Chitra. Alæ suprâ ferrugineo-fusce saturate subnitentes, antice immaculate, postice plagâ albâ terminali in regione anali maculis duabus nigris freâtâ, exterio re punctis albis irrorâtâ; subtûs antice fulve basi dilutiorâ, stigmate obliquo flavo in disco, pone hoc fasciâ arcuâtâ versus marginem interiorem saturatorem, ex lineolis confluentibus fuscis efformâtâ, denique strigâ marginali tenue fuscâ cano fimbriâtâ; postice alba, limbo apicali latissimo fulvo, versus regionem anali attenuato in strigam tenuem flexuosim usque ad marginem interiorem excurrentem; lînea obliquâ brevi flavicante tenuissimâ discedâtâ, tunc ad medium alae fasciâ obsoletâ ex punctis fuscis efformâtâ et in areola anali strigâ transversâ aterrimâ ad marginem interiorem tendente punctoque solitario nigro in medio ejusdem marginis; pone quam strigam maculâ quinque sardiniâ erectam in limine regionis analis dispositum, primâ ad angulum externum ortâ oblongâ, secundâ cuneâtâ intus strigâ viridi-argenteo irrorâtâ, tertiâ oblique striâtâ alba, quartâ et quintâ strigis intermedîis viridi-argenteis, quintâ denique attenuâtâ margini interiori approximâtâ et strigâ argenteo fere operâtâ. (Exp. alar. 1 unc. 5 lin.)

Plate I, fig. 5.

Wings agreeing in form, longitudinal extent, and in the notch and anal appendage of the hinder pair, with the preceding species; surface above dark brown, with a very slight ferruginous lustre, being paler on the disk and more saturated at the borders; in the hinder pair the anal region is covered by a broad white patch, confined posteriorly by a delicate black marginal thread and bearing two irregularly round black spots, the exterior one being dotted with white; the anal appendage bears a black dash, attenuated interiorly and marked laterally with a greenish silvery line; the extreme fringe of the hinder pair and the tails throughout being white: underneath the anterior wings are fulvous, the hinder silvery white, with a broad fulvous posterior border, attenuated towards the anal region, and continued by a narrow striga passing irregularly flexuose to the inner margin; the anterior wings are paler at the base, have an obscure yellowish litura on the disk, behind this a curved brown striga, increasing in breadth and intensity of tint towards the interior margin, and finally a black marginal thread; the hinder have a very delicate linear yellowish transverse streak on the disk, a medial band of brown dots, more saturated near the costa, and continued at the inner boundary of the anal areola by a very deep black broad regularly transverse streak, tending to the inner margin, and accompanied, a little above its termination, by a solitary black dot; the anal region is interiorly bounded by a series of diversified marks, of an intense black colour, disposed in a simple curve; it commences, near the outer apical angle, with an oblong black streak touching a wedge-shaped streak with a minute dash of green silvery irrorations at its inner extremity; this is followed by two large irregularly defined black spots which also appear on the upper surface, the exterior one being bordered at its inner margin by a crescent of silvery irrorations, the next divided into two portions
portions by the passage of the fulvous striga, bearing near the middle two silvery lunules opposed to each other; the series is terminated by a black streak, extending in contact with the fulvous band along the oblique portion of the inner margin, being nearly concealed by a corresponding streak of silvery irrorations; the anal appendage is black, and surrounded by a lax ciliated white fringe which is broader internally; the thorax and abdomen are brown above and white underneath, the latter being banded at the sides; the feet are white annulated with black; the antennæ are also delicately annulated, and the club has a broad white ring at its base and a ferruginous tip.

The resemblance, in general habit, in the outline of the wings and in the characteristic marks of the lower surface, between the two species last described, is so striking, as to cause an inquiry, whether, notwithstanding the palpable difference in colour, they might be no more than different sexes of the same species. A careful examination has however convinced me that this is not the case. In No. 28 the upper surface of the hinder wings is without the least indication of the ocellate spots in the anal region; in the lower surface the fascia, dividing the posterior portion of the fore wings, has a different direction, and in the hinder wings of the same species the dimidial portion has not any indication of a transverse discoidal striga, whereas No. 29 has a very distinct transverse line on the disk of the same wings. Our collection contains six specimens of Thecla Chitra and seven of Thecla Nedymond, which individually closely agree with the description given of them.

It is my duty to caution the reader against confounding our 28th species with the Polyommatus Nedymond of the authors of the Encyclopédie, and to state the reasons of my differing in this instance, from the learned authors of that work. Our 28th species, according to my judgment, is distinctly figured on the 299th plate of Cramer's work, with the name of Papilio Nedymond. This specific name is applied, in the Encyclopédie, to an analogous species, which is also described in this catalogue in the next subgenus in its proper section; and the authors of that work, perceiving some discrepancies between the latter species and Cramer's figure of the former, point them out in a note. These discrepancies relate chiefly to the anal appendage and the tails, and to the colours and markings of the anal region of the posterior wings underneath. Possessing specimens of both insects, I have been enabled clearly to identify Cramer's figure with our 28th species; and the detail of the peculiarities of the analogous species, will afford the means of a distinct discrimination.

** Antenne è basi usque ad apicem sensim incrassate, capitulo haud distincto; tarsi pedum anticorni in mare articulo solitario inermi obtusissimo, superficie verticali abrupte terminato; larva vere depressoscutata typum hujus generis exhibens in sectione prima vel tertia illustratur. (Tab. iv. fig. 3 and 4.)

Subgenus Amblypodia.

30. Amblypodia Narada. Ale supra maris nigricanti-fusce, plagâ medianâ maximâ cyanâ, vel secundam aspectum ex purpureo-fuscecente, ad basin usque extensâ, limbris apicalibus angustis; feminae dilutiores fuscescentes, plagâ medianâ auroco-purpurea ex argenteo nitente limbris latio-ribis cinctâ; subitus canescentes in mare saturatores, strigâ communis fusca oblivi ad angulo apicali anteriore regionem analen posticorum versus ductâ, extus colore saturatores limbatis, paginis omni hue strigae interiores, ad basin usque, fusco pulverulentâ; serie duplici intra marginali ex limbris obsoletis in posticis inacrescentibus nigro alboque pulverulentis, appendiculo anali intus, caudâque medio obscurâ albo notâs. (Exp. alar. 1 inc. 6 lin.)

Wings
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Plate I, fig. 8.

Wings above, in the **male**, blackish brown, with a cyaneous patch on both pair, corresponding in outline with the wings and covering the whole surface from the base to a regularly defined distance from the anterior and posterior margins, the tint varying in brilliancy according to the direction of the light; in the **female** the ground-colour is paler, the blue patch has a light azure tint with a purple reflexion, is less widely diffused, especially in the posterior pair, and the borders are proportionally broad; beneath the surface of the wings is brown in the male, with a glaucous reflexion and gray in the female, and the markings, although of the same character, are less prominent in the latter sex; a brown band, commencing at the outer apical angle of the fore wings, passes obliquely through both pair to the anal region of the hinder, where it forms a gradual curve and terminates at the middle of the inner margin, having the outer edge regularly defined and of a deeper tint, the inner gradually evanescent; the whole surface of the wing, from the band to the base, is speckled or irregularly mottled with blackish brown, and on each pair a very obscure stigma is scarcely perceptible; between this band and the posterior margin is a double series of obscure dotted lunules facing each other with their concavities, which in the hinder pair is more distinct, with gradually diverging lunules; the margins between the nervures, the inner series of lunules, the anal appendage at its inner edge, and the tails are clouded with whitish dots. The **body** is blackish above and brown or gray underneath: the **antennae** are almost uniformly brown to the tip, which is ferruginous.

Our museum contains one male and one female specimen, both in high state of preservation; the former is represented in the eighth figure of our first plate. It was obtained from the caterpillar by breeding: its similarity, in the larva and pupa states, to *Amb. Apidanus*, will be pointed out in the subsequent remarks on that species. Our insect exhibits, in the form of its hinder wings a marked peculiarity, on which a section of this subgenus is founded; the anal appendage being more lengthened than usual, and united with the tail at the extreme angle of the wing.

†† Caudis duabus distantibus exterioire minore, appendiculo anali abbreviato.

31. **Amblypodia Vivarna.** *Ala supra nigricanti-fusce, maris plagâ maximâ medianâ in anticis subquadratâ in posticis triangulâri, saturâe cyaneous, nitente, vel secundum aspectum obscuro purpureo relucânte; femîne pallidiore immaculâta: subîtis fusce glaucino lavate, singula pone medium striâtâ nigricante flexuosim arcuatâ, ex lunulis appositis in posticis luteo marginatis efformatâ; antice insuper, in area medianâ lituris duabus transversis parallelâs, punctis tribus obsoletis costalibus et denique serie punctorum marginii apicâli parallellâ, postice ante basin lunâtâ flavo marginâtâ una cum strîga obsoleta transversim ordinâtis, serique margini apicâli parallellâ ab angulo anteriore instar punctorum quatuor vel quinque in ordine digestis, sequentibus lunulis totidem flavo marginatis; pone hanc ad imum marginem maculae lunares obsoletiis flavo punctulâtis tres in ordine digesta, exterioire inter caudos mediad. (Exp. alar. 1 unc.—1 unc. 4 lin.)

Wings above, in the **male**, deep blackish-brown, the **anterior** with a large oblong brilliant cyanous patch, the **posterior** with a triangular one of the same colour, varying in both according to the direction of the light to obscure purple, being separated from the margins by a regularly defined border of the ground colour, which is broader at the inner margin of the hinder wings where the anal...
anal excavation has a grayish tint; in the female the whole surface is uniformly dark brown in both pair: underneath, alike in both sexes, brown with a glaucous tint, the surface being also marked with a few clouds inclining to a purple colour; an irregularly arched and flexuose streak, consisting of delicate lunules in close succession, passes through both pair; in the anterior pair it commences at the same distance from the costa and the inner margin, and after a short curve at each extremity forms a large arch in the middle area tending towards the posterior margin, in the hinder it winds over the surface in a serpentine course, and the lunules are individually edged externally with pale sulphureous yellow; the anterior wings have further two short transverse liturae in the middle area before the disk, three obsolete marginal dots near the medial portion of the costa, and finally a row of dots parallel with the posterior margin; the hinder wings have, near the base, a lunule edged with yellow and an obsolete waving litura disposed in succession as a striga, then, behind the curved medial striga, a series parallel with the posterior margin, commencing at the outer apical angle with four or five successive obsolete dots, followed by as many lunules edged with yellow and continued in a flexuose direction to the inner angle, and finally, at the anal termination of the wing, three semilunar marks, faintly dotted with yellow, extending from the outer tail to the inner edge of the anal appendage. The body is brown above and gray underneath, and the antennae have a brown tint to the ferruginous tip, the rings having a very faint grayish discoloration: the inner tail, which exceeds the other in length, is brown with a grayish tip.

This species differs from the former, as well as from the following, in the anal appendage and in the tails, and on the indications afforded by these, minor subdivisions have been proposed which remain to be confirmed by the Lepidoptera of other countries. Our specimens are four males and one female. As far as I have been able to observe, the anterior foot of the male is without claw and abruptly terminated by a vertical surface, agreeing with the character assigned to this subgenus.

+++ Caudis tribus, intermedio elongato, lateralibus minimis dentiformibus: appendiculō anali brevi.

32. Amblypodia Apidanus. Ala supera maris omnes pagina tota saturate purpurea, vel in certa luce cyanico resplendentes; limbus angustissimis nigris, posticarum in regione anali subundulatis, canali abdomen excipiente cinerascente; feminae fuscae plagis maximis cyanico vel atio aspectu thalassino-argenteo nitente, de basi ultra medium extensa, limitibus singulis marginibus paralleliis; subtilis fuscae canescente fasciatis, margaritaee, anticarum apicibus posticarum paginae feret tota nitore violaceo lavatis; singulae ad basin teniis costali saturatē punicea oblonga attenuata; antica fuscis tribus cinerascentibus, anteriori dimidiatō vel in forma stigmatic abrupte abbreviati, altera postea medio siti, tertia submarginali, his in area anali cinerascente evanescentibus; postica basi tota saturata fuscae, tunc plagis latissimis transversis cinerascentibus violaceo lavata insigni fuscae cano-limbati freta, in area costali simplici lati in mediana et anali autem ex seriebus duabus oppositis efformati, anteriore interrupta altera continuo fuscis posteriori nigrante confluenta et una cum illa in arcum per paginam totum ducita; denique intra margine posticum strigis nigrantibus flexuoso cano-limbati, maculisque duabus distantis suboccularibus nigris intus albo irrorationis rarius punctis paucis inauratis ornatis. (Exp. alar. 1 unc. 5—10 lin.)

Papilio Apidanus. Cram. pl. 137. fig. F. G. (the male.)
Papilio Dorimond. Stoll, Suppl. à Cram. pl. 37. fig. 4 and 4 D. (The female.)


Wings above, in the male, covered on the whole surface, excepting a very narrow posterior black marginal thread, with a saturated purple tint, reflecting in a certain light a cyaneous gloss, or transmitting in another aspect the blackish ground colour with a faint livid lustre; in the female the wings are blackish brown, with a brilliant cyaneous patch, adorned with a rich silvery gloss of a more intense tint at the base, and defined in both pair according to the outline of the wing, being separated from the margin by a broad regular border of the blackish-brown ground colour. Underneath the wings are alike in both sexes; the ground colour is deep brown with a reddish cast, and marked with broad cinereous slightly yellowish bands, and with occasional pearly spots; the tips of the fore wings and the whole surface of the hinder, being covered with a purple reflexion; the wings bear individually, at the base, near the costa, an oblique attenuated streak of a deep crimson shining tint; the anterior have further three grayish bands, of which the first is abruptly terminated before the disk, and often appears in the form of a short stigma, the two others are terminated in the anal region at a small distance from the inner margin; the exterior band is often undefined and spreads diffusely to the margin; in some specimens a few minute grayish dots stand near the base; in the posterior wings the basal portion is dark brown; a broad cinereous band, highly tinctured with purple, occupies the medial portion, bearing a compound brown band faintly bordered with gray, consisting in the costal area of a short simple brown patch to which two parallel bands are joined, the anterior being interrupted the posterior continued and united with a deep ferruginous blackish brown band which passes in an arch across the disk; exterior of this are a few obsolete dots near the posterior margin being defined internally by a narrow waving blackish striga; the dots towards the outer apical angle are very faint, but in the anal region are two pronounced black subocellate spots, the exterior being placed between the tails, and the other which is largest, at the extreme anal angle; they are generally speckled with white within and at the sides and in some cases adorned with a few silvery spots. The body is deep blackish brown or purple above, and ferruginous brown and hairy underneath; the antennae are nearly throughout ferruginous brown; the intermediate tail is narrowly tipt with gray. The tarsi of the male are covered above with small, and of the female with large scales, which appear pendulous under the lens.

Amblypodia Apidanus appears, agreeably to my observations, to be the most abundant species of this section. Our museum contains at least sixteen individuals, three-fourths of which are females. Most of these were obtained while I was carrying on my observations on the metamorphosis of Javanese Lepidoptera. The larva feeds on the leaves of several species of Eugenia and Calyptranthes. It occurred not unfrequently, and was from time to time undergoing its change in my breeding cages. Observing some difference in the individuals, which I ascribed to the difference of age, the subject was more than once delineated; the forms under which I observed it are represented in the third and fourth figures of the fourth plate. On arranging my materials for publication, and examining them with more minuteness than was practicable during a very extensive series of inquiries, I discovered our 30th species, Amblypodia Narada, mixed with a large number of individuals of Amb. Apidanus, obtained by breeding, and designated by the same mark. It now was manifest to me, that what I had considered, in the larva state, a mere variety of form, owing to the age of the individual, was in reality a different species, modified in the perfect insect, in the character of the wings and affording the type of a separate section in the subgenus. But, although this fact was apparent, yet the general agreement of the two larvae, as well as the respective chrysalides, confirmed
confirmed the character of *depressoscutata* given to it in the generic description, in conformity with the denomination originally employed in the Wiener Verzeichnis. I feel it my duty to make this candid statement in this place, as it is not in my power to indicate, with entire certainty, which of the two larvae No. 3 and No. 4 of my fourth plate, belongs to *Amb. Narada*, and which to *Amb. Apidanus*; the indication I have given in the explanation of the fourth plate is provisional, and requires a final confirmation.

33. **Amphitopia Centaurus.** *Aile superæ maris purpureæ nitore in chalybem vergente vel in alici aspectu violaceo fusco relucens, simili et posticam canali interiori abdomen excitante nigriis; feminæ nigrantes, singula plagæ amplissimæ cyanæ fulgidiæ ad basin aruginosum irrorati posticè sensim pallidiores, limbes exterioribus antecavariam laterius: subÆ antice canescentes apicibus submargaritaceæ, plagæ basali maximæ exs costam atingentes intus appendiculatu oblongo obliquo attenuato cano-cincto stipitati; fasciæ medianæ cano limbatæ ad marginem interiorem fractæ et fasciæ posticæ intus evanescentis saturetæ fusce; in area mediana maculis duabus obscuris in seriebus duabus ordinae.

*Papilio P. R. Centaurus.* Fab. Mant. Ins. tom. 2. p. 68. No. 646. 
*Hospitatus in Museo Domini Banks, Societati Linneanae Londinensi munificè donato, nomine a Fabricio ipso inscripto.*


*Wings above,* in the *male,* bright purple inclining to azure, with a rich cyaneous gloss uniformly spread over the surface assuming according to the light a livid cast varying to brown, surrounded along all the margins by a narrow black thread, which is somewhat broader in the anal region; inner marginal canal for enclosing the abdomen gray with a silky down; in the *female* blackish brown with a large medial cyaneous patch, circumscribed in both pairs according to the outline of the wing, broader along the exterior margin and gradually decreasing in intensity of tint towards the posterior borders; the medial area covered with a rich refugence, the base with a radiating verdigris cloud varying according to the direction of the light: *underneath,* ground colour of the *fore wings* cinereous, with a pearly somewhat violaceous cloud towards the outer apical angle; the basal portion, spreading near the costa towards the middle of the wing, but evanescent in the anal area with an oblong dentiform obliquely diverging process edged with gray, within which are two very obsolete brown spots; then a defined medial fascia with undulated marginal gray strigæ abruptly infracted in the anal area, and a broad posterior border evanescent internally, and in most individuals divided by a faint transverse grayish striga, dark ferruginous brown; two dark oval spots, commencing at the base and successively larger, encircled with pearly silvery rings, adorn the medial area, and are followed, on the disk, by a short broad band edged with shining silvery lines; *hinder wings* with a pearly ground colour, minutely dotted with gray, and covered on the disk with a rich violet reflexion, marked at the base with two transverse rows of oval or irregularly oblong spots of ferruginous brown, edged with gray, and increasing in size as they recede from the base; a very broad band of the same brown tint, edged
edged with undulated gray strigae, consisting in the middle and anal areolets of two branches, of which the anterior is interrupted, crosses the middle of the wing in form of an arch; and a very broad border verging to ferruginous passes along the posterior margin, being edged internally by a waving line of a deeper tint; inner extremity of the margin, in the anal region, ornamented with three oblong semi-ovate intensely black spots disposed at the extreme angle in a uniform connected series, covered with rich golden irrorations inclining to green; thorax above in both sexes, irrorated with a verdigris shade; abdomen brown; both these covered underneath with a tawny down; antennæ nearly uniformly brown; intermediate tail with a dull grayish tip, lateral tails minute, obscure.

I have been enabled to identify this species with the *Hesperia Centaurus* of Fabricius, by the examination of a specimen contained in the Banksian Museum, bearing a ticket in his own handwriting. It is closely allied to the following, but its prominent distinctions are the pure purple tint of the upper surface of the male, and the brilliant, pearly rings, enclosing the spots in the medial area of the fore wings of both sexes, underneath. Besides other peculiarities which appear in the detailed descriptions, the markings are more pronounced in our specimens of *Centaurus*, and the tints are more diversified. Our collection contains three male and six female specimens of this very beautiful species which, as far as I have observed, has not yet been figured.

34. *Amblyodia Helius.* *Alce supra maris saturatæ azureæ letissimē argenteo-reflucentes,* tenui ad appendiculum analem albi, finamì canaliculæ abdominali posticarum canis: subitis canescencti-fuscae, maculis fasciisque saturatioribus, lineis sordidæ albis absque ullo splendore limbatis; antice in area mediana maculis tribus, in serie ordinatis, internore minore, externo latiore, fasciam brevem mentientem, et in area anali, versus basin, maculae duæ obliquæ dispositæ; pone discum fasciæ ex maculis brevibus confluentibus, in medio fracti, marginem interiorem non attingente, et denique fasciæ apicali obsoletæ cano-strigosæ; postice ad basin maculis circiter sex in serie duplici dispositis, tunc fasciæ dimidiati submaculari arcuatæ margine interiore terminati; pone discum fasciæ maculari completæ arcuatæ paginam percurrentem, et denique fasciæ obsoletæ margini postico parallelo lineis undulatæ obscuræ canis limbati; in regione anali macula tres nigerrimæ exterioribus oblongo-lunaribus intimâ ad angulum sitâ subrotundâ, omnibus strigis undulatâ viridi-aureâ intius limbatis. (Exp. alar. 1 unc. 10 lin.)

*Papilio Helius.* Cram. pl. 201. fig. F.G.


The peculiarities of this species, in the upper surface, are, a most brilliant azure tint, extending uniformly over the whole, and reflecting a rich silvery lustre, similar to that of *Morpho Adonis*, but of a more saturated hue; in the lower surface the spots and bands are edged with delicate whitish rings and lines, but without any pearly lustre or metallic gloss. The disposition and the character of the bands is also peculiar in several points: they consist of confluent fragments, bordered by strongly undulated strigæ, appearing macular, and the medial band of the hinder wings is simple.

My account of this species is unsatisfactory, since we have but a single male specimen in our collection: it is however in high perfection, and exhibits, unchanged, the rich brilliancy of the upper surface. The figure of Cramer represents the marginal lines which confine the bands as they exist in our specimen.

35. *Amblyodia Eumolhus.* *Alce supra maris smaragdine ex aureo latissimē micantes; antice limbo apicali angusto atro margini prorsus parallelo, post'ce limis omnibus latioribus atris; fœminœ*
Wings above, in the male, deep emerald-green, with a rich golden refulgence, spreading over the surface to a deep black border, which is narrow and regularly defined in the fore wings, broader and indented in the hinder wings; in the female black, the greenish golden lustre being limited, in the fore-wings to a medial patch extending to the base, and in the hinder to a triangular spot occupying the basal areolet: underneath brown, in some individuals inclining to gray; fore wings, with a series of three successively larger dark brown spots in the medial area surrounded with pearly shining rings, the first near the base being smallest, the exterior one on the disk constituting a short broad band bordered with white undulated marginal lines; the contiguous portion of the anal area marked with two oblong tapering obliquely diverging spots of the same colour; behind the disk follows a broad dark-brown complete fascia, broken in the middle, with white undulated edges, and finally, parallel with the margin, a more obscure band with paler grayish undulations; hinder wings with six or seven oval or irregularly round dark brown spots, narrowly edged with gray, disposed in two successive interrupted rows near the base; next, a more prominent transverse band, of the same colour, simple and broad in the costal area, subdivided into two parallel branches, in the medial and anal area; behind this an obsolete band parallel with the margin, faintly undulated with gray, and succeeded in the anal region by three deep black oblong lunular spots, arranged in regular succession close to the margin, the interior one being somewhat larger and marked with an intensely black subocellate spot, the whole being confined along the inner edge by a waving emerald green band richly covered with irrorations of a golden lustre. The body above agrees in colour with the adjoining portion of the wings, and underneath is covered with a light gray down. The antennae are brown to the middle and ferruginous towards the extremity. The intermediate tail is slender, tipt with gray, and the lateral tails are very minute.

Cramer gives a distinct figure of the male of this species. Our collection contains one male and two female specimens; by these materials I have been enabled to point out clearly the difference between Eumolpus and Helus, and to remove the doubt, expressed by the authors of the Encyclopédie, regarding their distinctness as species.
36. Amblypodia Sugeriva. Aile suprâ maris atra, antice nervo costali extimo flavicante ad apicem striolis tribus obliquis tenuissimâ signato, postice fasciâ apicali latâ cyanâ in saturâtâ thalassïnâ variâbili, angulâtâ exteriorem non attingente; margine interior ad basin fusco ultra medium flavicante, areolâ anali caudâque fulvis, humidi duabus nigris, alterâ exteriori denti marginali approximâtâ, alterâ in appendiculâ anali siti: sublès ochraceo-fusce fasciis maculisque saturatoribus bruneis, ex flavido tenuissimâ limbatâ; antice macula basali, stigmate brevi in disco, fasciisque tribus latissimis, primâ anteriore dimidiatâ in area anali abruptâ, alterâ pone discum completâ angulum analêm versus attenuâtâ margine postico insigniter undulâtâ, tertiâ angustiore marginali subarcuatâ ex maculis subconfuentibus efformâtâ; postice maculae ovatae ad basin, costa approximâtâ, tunc fasciâ maculâri insigni irregulariter arcuatâ, maculis juxta costam subconfuentibus versus marginem interiorem per paria subdistantia ordinâtis; pone discum fasciâ variegâtâ ex humidi fuscis intorsûm cano adnatis conflatâ, paginâm arcuatûm percurrente parte dimidiatâ costali simplici anali vero duplîci; tunc strîgâ tenui completâ fusâ subflexuosa, et denique serie maculârum oblongârum fuscarum, margini paralêlæ, maculis duabus in regione anali saturatoribus subocellaribus atris, ad basin caude utrinque dispositis, maculae oblongae atrae in appendiculâ anali, seorsim strĭgâ brevi viridi-aureâ irrorâtâ. (Exp. alar. 1 unc. 7 lin.—Long. ab apice costali ad append. anal. 1 unc. 3 lin:—ab apice costali ad extrem. caude 1 unc. 10 lin.)

Extent of wing proportionally great in the longitudinal direction of the body; hinder wings narrow, gradually tapering to the anal extremity, with a single marginal notch near the base of the tail. Wings above, in the male, black, the anterior with the extreme costal nerve yellowish and marked near the apex with three delicate oblique black lines; the posterior with a broad cyanous marginal band varying according to the aspect to saturated sea-green, terminating at a small distance from the outer apical angle; inner margin brown from the base to the middle, then yellowish gray and in the anal region orange, which colour extends to the extremity of the tail; there are two black lunules in the anal region, one exterior near the marginal notch, one on the anal appendage: underneath ochraceous brown with spots and bands of a more saturated colour bordered throughout with a delicate yellowish line; anterior pair bearing an oblong spot near the base, a short transverse stigma on the disk and three broad transverse bands; the first, at a small distance from the base, dimidial, abruptly terminated at the anal areola, the next a little beyond the disk, extending across the whole surface attenuated and tending slightly to the inner apical angle, with an irregularly waving posterior margin; the third somewhat narrower than the former consists of adjoining spots and extends in a gentle curve over the exterior portion of the wing; the hinder wings have an oval spot near the base in contact with the costa, then a broad irregularly interrupted band passing in an arch across the surface, composed near the costa of subconfluent maculae, but on the disk and near the inner margin of several successive pairs of distinct oval spots; behind the disk a series of brown arcs margined with yellow forms a curved band which extends over the whole surface being simple near the exterior margin, but consisting of a double series of parallel arcs more deeply tinctured as they approach the inner margin; beyond this follows a delicate brown thread which extends flexuose across the entire wing, forming an inner boundary to a series of oblong spots close to and parallel with the margin, which is continued in the anal region by two deep black ocelli,
one at each side of the base of the tail, an oblong spot of the same colour marking the anal appendage, all these being adorned individually, at their internal edge, by a delicate streak of greenish silvery irrorations. Body black above covered with a white down underneath: *antennæ*, black with a ferruginous tip, sprinkled with a beautiful snow-white powder underneath to the base of the club, gradually increasing in intensity of tint exteriorly. *Tails* uniformly bright orange, with a medial nerve of the same colour and a delicate fringe at the sides and tip of a paler tint.

This remarkable species affords the type of a peculiar subdivision. It has a single tail of excessive length, while the anal appendage is narrow and linear. In these particulars as well as in the outline of the wings it approaches the individuals of the first subgenus, the true *Thecle*; the club of its *antennæ* is also slightly attenuated at the extremities, but in its markings it greatly resembles the species arranged in the third subdivision of *Amblypodia*, particularly *Apidamus* and *Eumolphus*. Some uncertainty therefore remains as to its true situation in the series and many intermediate forms are wanting to complete a regular succession of affinities.

+++ Caudis duabus mediocribus subequalibus, dente marginali conspicuo: appendiculo anali rotundato producto.

37. **Amblypodia Vulcanus**. *Ale suprâ fusce cano fimbriate maris violacea subnitentes; antice striolis quatuor abbreviatis inaequalibus undulatis fulvis, postice plagâ anali fulvâ ocellis duobus atris notâtâ: interiore lanula argentea subjecto: subtûs sulphureâ, fasciis latis fulvis, seorsim striis argentâs mediana interruptâ ornatis ligneâque migrâ subundulâtâ limbatis; fascie anticarum sex, duobus apicalibus completis margini parallelis exteriore inornâtâ, tertâ subdimidiatâ, quartâ completâ in area costalâ striis abbreviâtâ auctâ, indeque extorrisim bifîddâ, quintâ subdimidiatâ in area anali abruptâ, sextâ basilaris obliqua minimâ; postice fasciis sex, duobus marginalibus, quarum exteriores interruptâ, secundâ completâ arcuatim ad marginem interiorem productâ, tertiâ dimidiatâ cum secunda ad medium juncta, quartâ et quintâ completis in regione anali subito inflexis, sextâ angustâ basilaris corporis contigû; regione anali fulvâ punctis duobus occellâribus aternâs fretâ. (Exp. alar. 1 unc. 3 lin.)*

*Papilio Etoûs*. Cram. pl. 208. fig. E.F.

Hospitatur in Museo Dom. Banks.

38. **Amblypodia Lohita**. *Ale suprâ sordidâ fusce canescenti-nebulose, cano fimbriate, maris saturatores; antice e basi ad medium, postice pagina totâ violaceo-micante; femineae fasciis paginae inferioris obsolètè striose; postice insuper plagâ anali triangulâri fulvâ, lanula duabus atris, intas argenteo-irrorâtes frite; lanula interiore magiore subcœcellâri, appendiculo ipso impossâ: subtûs flavâ, fasciis fulvis, in mare panicellis, margini simplicibus, singulis striis mediana argenterâs continuâ vel parum interruptâ ornatis; antice fasciis septem, duobus marginalibus completis, exteriores inornâtis, tertiâ et quartâ abbreviâtis pone discum confluentibus, quintâ completâ angulum analem versus tendente, sextâ dimidiatâ tertiâ fuscâ area anali dilutioris terminâtâ, seorsim basali minimâ; posticoe fasciis sex, duobus exterioribus margini parallelis, secundâ completâ versus marginem interiorem
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riorem arcuatum productâ, tertió dimidiatâ, quartó et quintó completis in regione anali
abruptê inflexis, sextó basilari abbreviâtâ; regione anali laté fulvâ, punctis ocellâribus
duobus aterris frettâ, exteriore caudis intermedio oblongo taniâ argenteâ intus actuâ, intimo
majoire appendiciculo ipso imposito anguliâ strígâ argenteâ brevi intérieure ornato. (Exp. alar.
1 unc. 3 lin.)

39. AMBLYPODIA SYAMA. Alæ suprà fusca canescens-nebulose fasciis pagina inferioris obsolete
notate, angulo anali posticarum fulvo punctis duobus aterris fretis, exteriore maximo subo-
cellâri, singulis intús striolâ argenteâ auctis; maris areâ anali anticâ argenteâ auctis : subtus sulphureâ,
fasciis nigris striolâ argenteâ intermedii continuis vel interruptis; exteriore fascis sex, duobus marginalibus completis, exteriore inornatâ,
tertió dimidiatâ quâ quartâ brevissimâ parallelâ, quintâ completâ angulâm analem versus
tendente dimidio posteriori dilatâre et denique attenuato, sextâ dimidiatâ taniâm fuscam
areâ analis attingente, liturâ insuper basali longitudinâlì atrâ; postice fascis quattuor,
marginalibus parallellis, exteriore abbreviâtâ interruptâ, secundâ arcuâtum trans regionem
analem marginem intérieurem petente, tertió dimidiatâ, quartó completâ in regione anali
abruptê inflexê et ad marginem internâm longê protendâ, maculis insuper tribus in serie intérieure
ordinatis singulis puncto centrali argenteâ fretis et denique maculâ basali triangulâri corpori
contingû; regione anali laté fulvâ punctis duobus aterris ocellâribus intérieure orbiculari
maximo appendiciculo ipso imposito, singulis intús striolâ argenteâ auctis. (Exp. alar.
13 lin.)

Hospitatur in Mus. dom. Banks.

Two of the species last enumerated were united by Fabricius under the name of Vulcanus, as appears
from the Banksian Cabinet, now preserved at the Linnean Society, where our thirty-ninth species is marked
with a ticket in Fabricius' own writing, while the detailed description of H. R. Vulcanus, in the Entom.
System. Emmend. iii. p. 264 evidently depicts our thirty-seventh species, which has therefore a prior right
to that name. This species is also contained in the Banksian Cabinet.

The materials in the collection at the India-house, from Java and Continental India, have enabled me
clearly to discriminate three species, and I have endeavoured to exhibit the most prominent characters
each. This discrimination does not rest on the examination of a single specimen, or of one sex only : of
No. 37, Amblypodia Vulcanus, we have four specimens: of No. 38, Amb. Lohita, three, two males and
one female; and of No. 39, Amb. Syama, two specimens, one of each sex; most of these are in a perfect
state of preservation. I shall concisely sketch the peculiarities of each.

AMBLYPODIA VULCANUS, No. 37, is prominently marked above, in the fore wings of both sexes, by
four short unequal waving striole of a fulvous colour: underneath, in the fore wings the third band
is short, tending towards and touching the second band; the fourth is complete and has, at the
costal extremity, a short accessory band, whence it appears to be bifid exteriorly; in the hinder
wings the third band is dimidial and loosely united, behind the base, with the second; but the
most striking distinctive character of this species is a deep black marginal thread, which passes in
an undulated course along the edge of all the broader bands.

AMBLYPODIA LOHITA, No. 38, has the upper surface brown, slightly variegated with gray, espe-
"
bands, comparatively with No. 37, are narrow, and wholly without any black marginal thread; the bands in the fore wings are seven in number, besides an obsolete angular basal spot, the third and fourth are abbreviated converging approximate or confluent behind the disk; in the hinder wings the third is dimidial regularly transverse and without any tendency to the second marginal band: in the character of the fourth and fifth band this species agrees with the former while both differ decidedly from the following.

**Amblypodia Syama**, No. 39, agrees in the upper surface with our last species: underneath the wings are sulphureous-yellow and marked with bands of a black colour, while the intermediate argentine strigae are partially interrupted; in the fore wings the third and fourth bands are parallel; the third is dimidial deeply indented on each side in the middle; the fourth is greatly abbreviated; the fifth is complete, somewhat distended in the middle and then tapering to a point, having a general tendency to the inner apical angle; at the base is a short longitudinal litura; the hinder wings have four bands; the third, from the posterior margin, is dimidial, the fourth forms a sudden curve in the anal region and then ascends along the whole course of the inner margin, until it terminates at the thorax; interior of this are three oblong marks, individually ornamented with a silvery dot, disposed in a regularly transverse series, and finally at the base, a triangular spot, touching the thorax.

In all these species the wings of the male are adorned with a violet varying tint, spreading over the whole surface of the hinder pair, but confined to the anal area of the fore wings. Underneath the transverse bands are marked in all, with a continued or interrupted medial silvery striga. The two posterior bands are always regularly parallel with the margin. In the distribution of the other bands, the third and fourth, in the fore wings, present in each species a decided difference: and the minor modifications peculiar to each are detailed in the Latin description. The abdomen, in all these species, is marked with distinct yellow bands; the tails are long, slender, orange at their union with the anal angle, brown or black in the middle, and white at the extremity. The brown antennae have a ferruginous tip, and very minute, close, dusky bands on their filiform portion. These three species further resemble each other in the orange-coloured termination of the anal angle, which is separated above from the adjoining portion of the surface, by a regularly oblique boundary, but is gradually diffused, and of a brighter tint underneath, while both surfaces are marked with two ocellate spots of intense black, the interior being round and lunular, slightly diversified in the different species, and adorned by a short streak or arc of silvery irrorations, the exterior one, between the tails, oblong, transverse, and surmounted at the inner edge, by a large oblong shining group of metallic dots.

40. **Amblypodia Rochana.** 

 Ala suprâ maris nigre, antice plagâ oblongâ, postice plagâ ambitui ales subconformi ad basin profundi en-marginati secundum aspectum cyanâ vel saturatâ thalas-sinita nicante: subtius badie, postice saturatoriis in puniceum vergentes, aed anatii anticarum dilatiore posticarum canâ; antice ad basin lineâ attenuatâ—, tunc in disco stigmate brevi—, pore, medium fuscâ arcuatâ ex maculis minutis cuneatis intermediâ sagittata intorsum longissime cus-pidatâ et intius marginem striâ lunularum—, postice arcu humerali plagâque maximâ basilari irregulariter oblongâ, costam versus dilatiore rotundatâ, extius profundi situâ intius appendiculâ linearì ad angulum rectum divergentem acuidâ—, tunc striâg strigâ totam poignam arcuatin exercitente ad costam e maculâ oblongâ orinamâ, in disco notis cuneatis efformâtâ et versus marginem interniorem bifidâ—, postico denique striâ dupliciti maculas oblongas includente omnibus nitide-niveis:
Wings above, in the male, black, the anterior with an oblong patch, the hinder with a large area nearly circumscribed according to the outline of the wing, deeply notched at the base and separated by a narrow curved border from the posterior margin, deep cyanous blue, or reflecting in a different light a beautiful sea-green lustre: underneath dark reddish brown, the hinder covered with a shining bay reflexion; the anal area paler and clouded, in the fore wings, uniformly gray, and defined in the form of a regular arch in the hinder pair; the surface of both pairs bearing diversified marks of a beautiful shining silvery white, arranged in the following manner: in the fore wings a narrow white line, attenuated towards the base, extends near the inner boundary of the costal area about one-third of the wing; on the disk stands a very short transverse stigma; behind this follows a curved interrupted band of five wedge-shaped dots, of which the intermediate one is greatly lengthened and sagittiform, and, near the posterior margin, a gently curved striga of minute arcs: the hinder wings have a delicate dash at the inner costal curve, then a very large oblong longitudinally disposed spot with irregularly defined edges, narrow at its basal extremity, enlarged into a rounded head as it approaches the middle of the costal margin, the exterior edge being deeply sinuated and the interior produced into a lengthened process stretching at right angles to the disk; behind this an irregular striga extending in an arch across the entire surface at the anterior boundary of the gray anal area, commencing near the middle of the costa with a large irregular dot, continued over the disk by four or five wedge-shaped marks, and then passing in two slightly diverging acutely flexuose lines to the inner margin; lastly near the hinder margin a double striga, the interior one undulated, enclosing a few oblong reddish brown marks terminating near the external tail, all of a shining white tint, being succeeded by a large oblong transverse patch of a deep black colour and a stripe closely dotted with white, both which are regularly parallel with the posterior margin, while the anal appendage itself is covered by a large circular black spot, and two marks of the same colour, edged with white, are disposed along the oblique portion of the inner margin. The body is brown above and hoary underneath; the antennæ are uniformly brown to a short ferruginous tip; the black tails have a delicate medial line and a white extremity.

A single male specimen is contained in our museum.
formam V montiente illis intermedid nigris, in serie marginem interiorem petente ocellisque parallelê digestis. (Exp. alar. 1 unc. 7 lin.)


Wings above, in the female, pure brown, the anterior immaculate, the hinder with a broad oblong posterior band of a pale azure tint, varying according to the aspect to pale sea-green with a silvery reflexion, bearing at the exterior edge three oblong black marks, of which the interior one has the deepest tint, the whole being bordered externally by a white marginal line, separated from the fringe of the same colour by an intermediate black thread which is flexuose in the anal region; the anal appendage bears a lunule covered with silvery sea-green resplendent dots: underneath the basal dimidial portion of the surface is satin-white, the apical portion brown with a slight violet shade; the latter is further subdivided, in the anterior wings, by an intermediate abbreviated undulated white striga, the posterior half being paler and the whole of the inner apical angle gray; in the hinder wings the marginal portion is white and marked with four obsolete gray spots, fainter as they recede from the outer apical angle; the anal region is white and bears two very large, strongly pronounced, intensely black circular ocellate spots, with an intermediate round group of greenish silvery irrorations; the exterior ocellus bears internally a broad orange lunule spreading in a radiant manner towards the disk; the second ocellus occupies the anal appendage itself and is entirely surrounded by a narrow annular iris of a pale green silvery tint; parallel with the ocelli three delicate black marks are arranged in a series, the intermediate one forming an angular mark resembling the letter V, the lateral ones constituting two short oblique striales; a very faint oblique bifid streak stretches from the inner ocellus towards the anal angle. The body is brown above and white underneath; the antennae are brown with a ferruginous tip and marked underneath with delicate bands alternately white and brown; the tails are white very delicately fringed at the sides, and marked longitudinally with a distinct black medial line.

This highly beautiful species, originally described in the Encyclopédie, has not, as yet, to my knowledge been figured in any work. I have already stated my reasons for applying the name of Nedymond, by which it is designated in the Encyclopédie, to our 28th species (see above, p. 98); and I have, in the preceding description, directed the attention of the reader to the markings on the under-surface, which discriminate this species, by printing them in italics. Besides these particulars which relate only to colour and painting, our insect differs likewise in form and belongs to a different section of this subgenus. The anal appendage is rounded and the wings are provided with two tails.

42. Amblypodia Longinus. Alle supra maris cyanee argenteo-micantes, nitore saturato variabili, limbis apiceque largissimo anticarum nigris; femine sordide alba basi tantum azureo irrorate, antice limbis fuscis, postico margine anteriore discoque fusco-nebulosis, seriebus insuper duabus punctorum, margini apicali parallelis, strigâque extâ summed nigris, maculis duabus arce analis oblongis insignioribus: substantia sericeo-grisea serie communì postico ex arcibus minutis nigris in anticis continuâ in posticis subflexuosâ, notâ insigniori angulari in regione anali plagae ocellulis intermedia oppositâ; antico insuper striae obsoleti margini parâllellâ ex maculis oblongis canis albido limbatis, postico strigâ conformi geminae et deinâ in regione anali ocellis duobus atrae exteriore minore orbiculâri in plagae maxima fulcia intus subquadrae nudâ.
LEPIDOPTERA.

Plate I, fig. 7.

Wings above, in the male, cyaneous blue, with a saturated silvery reflexion changing according to the light to sea-green, the borders throughout and the exterior dimidial portion of the fore wings, defined by a boundary extending obliquely across the disk, being black, the inner excavated margin of the hinder wings gray; in the female sordid white, all the wings with pale azure silvery irrorations confined to the base, fore wings with broad brown borders, hinder pair faintly clouded with brown and paler anterior margin, bearing two rows of minute black spots parallel with the posterior margin and an extreme black thread; the two interior spots of the exterior series being larger more pronounced and succeeded by an obsolete brown lunule on the anal appendage; fringe throughout gray: underneath satin-gray with a common striga of minute black arcs, beyond the middle, regular and disposed in close contact in the fore wings flexnose and farther removed from the margin in the hinder pair, interrupted by a more conspicuous arc or angular mark in the curve at the anal region, opposed to the medial space between the tails; the fore wings have besides between the principal striga and the margin a regular series of very obsolete oblong grayish spots faintly margined with white; this is continued in the hinder wings by a double series of the same kind with more distinct spots and followed in the anal region by two intensely black ocellate spots, the exterior one near the marginal notch being small regularly circular and bedded in a large fulvous patch with an abruptly transverse interior edge, the other ocellus occupying the anal appendage, being oblong-transverse, bordered internally by a fulvous lunule and ornamented externally by a narrow metallic streak; between these is a round group of delicate silvery irrorations on a hoary ground. The tails are black with white edges and tips; the antennæ brown with a ferruginous tip, and marked on one side with delicate transverse grayish dots. The body is covered with a bluish sea-green down above and with delicate white hairs underneath.

Amblypodia Longinus deviates both in the larva and imago states from the species described in the third section, which I consider as typical in this subgenus. The larva is considerably distended anteriorly, excavated at the sides, contracted behind and transversely swelled at the segments (see Plate iv. fig. 5). In the imago state the peculiarity chiefly exhibits itself in the antennæ, which are abruptly terminated by a short point (see Plate iv. fig. 5, c). In the character of the anal appendages and of the tails, the various species arranged in this section generally agree, with the exception of Amblypodia Etolus; but nothing is as yet known of their metamorphosis; and the investigation of the larva forms of this subgenus, which is so much diversified in the imago state, deserves the closest attention of Entomologists in foreign countries.

Amblypodia Longinus is not unfrequent, and I obtained six male and five female specimens chiefly by breeding: the larva feeds on a species of Loranthus, which grows parasitically in great abundance on the Mango and other fruit trees surrounding the villages of the natives. The discoidal litura, represented in the figures, does not appear in all our specimens.

43. Amblypodia Erylus. Alæ supra fuscæ maris saturatores, salvis lineis marginali singularum maculâque discoidè anticaeum nigrimentibus, cyanoe mutabilire saturato micantes; femineae canescenti-fusuco nebuloae, fasciâ saturatior communem pone discum, in posticis flexuosâ et in regione anali plagâ abbreviâtâ
Wings above brown, in the male more saturated and covered with a very rich cyanous blue lustre which disappears almost entirely in a certain direction to the light; a narrow border in both wings and a large discoidal spot in the anterior pair always preserve the original ground colour inclining to blackish; in the female the tint is without blue lustre and slightly clouded with grayish brown, a saturated brown band passes a little behind the disk through both pair, being flexuose in the hinder and accompanied in the anal region by a subdimidial arched band consisting of a series of confluent broad white spots; behind this a very faint narrow band passes in a curve across the whole wing, and close to the margin is a somewhat more distinct row of spots originating at a small distance from the outer apical angle enclosed by two delicate white striae being continued in the anal region by two very large deep black ocelli, encircled by white rings, while a fainter ferruginous spot covers the anal appendage; the latter also appears in the male and a brilliant white marginal thread winds in both sexes along the anal region, exterior to which is a black marginal thread while the wings are uniformly terminated by a grayish fringe: underneath the wings are silvery-gray with a faint glaucous cast; on the disk of each pair stands a short double reddish-yellow litura; behind this follows a more distinct and saturated common band of the same colour, narrowly edged on both sides with brilliant snow-white lines, nearly straight with an oblique outward tendency in the fore wings but slightly interrupted and flexuose in the hinder wings; then an angular mark resembling the letter V standing at the curve in the anal region, from which a detached line passes obliquely to the inner margin, having a fainter line parallel to it at the extreme boundary; between this band and the extreme margin passes a connected series of obsolete brown marks which is complete in the fore wings and subdimidial in the hinder pair, being followed in the anal region by two very large black circular ocelli separated by an intermediate oblong group of white dots, which are crowded more distinct and brilliant in an attenuated transverse streak adjoining the interior ocellus; the latter occupies the anal appendage itself and is bordered internally by a narrow white are while the exterior ocellus is surrounded by a very large orange lunule; posteriorly both ocelli are bordered by a brilliant white waving marginal line exterior to which is a black thread and gray fringe. Body brown above, hoary underneath: abdomen marked laterally with white bands. Antenne brown with a ferruginous tip, and delicate white bands along the filiform basal portion. Eyes covered with a delicate ferruginous down and edged posteriorly with white. Legs covered with a white down and marked with black bands.

This species occurred occasionally in my breeding-cages; as the larva was not delineated I conclude that it is nearly allied in form and appearance to the other larvæ of this genus. Our specimens are one male and two females. The authors of the Encyclopédie have given the first description of this species.
44. **Amblypodia Jangala.** *Ale suprà brunnea immaculata, posticae margine interiore abdomen excaviente sericeo-cano, appendiculo anali lunulé ferrugineo freto strigáque postico albd et denique tìmbri nigrd cincto: subítus ferrugineo-fuscescentes nitore glauco in purpureum vertente lavate, areáe anali anticarum dilutiore; singulae liturá discolé discolé geminá interruptá abbreviáta; pone discum strigá communem ex lineolis brevis rectis contiguis, in anticis strictá dimidiatá in posticis ad marginem anteriorum fractum unum undulatam et in regione anali interrupte creporisque canescéntibus limbátam; maculis ocellaribus duabus orbiculatis maximis saturaté fusces ferrugineo-nitentibus, plágis elbo-irroratá distinctis, postico strigá nivei margini parallelé circumscriptis; notis quatuor viridi-aureo nitentibus in serie ocellis interiore digestis, primá marginis medio parallela, secundá arcum formante super ocellum exteriorum, tertiá angulari ocellis intermedia, quartá attenuatá ab ocello interiore ad marginis medium feré prolata. (Exp. alar. 1 unc. 2½ lin.)

Wings above uniformly dark brown, with a very faint varying purple reflexion; inner margin of the hinder pair silky gray; anal appendage bearing a saturated ferruginous lunule and confined exteriorly by a white arc, behind which is a delicate black line gradually evanescent towards the marginal notch; a gray fringe surrounds the margins of all the wings: underneath ferruginous brown with a glaucous gloss changing to purple according to the direction of the light; anal area of the forewings ferruginous gray; disk of all the wings marked with a short double brownish litura; between this and the posterior margin follows a delicate but distinct brown striga with a purple gloss, consisting of minute linear fragments which in the fore wings are regular and contiguous, forming a slightly curved striga commencing at a small distance from the costa and terminating at the anal area; in the hinder pair this striga passes over the whole surface, being broken at the costa, slightly waving in the middle region, and then passing, after several interruptions, to the inner margin, being marked in the anal region exteriorly with several whitish angular clouds; the whole of the anal portion of the wing is covered with a saturated ferruginous band continued obliquely to the anterior apical angle, regularly defined interiorly, and bearing exteriorly at the margin two very large circular spots, ferruginous-brown, varying to purple and separated by a group of white atoms: the inner edge is ornamented with four delicate emerald-green marks with a golden lustre, the first near the middle of the margin being short and linear, the second forming a semicircular arc above the exterior ocellus, the third opposed to the intermediate group of atoms being angular or resembling the letter V, the fourth forming a minute lunule over the interior ocellus from which it is continued one-third of the length of the inner margin; exteriorly the anal region is bordered by a delicate grayish thread, beyond which a brownish fringe extends along the wings. Body brown above, pale ferruginous gray underneath, antennae brown with numerous white bands on one side, tails black tipt with white.

A single female specimen is contained in our collection.

45. **Amblypodia Vidura.** *Ale suprà maris latè azureae argenteo-relucentis nitore mutabili dilutae thalassina; antice penicillo insigni sericeo-albo inflexo punctoque nigro in imo disco adpresso, marginibus apiceque largé atris limite interiore arcuate circumscriptis, posticae margine apicali lunuléque in appendiculo anali nigris cano-fimbriatis, canali abdomen recipiente albo villis sericeis canescéntibus vestito: subítis canescénti-fusce nitore palidi argenteo micantes, fasciád
Plate I, fig. 6; 6, a.

Wings above, in the male, bright azure with a snowy refulgence spread as a delicate white powder over the surface, while the ground colour assumes in a different aspect a pale sea-green cast; the fore wings are ornamented with a delicate white silky brush-like appendage, reflected and closely applied to a blackish spot on the middle of the disk; the margins are black, gradually increasing in breadth to the tip, being separated by a curved boundary from the azure ground; in the hinder wings the posterior border is marked with a black thread extending to the anal appendage, which bears besides a black lunule; the extreme fringe is gray; in the exterior margin is a hemispherical denudated silvery spot, corresponding with a delicate brush of lengthened hairs in the under side of the fore wings; the interior border is covered with a delicate whitish down, slightly fringed with gray; underneath the wings are grayish brown with a very faint livid lustre; a strongly pronounced broad snow-white band passes in a straight line through the middle of both pair to the anal region of the hinder wings, where it becomes narrower, and after several minute curves, stretches obliquely to the interior margin; between this and the hinder margin is a very delicate blackish thread composed of small linear fragments, in close contact, arranged in a regular curve across the fore wings, slightly interrupted and curved in the hinder, forming in the anal region a delicate edge along the medial white band; the hinder wings are further marked within the posterior margin with a row of oblong spots of the ground colour enclosed within a double series of white lunules, and continued in the anal region by two very large circular black ocellate spots, the exterior one being surmounted by a large oblong patch of an bright orange tint abruptly terminated at its contact with the black striga, the interior one occupying the anal appendage, being covered internally with a white arc sending off a short oblique line along the inner margin; the space between the ocelli is gray, irregularly irrorated with black and marked in the middle by an indistinct white lunule, a brilliant white thread passes along the entire anal region, exterior to which is a continued black marginal thread, and finally a grayish fringe. Body with a varying bluish or sea-green tint above, covered with a yellowish down underneath; antennae brown, with a closely catenulated lateral white line extending to the origin of the club, the tip of which is ferruginous; tails black with a white tip and grayish fringe.

This species, as appears from a drawing in the possession of General Hardwicke, is also found on the continent of India. In Java it is comparatively rare, a single male specimen was brought to England.
46. **Amblypodia Etolus.** *Aea suprà antica nigra basi carulescente, postica carulescentes angulo apicali exteriusque punctisque duobus analibus distantibus nigris: subtius antica testaceo-fusce salea basi obliquè definita carulescente, strigis tribus saturatoriibus, anteriore abbreviatemente geminâ discomalis, alterâ mediana insigni ad aream analam abruptè terminatâ, tertìa obsoleta ferè completâ margini apicali paralleâ antice evanescentë; postica pallide carulescentes puncta insigni aterrimo albo cincto versus basin ad costam sito; tunc pone discum strigâ tenui interruptâ ex lineolis ferrugineis et in regione analis ex notis nigris flexuoso-undulatis lineâque internae obliquae ad marginem internem tendente; intra marginem posticum denique ex parte et singulis ex strigis ferrugineis junctâ angulum exteriusque diffusius indeterminatis versus medium attenuatis, strigâ interiore in regione anali puncto oblongo negro definitâ, exterius vero in cæsum regione maculis duabus maximis ocellariis aterrimis albo irroratâ intermedio efformatâ; litorâ insuper marginali attenuatâ introrsum cuspidatâ punctis viridi-argentèis irroratâ ocello interiori adnotatâ; margini extremita linea atrâ undulatâ albo-fimbriatâ limbatâ. (Exp. alar. lin. 13.)


**Anterior wings** above black with a bluish base, **hinder wings** light blue and silvery, with an oblong abbreviated black patch at the outer apical angle and two circular distant subocellate black spots in the anal region: **underneath** greatest portion of the surface of the **fore wings** testaceous brown, separated by an oblique boundary from the bluish base; surface marked with a short double litura on the disk, a distinct abbreviated medial and a very faint almost complete posterior band, all these marks having a more saturated brown tint than the ground; **hinder wings** pale blue, with a whitish lustre, bearing near the base, in contact with the costa, a very distinct black dot enclosed in a faint white ring; then, behind the disk, a very delicate striga of interrupted ferruginous lineole followed in the anal region by an irregularly flexuose black line passing obliquely to the inner margin; posterior margin marked with a double series consisting of two parallel ferruginous strigæ, clouded and diffuse at the outer apical angle, attenuated towards the middle of the wing, the interior of these strigæ terminating by a distinct oblong dot between the ocellate spots, the exterior bearing a small black dot at the middle of the margin, after which follow in the same line two very large intensely black round ocellate spots with an intermediate group of white irrorations, which are more thickly disposed and covered with a greenish silvery cast on a black wedge-shaped dash at the edge of the inner ocellus, having its point directed towards the disk. **Body** brown above, sparingly clothed with bluish hairs, whitish and downy underneath; **antennæ** brown, delicately annulated with white to the club, which is terminated by a ferruginous tip; **legs** banded alternately white and black.

Fabricius alone, as far as I have observed, has hitherto given a description of this species; it is therefore important to confirm his very concise indication by the more detailed description of a specimen in excellent preservation. Being peculiar in its sectional character, it is accordingly placed at the end of the series described; and it remains to be determined whether it be really a distinct type, or whether the hiatus remaining may be supplied by intermediate forms. Several peculiarities in the form, painting, and external habit of this species lead us to those insects which will be described in the next genus.
Genus MYRINA. *Fab. Latr.*

**Character.**

**Larva**

The larva and chrysalis as yet unknown. In the perfect insect: Antennae of moderate length increasing gradually in thickness to a cylindrical club which tapers to a short point; basal portion with an obsolete internal groove transversely crenulated, while the extreme joints are marked with minute bristles. Palpi straight, compressed, slender; measuring one-third at least the length of the antennae: basal joint short, closely applied to the head, covered by a tuft of delicate silky hairs; second joint long, oblong, projecting far beyond the head, gradually tending upwards, closely covered underneath with silky hairs uniformly pointing downwards; third joint slender, oblong, obtuse, pointing forward, covered with a very minute, short down. Proboscis broad, longer than the palpi, with short bristles at the extremity.

**Chrysalis**

Head short, obtuse. Eyes not prominent, even, naked. Body short, acute. Wings: anterior oblong, obtuse; posterior, attenuated towards the anal region, abruptly truncated, with a short anal appendage and straight tails following the direction of the wings. Feet: anterior of the male, with tarsi consisting of a single, subcylindrical, attenuated, obtuse joint, covered with minute scales, arranged in alternate rings of different colours, among which, underneath, stiff bristles are also scattered; the extremity being blunt, incurved, without claws, but provided with several stiff bristles: of the female, with tarsi consisting of five joints, the first thick and long, the rest gradually attenuated to the terminal one, which has two minute lateral claws, an appendage on each side, and an intermediate pulvillus, all which are concealed by a transverse series of hairs; the general hairy covering, and the bristles underneath, are similar to those of the males: the mid legs and hind legs, in both sexes are also provided with two minute claws, resembling in their appendages, pulvilli, and general structure the anterior feet of the female.

The illustrations given of this genus on the second plate of the first part, fig. 5, a; 5, b; 5, c; 5, d; 5, e; are by no means complete; several points, particularly those relating to the diversified structure...
structure of the tarsi in the sexes, were ascertained since the arrangement of the plates of the first part for the engraver. These will be given in a future number.

The peculiarities of this genus and its relation to the genus next in order, will be pointed out after the description of that genus.

* Alis posticis caudis tribus, intermedii longissimis, interiore mediocris, exteriore brevi denti marginali adhaerente.

47. Myrina Ravindra. Alae antice fusce immaculatae, maris saturatiores nigricantes; postice in mare cyanenum pulverulentum vel in certa luce thalassino variabiles micantes, relictio margine exteriore lato, postico angusto lineari, albo-fimbriato fuscis; in femina fusca, limbo angusto postico saturatore; utroque sexu maculis tribus atriis in regione anali in serie marginali digestis, interiore appendiculo anali imposito, in femina lunulis diffusis pallide cerulibus inductis, striis denti tenui migrati albo-fimbriati marginem posticum legentes; subtilis antica canescens-fusca areo anali ad basin dilutius, maculis fascis equales saturatioribus tenuissimi albo marginati; macula interiore longitudinali in area mediana per tertiam partem paginae extensa, altera transversa costam non attingente ante discum sita, tertiit discoidaliter brevissimis; tunc pone discum fasciis ex strophiis duabus diversis indolis conjunctis efformatis, exteriore simplici interiori dilatatae, albo-limbatae; intra marginem denique serie simplici complete recti lineolarum obsoletarum; postico albae atro insigniter maculatae; maculis duabus basiliaris elongatis parallelo costam non attingentibus, intersitio vero puncto oblongo versus costam tendente freto; tunc in medio serie trium macularum lati interruptae duabus nemanpe exterioribus conformibus utrique quadratis tertii discodialiter latiori; pone discum serie costam non attingente ex maculis quattuor vel quinque difformibus interiori elongatius insigniore versus discum anguli instar inflexus ad marginem interiorum bifidius; pone hanc strii tenui conpletae ex lunulis stratolisque in arcum subflexuosum per paginam totam ductae et denique serie maculari postico intra marginem, maculis exterioribus tribus linearibus obsoletis interioribus quinque difformibus aterrimis seriatis analibus exterioribus oblongis, proximis hinc inde interioribus semilinaribus maximis altera in appendiculo anali altera in sinu marginis ad dentem exteriorem sita, quinta denique obsoletiore intermedii, singulis secundum ordinem, striis lunulis et plagis oblongis viridi-argentoe irroratis inductis. (Exp. alar. lin. 11—17.)

Plate I, fig. 11; 11, a.

Anterior wings above brown, more saturated in the male, posterior wings covered in the male with a cyanenum pulverulentum glossy tint, varying according to the light to sea-green, increasing in strength to the hinder margin; a broad exterior and a narrow posterior border are brown, the latter having a snow-white fringe which also extends to the paler inner margin; in the female these wings are brown, with the exception of a few faint diffuse bluish lunules covering three semilunar black spots, which in this sex, as well as in the male, are arranged along the posterior boundary of the anal region: underneath the fore wings are grayish brown, with a whitish anal area, and marked with dark brown spots and bands enclosed by very delicate white edges; the first spot stands at the base in a longitudinal direction; before this are two transverse spots, the outer being very minute and occupying the disk; behind this follows a complete band, which is simple and slender exteriorly, but broad and margined in its interior dimidial portion; within the margin an obsolete series of interrupted lineolar fragments passes over the whole surface;
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surface; the hinder wings are white, and marked on the base and disk with oblong black spots, in
the following manner: the two interior near the base are lengthened parallel with each other,
and bearing at their costal termination an intermediate black spot; near the middle, three
oblong spots abruptly terminated at each end form a widely interrupted series, behind which
follows another broken row of four or five spots, not extending to the costa, of which the
interior one is lengthened, hooked at its discoidal extremity, and bifid at the inner margin;
beyond this a delicate black striga composed of lunules and minute lines passes in an arch over
the whole surface; the posterior margin itself is lined with a macular series, commencing with
three exterior spots minute and simple, extending from the costa to the middle, being followed
in the anal region by five diversified intensely black spots, one at each extremity being simple
and oblong, the next adjoining internally on each side semilunar and large; of these, one is
disposed on the anal appendage, the other at the marginal angle in the sinus, while the medial
space is occupied by an oblong spot placed at a small distance from the margin; they are indi-
vividly covered with greenish silvery atoms, corresponding in form to the spots to which they
are applied, and forming by their union an undulate band stretching along the inner confines of
the anal region. Body brown above, hoary underneath. Antennae brown with a ferruginous
tip, delicately crenulated with white along the lateral groove. Legs white, with distant black
bands on the tibiae, and numerous bands on the tarsi. Tails white, with a medial black striga.

This species greatly resembles Hesperia R. Lisias of Fabricius, of which a specimen is preserved in the
Banksian cabinet. A clear distinguishing character is however afforded by the fore wings, which are
uniformly immaculate in both sexes. Our collection contains numerous male and female specimens. In
the painting of the lower surface this species still preserves an affinity to the individuals of Amblypodia, but
in essential characters it rigidly agrees with Myrina, as above defined.

** Alis posticis caudis duabus denteque marginali prominulo; caudé exteriore longissimade,
interiore medio cri.

48. MYRINA JAFRA. Ala supra fusce maris cupreo saturato in violaceum vergente micantes;
antice immaculate, postice regione anali atré, in mare maculis duabus niveis freta, unà
marginali lunari insigni, altera interiori oblonga obsoleta; in femina fasciá nivé insigni ex
maculis tribus oblongis connatis efformátæ lunulóque insuper maximá ad marginem posticum:
subita alba nitore diluito concescenti lavata, antice limbro exteriore et postico striáto
tenissimâ discoidali strigóque completà posticá nudulátæ ex lineolis interruptis efformató ferrugineis,
strigá denique maculari intra marginem obsoletissimae ejusdem coloris; postice pone discum strigá
tenissimâ completâ nigra, e costa ad medium usque ex lunulis interruptis in regione anali vero
ex notis arcuatis conflatâs; tunc strigá tenue interruptâ completâ in arcum per totam paginam
ductâ; postice denique intra marginem serie macularum; maculis quatuor exterioribus oblongis
obsoletis, interioribus quinque inaequalibus aterrimis, extremis nempe linearibus, proximis maximi-
missimobus subocellariis, altera in sinu marginali altera in appendiculo anali dispositâ,
quinta oblonga transversá in spatio intermedio siti, singulis in ordine lineolis extremis lunulis
plogóque intermediâ viridi-argenteis irrortatis. (Exp. alar. 1 unc. 5-7 lin.)

Plate II, fig. 5; 5, a.


Wings
Wings above blackish brown, the male covered with a beautiful saturated cupreous gloss slightly varying to purple; the anterior pair immaculate in both sexes, the posterior with the anal extremity black separated by a regularly transverse boundary, in the male marked with two white spots, one large, lunulate and marginal, the other oblong, narrow, and exactly opposed to the exterior one at the inner boundary of the anal region; in the female a broad snow-white band separates the anal from the middle region: it consists of three oblong spots, of which the exterior one is narrow and passes obliquely towards the margin; a very large lunule of the same colour occupies at the margin the extreme space between the tails: underneath the wings are white with a grayish shade covered with a slight lustre; the anterior pair have the exterior and posterior borders ferruginous, the tint being faint and diffuse interiorly but more intense in contact with the margin; a very delicate discoidal line, a complete undulated striga behind the disk composed of interrupted lineolæ, and a very obsolete row of spots within the posterior margin are of the same colour; the hinder wings have beyond the disk a very delicate black striga composed at the costal extremity of interrupted lunules, and in the anal region of arcuated marks disposed in regular succession; then follows a delicate interrupted streak passing in a curve over the entire surface of the wing, and exteriorly of this, just within the margin in the costal extremity, a macular series of four oblong obsolete brown spots followed by five diversified spots of an intense black tint pervading the anal region; the extreme ones on each side being linear, the next adjoining interiorly large, angular, subcellularoted, one of them being situated in the marginal series near the notch, the other on the anal appendage; the fifth, which is oblong and somewhat removed from the margin, occupies the medial space of the anal region; these spots are all covered along their inner edge by marks corresponding to their individual form of greenish silvery atoms, forming by their union an undulated streak passing along the inner boundary of the anal region. The body above and underneath agrees in colour with the adjoining portion of the wings; the legs are white with distant white bands, but the tarsi are closely banded; the antennæ are brown, with a faint grayish crenulation along the inner groove; the eyes are edged with white, and the palpi underneath are also white; the tails are white with a black medial streak. Besides the distinctions already enumerated, the male is marked above by a short white line at the extreme inner margin near the base, indicating the interior attachment of a small brush-like appendage.

We have two male and four female specimens of this species, which was first made public in the Encyclopédie. The authors of that work were acquainted with one sex only, which, agreeably to the preceding details, was the female; the distinguishing characters of the male are now, for the first time, given.

Genus LOXURA.

**Myrina.** MM. Latr. et Godt.

**Character.** *Larva Chrysalis* \{ haecenus latent.\)

*Imago:* Antennæ breves, strictæ, sensim incassatae, capitulo apice acuto basin versus haud manifestè distincto, sulco interiore longitudinali obsoletè crenulato, articulis exterioribus setis minutis cinctis.

*Palpi* longissimi, stricti, compressi, graciles, parum divergentes, antennarum longitudinalis dimidiam partem æquantes; articulo basilari brevi capitì adnato, villis brevibus serieis obsecto; articulo secundo
secundo longissimo, oblongo, latere superiore subarcuato, ultra basin a capite soluto, obliquè
assurgente, villis tenevrimis vestito; articulo tertio mediocrì, attenuato, subfalcato, vix nutante,
villus brevissimis obsoito.

Proboscis dilatatus, palpis longior, apice latere altero setis crebris brevibus munito.

Caput breviusculum subrotundatum. Oculi mediocres, subprominuli, nudi. Corpus breve, atte-
nuatum, compressum. Ale antice oblongae, obtuse, margine costali dilatato-arcuato; postice
subelongate, angulum analem versus sensim attenuata, appendicuio anali lateraliter producto,
angulari, truncato; caudà solitarì obliquè divergente. Pedes antici tarsis pro sexu diversis; maris
articulo solitario, elongato, cylindrico, obtuso, medio sulco obsoleto, transverso, exarato,
squamis minutis obsecto, subùs setis quoque adsperso; setis insuper nonnullis terminali-
bus erectis non exsertis munito; foeminæ quinque-articulatis, articulo basilari subelongato,
reliquis attenuatis, squamulis minutis vestitis, subùs parum setosis, articulo extimo unguibus
dobus minutis, appendiculis utrinque lateraliibus et pulvillo intermedio prædito, serie
denique terminali apicem occultante: pedes medii et postici in utroque sexu unguibus duobus
minimis, appendiculis lateraliibus et pulvillo intermedio muniti.

The two genera last enumerated, Myrina and Lozura, agree in various particulars; we find them
accordingly united in the Encyclopédie, while the modifications of form which they exhibit, afford indica-
tions merely of sectional divisions, the type of one being Myrina Jafra, and of the other Myrina
Atymnus. I originally adopted this view, as appears from the explanation of the plates of the first part;
but the examinations which I instituted in the prosecution of my inquiry, and the analysis of numerous
specimens of each species, have convinced me that they are, according to our present views, perfectly
distinct. I therefore proceed now to the detail of the most distinguishing peculiarities of Lozura. The
Antenne are short, strict, more evidently incrassated towards the point than in Myrina, and provided at the
terminal joints with more distinct bristles. The Palpi are proportionally much longer, being full half the
length of the antenne; the second and third joints differ both in form and direction, as appears from the
peculiarities which are minutely exhibited in the description and plate. The head is comparatively narrow,
and the eyes prominent. The hinder wings in Lozura are lengthened, and regularly attenuated to a
narrow anal extremity; the anal appendage is angular, with a lateral projection and an abrupt posterior
termination: these wings are provided with a single tail, which passes off in an oblique direction. In the
essential structure of the tarsi of both sexes, Lozura agrees with Myrina; these organs are however more
elongate in the former, especially in the male, and uniformly covered with minute scales, in which the
annular disposition is obscure. But the most important character required for the illustration of these
genera is still unknown; I mean that exhibited by the metamorphosis; but as Lozura Atymnus is found in
the Hon. Company's botanic garden at Calcutta, I hope to be enabled to add this illustration at a future
period.

Loxura is a very remarkable genus. It stands in our series near the confines of the Vermiform and
Chilognathiform stirpes, and the indications which it affords in point of affinity, are highly instructive. Its
relation to the genus, which in our catalogue immediately precedes it, appears, from the statements above
made, and from the illustrations given in our second plate; and although the antennae and palpi vary in
proportional length, they are very similar in form.

I shall now direct the reader to those characters in Loxura which indicate the approach of the Chilognath-
iform stirpes. The external habit resembles Colias; the colour is spread over the surface in the same
manner, and varies but little in the different sexes; the margins are similar, and the metallic irrorations
existing in Myrina are no longer observed; the markings underneath likewise are simple. The anterior
tarsi of the males, although essentially agreeing with Myrina in character, are more lengthened. The
form of the hinder wings and the direction of the tail indicates an affinity to Gonepteryx; but this resemblance being founded entirely on an artificial character deserves not much notice.

There is, however, a considerable hiatus in the series which I am not enabled at present to supply; and it remains for future inquiry to determine whether the subjects already accumulated in other collections will fill up the deficiency existing in ours, or whether the completion of the series depends on future discoveries.

This genus is illustrated in the second plate; fig. 6; 6, a; 6, b; 6, c; 6, d; 6, e.

49. Loxura Atymnus. Alae supra fulve, colore saturatiore testé aurantio, vel dilutior in flavescentem vergente; antice limbis externis et apicalibus saturate fusci, coloribus limite intermedio arcuato conjunctis, apice dilutior; postice limbo apicali pallidis interi ex dilutior evanescente, vel paginâ totâ dilutior flavescens, margine internus producenture canescente villosus, appendiculâ anâi albo-pulverulento: subtis ochraceo-flavicantes, colore opaco pulverulento equaliter diffuso, striis quattuor fuscescentibus parallelis, duas interioribus obsoleteissimis, tertâ communi ex lunulis contiguous conflatâ, quattâ intra-marginali obsoleteissimâ sepulcric inspiculâ; appendiculâ anâi punctis tribus tribus lunulares con fluentibus fuscesce albo-pulverulentis ino diffusiore. (Exp. alar. 1 unc. 2—6 lin.)

Plate II., fig. 6; 6, a.


Hospitatur in Museo Domini Banks.

Wings above in both sexes fulvous, the intensity of the tint varying in different individuals, from florid but not glossy orange to pale saffron yellow; anterior with the exterior and posterior borders blackish-brown, the intermediate boundary being regular and passing in an arch from the middle of the costa to the inner apical angle, leaving the greatest breadth at the tip; posterior with a narrower and paler apical border, whose inner edge is slightly dentate and gradually diffused in the ground colour of the surface, or entirely covered with a diluted yellowish tint; inner margin dirty grayish and downy, lengthened in the direction of the anal appendage, which is irrorated with dusky white: underneath covered with a yellow ochraceous pulverulent tint which is uniformly diffused over the whole surface; marked with four brownish parallel strigae, the two interior ones being very obsolete and apparent only in fresh and well-conditioned specimens, the third extending over the middle of both pairs is the most distinct and composed of darkish lunules in close succession, the fourth just within the margin is faint and interrupted; the transverse anal extremity is marked with a brownish streak consisting of three confluent spots, which are covered along the margin with whitish irrorations, the inner spot being diffused over the rounded extremity of the anal appendage. The body is brownish above with a slight admixture of yellow; the thorax bears delicate silky hairs; underneath these parts are covered with a short close whitish down. The antennae are brown: tails pale fulvous with an obscure brownish margin and a whitish tip.

This species is described by Fabricius, who indicates Siam as the native country, and the specimen from which his description was probably made is still preserved in the Banksian Cabinet. Cramer has given a figure in which the most distinguishing organs, the palpi, are wanting. Donovan's figure does not give a
correct idea of the form. It was therefore desirable to represent both surfaces with more accuracy, an object I trust our figure has sufficiently attained. This insect is by no means unfrequent in Java. Our collection contains at least eighteen specimens. The female, according to my observation, can be distinguished only by the structure of the anterior tarsi; in colour and painting it differs not perceptibly from the male.

50. Loxura Pita. **Alae supra fœminea fulva, colore saturato in aurantium vergente, antica limbis exteriore et apicali intus arcuatim circumscriptis, postice limbis apicalis fuscâque obliquâ ab angulo apicali anteriore ad medium marginis interioris tendente ex maculis quatuor subcontiguis eformatae saturatae fuscis; margine interiore abdomen excipiante cano, appendiculo anali albo notato; subbas ochraceo-flavicantes, colore pulverulento opaco equaliter paginam totam obtentene; areolâ medianâ singularum arcubus minutis obsoletis fuscis notatâ; in antiscis sparsis in posticis seriebus duabus parallelis ordinatis, posteriore in regione anali saturatâ intus creperâ alba limbata; tenui denique marginali striâtâ alba intus acutâ, punctoque ocellari in appendiculo anali lunulâtâ alba stipatâ fuscis.** (Exp. alar. 15 lin.)

*Wings above,* in the female, fulvous, the tint being saturated and inclining to orange; *anterior,* with the exterior and apical borders blackish brown, meeting the orange portion in a regularly arched boundary line, extending from the middle of the anterior costa to the inner apical angle; *posterior,* with the apical border and an oblique band composed of four contiguous spots extending from the outer apical angle to the middle of the inner margin, of the same colour; anal termination of the apical border diffuse and evanescent internally and marked with a few obsolete white dashes; inner margin excavated to receive the abdomen, gray: *underneath* ochraceous-yellow, uniformly covered with an opaque pulverulent tint; medial portion of the surface of both pairs marked with numerous very minute and obsolete brown arcs, which in the hinder pair are arranged in two parallel interrupted striæ, the posterior one increasing in distinctness towards the inner margin, where it bears externally a lunular white cloud; extreme anal margin bearing an irregularly diffuse brown stripe terminating in a distinct ocellate spot on the anal appendage; the latter surrounded internally by a white lunule from which an obscure striga passes over the extreme anal region. *Tails* ferruginous brown, tipt with white: *body* brown above, pale yellowish underneath: *legs* whitish, marked with numerous well defined black bands, which are more crowded on the tarsi.

*Loxura Pita* closely agrees in a generic point of view with *L. Atymnus:* the antennæ have the same strictness and the palpi the same proportional length: the character of the tail is likewise the same. As a species *Loxura Pita* is distinguished above by a deeper orange tint, by a broader border and by a transverse macular band on the hinder pair: underneath the ocellate spot and the marks on the anal region are more pronounced and the legs are distinctly marked with black bands; the tail also is proportionally lengthened and the wings are rather more expanded in breadth.

Our Museum contains a single female specimen in perfect condition.
LEPIDOPTERA.

Genus PHÆDRA.

PAPILO. Cramer, Drury, Herbst.

CHARACTER.

Imago: Antenna breves, cylindrice, sensim extrorsum incrassatae, apice rotundato, inflexo, acuminem obsolentum, laterali; articulis exterioribus verticillato-ciliatis, interstitiis transversè sulcatis.

Palpi mediocres, graciles, compressi.; articulo basilari brevissimo, arcuato, capiti adnato; articulo secundo oblongo, porrecto; his subtus pilis brevibus, sericeis, æqualibus, deorsum spectantibus arctè vestitis; articulo terminali brevi, attenuato, holosericeo.

Proboscis brevissimus, tenus.


Pedes antiqui tarsi pro sexu diversis; maris articulo solitario, elongato, obtuso, ungue acuto abruptè inflexo terminato, sulcis quattuor transversâ, obsoletis exarato, pilis holosericeis obsito; feminae quinque-articulatis; articulo basilari elongato-ovato, tribus intermediae minimis orbiculatis, decrescentibus, ultimo ovali, ungibus duobus parvis, lateralibus, pulvilloque intermediâ munita; pedes mediæ et postici, in utroque sexu, tarsi quinque-articulati, singulis unguibus duobus lateralibus, appendiculis et pulvillo intermedio instructis.

CHARACTER. The larva and chrysalis as yet unknown. In the perfect insect: Antenne short, cylindriæ, gradually thickening to the extremity, which is rounded, obtuse, with an obscure laterally inflected, mamillary point; exterior articulations surrounded by minute bristles, while the interstices are transversely sulcate or delicately wrinkled. Palpi of moderate length, slender, compressed; basal joint short, applied to the head; second joint oblong, obliquely porrect; both these are densely clothed with silky hairs of equal length; third joint short, attenuated, tending forward, covered with a delicate silky down. Proboscis short and slender. Head short, obtuse, broad. Eyes plane, very sparingly clothed with a short, scattered, down. Body of moderate length, attenuated. Wings: anterior oblong; posterior rounded, obtuse; discoïdal cell not closed. Feet: anterior with tarsi differently constructed in the sexes; in the male consisting of a single elongate, obtuse joint, terminated by an acute abruptly inflected claw, marked with four very obsolete transverse grooves, which are concealed by the silky down investing the tarsus; in the female with tarsi consisting of five joints; the first oblong-ovate, the three following very short, orbicular and decreasing in dimensions; the fifth oval and provided with two small lateral claws and an intermediate pulvillus; the tarsi of the middle and posterior feet have all five joints, the terminal one being armed with two lateral claws, intermediate appendages, and a pulvillus.

After the remarks which were made on the genus Loxura and on the indications afforded by it of the evident approach of the Chilognathiform stirps, the introduction of another genus of the Vermiform stirps, which does not contribute to supply those deficiencies indicated in the series, requires some explanation. The individuals of the genus now defined with the name of Phædra, possess in their perfect state a complication of characters, partaking of several genera, besides certain peculiarities of their own. In the structure of the antennæ they agree upon the whole with Loxura; and the palpi although shorter than in that
that genus, are constructed on the same plan; whereas in the anterior feet of the male they resemble the individuals of the first great subdivision of the genus *Thecla*, the *Th. strictè sic dictae*. In the covering of the underside of the wings, in their markings and in the abrupt termination of the hinder pair, they differ from all the individuals of the genera *Lyceana* and *Thecla*. But our knowledge of the genus *Phedra* is still imperfect and until its character shall be fully illustrated by the discovery of its metamorphosis, which I hope to obtain from our Indian researches, its present disposition at the extremity of the Vermiform stirps, is only provisional. In the Encyclopédie the continental species of *Phedra* is arranged in the fourth great subdivision of the genus *Polyommatus*, comprising subjects with entire or slightly dentate wings; several of the species of the same section resemble our insect in the colour of the upper surface, although they have nothing of the peculiarity which distinguishes the under side; and they are all essentially different in a generic point of view.

A very detailed dissection of our genus, in which the peculiarities of the perfect insect are distinctly brought into view, has been prepared: this I hope to be enabled to introduce in one of the succeeding plates of the *Lepidoptera diurna*.

51. **Phedra Terricola.** Ale postice obtuse; maris supra ex aurantio fulve, limbis exteriore et posteriorie apice largo anticarum fasciisque tenuissimis marginalibus posterioribus nigricantibus; feminae fusce, singula pleæ maximæ discoidali alba, paginæ totæ singulærum colore opaco nitente squamuloso dense operta, serie punctorum intramarginalium striatæ post-medianæ obsoléssimis nigris. (Exp. alar. 1 unc. 5—7 lin.)


*Hesperia R. Æsopus.* Fab. Ent. Syst. Em. loc. cit. No. 164. (The female.)

*Papilio Cinyra.* Cram. pl. 238. fig. C. (The male.)

*Papilio Thetis.* Cram. pl. 238. D. (The female.)


*Hospitatur in Museo Domini Banks.*

**Hinder wings** broad and obtuse with an abrupt regularly transverse posterior margin, gradually rounded towards the outer apical angle: upper surface, in the male, fulvous with a deep orange shade, having the exterior and posterior borders of the fore wings defined by a hemispherical boundary which leaves a broad apex, and a narrow posterior marginal line of the hinder wings, blackish brown; in the female brown, the wings being individually marked with a large oblong white spot occupying the disk and adjoining portions of the surface: underneath both pair are densely covered throughout with a milky-white glistening stratum of colouring particles, delicately pulverulent or scaly in appearance, exhibiting when rubbed irregular patches of a brownish ground; in some specimens this stratum is uniform and immaculate; others are very obsoletely marked with a series of minute dots, just within the posterior margins, and with a very faint common striga behind the disk, accompanied in some individuals by a parallel line towards the middle of the wing, of a black colour. **Body** above brown, with lengthened fulvous hairs in the male and brownish hairs in the female; underneath silky white: **legs** of the same colour, with very obscure orange bands towards the tarsal extremity. **Antenna** brown with an orange tip.

This species appears to have an extensive range on the Continent: we have, from various parts of India, five male and two female specimens. It was not observed in Java. The Banksian Cabinet contains one
male with the mark of *Papilio R. Phædrus*, and two females with that of *P. R. Esopus*, in Fabricius' own hand-writing. The decision of the authors of the Encyclopédie, above referred to, according to which the *P. R. Esopus* of Fabricius is not a distinct species but the female of *Phædrus*, is confirmed by a careful dissection which is intended for a future plate.

52. *Phaedra Insularis*. *Ale postice regionem analem versus subattenuate in angulum rotundatam producte, maris suprâ cupreo-fulve, limbris exteriore et posteriore, apice largo anticarum fusc- ciiique latâ marginali intus evanescente posticarum nigris; canali abdomen recipiente palliitore villis fuliginosis vestito; subtûs sericeo-argentae glaucino laevato stratu pulverulento paginam totam operiente, strigis duabus posticis tenuissimis undulatis completis, interiore saturatore, serie intramarginali punctorum minutorum punctoque solitario in medio marginis interioris nigris; singule insuper striola carinatâ discoidali obsolissim.* (Exp. alar. 18 lin.)

*Hinder wings* gradually attenuated towards the anal region, with a slightly rounded inner apical angle; *upper surface* (in the male) with a bright cupreous lustre inclining as the light varies to reddish-brown; exterior and posterior borders of the fore wings and posterior border of the hinder wings black, in the former the intermediate boundary forms a bold curve leaving a broad apex, in the latter the inner edge is slightly waving and evanescent; the concave inner margin which receives the abdomen is paler and covered with delicate hair of a sooty tint: *underneath* satin-white, the colour being spread in an opaque pulverulent stratum uniformly over the whole surface and covered with a silvery slightly glaucous gloss; behind the disk two very delicate waving strigæ of a blackish tint pass regularly over both pairs, the anterior being more pronounced; just within the hinder margin is a series of very minute black dots and near the middle of the inner margin stands a solitary dot of the same colour; on the disk the indication of a transverse brownish litura is faintly observed, which however is more lengthened and distinct in the hinder pair. All the wings have along their posterior margin a grayish line. *Body* and *abdomen* above glaucous inclining to brown with a lengthened down of the same colour; underneath yellowish white and pulverulent; *legs* of the same colour with obscure brown spots. *Antennæ* brown.

Two males in excellent condition have furnished the materials for the preceding description; the female was not observed, and the history of this species remains therefore imperfect. The form of the hinder wings indicates a sectional division in this small group.
CHILOGNATHIFORM

OR

IULULIFORM STIRPS.

Character.

Larva elongata; nunc cylindrica; nunc utrinque aequaliter angustata vel medium versus incrassata, convexa, dorso arquata, antice conico-attenuata: superficie modo glabra, omnino laxis, vel antice clupeo maximo e summo dorso ad caput usque operta; modo arctè punculata vel pilosa vel hirsuta vel appendiculis carnosis munita: caput globosum retractile corpori mediate articulo brevi junctum, exsertum subsolutum: furcula retractilis inter caput collumque media, perfectioris structure indicium, in generibus stirpi vermiformi accedentibus haud obvia. (Larva, quoad habitum Ivro similis.)

Pupa nuda angulata, quoad formam valde variabilis, tuberculis seriatis numero ac magnitudine diversis ornata; antice modo acumine simplici terminata, modo bifida; postice attenuata, fulcro adnixa; mediantibus filis collum abdomenque ligantibus verticaliter vel oblique suspensa, capite sursum spectante.

Observation.—The larva of this stirps is in all the various forms in which it appears, of great proportional length. Near the confines of the Vermiform stirps it is slightly attenuated at both ends, marked with distinct transverse striae at the segments and covered with minute elevated dots. This character it possesses in Colias (see Pl. iv. No. 6 and 7) and in Gonepteryx as figured by Roesel (vol. iv. Tab. xxvi. 1. 2. 3.). In the division which follows in natural order, the larva is regularly cylindrical, slender and closely covered with down or hairs: it exhibits this form in Terias (see Pl. iv. No. 8), Pontia (Pl. iv. No. 9) and the allied genus Leucophasia. We have next, in the Javanese series, a larva, slightly attenuated at both ends and gradually approaching the character of the following group; it is figured on our Pl. iv. No. 10, and the species agreeing with it, constitute the genus Pieris as applied in this catalogue. The group which succeeds to it and which appears to be peculiar to northern regions, has an intermediate character, while it is at the same time, quite anomalous in its pupa state. The principal genus in this group is Doritis:
the form and covering of the larva resemble those of *Pieris*; but now we have the first indication of the osmaterium or of that retractile, bifid organ which characterises the typical group of this stirps. *Doritis, Thais,* and the allied genera require however further examination; and this statement also requires the comparative illustration afforded by the perfect insect.

In following the series we have now arrived at the genus *Papilio* constituting a very extensive group, the individuals of which have not as yet been arranged accordingly to their true affinities. The metamorphosis in the Javanese and Indian series, in our collection, exhibits the following forms. *First:* a perfectly smooth larva, with nearly uniform surface, considerably distended about the fourth or fifth segment of the body, with an elevated arched back from which it tapers rather abruptly to the head and more gradually towards the anal extremity. Two examples of this form are contained in the Javanese series: see Pl. iii. fig. 5 Pl. iv. fig. 12. *Secondly:* a larva agreeing with the former in outline of form, but being thicker, of a sluggish habit and marked anteriorly with a large clypeus or shield, extending from the arched dorsal elevation to the head. It appears to be peculiar to tropical climates and is found on both Continents; in the East-Indies it appears to be comparatively abundant and four different modifications are represented from Java. The work of Smith and Abbot exhibits several American forms of it. *Thirdly:* an elongated, cylindrical, comparatively thick larva, very slightly attenuated at the extremities, with a smooth surface, from which naked fleshy tubercles arise, varying in thickness and length in different species. Of this we have two examples from Java, exhibited in the 17th fig. of the iii. and in the 13th of the iv. plate. Besides these I am enabled to give a third Indian example of the third group, which was liberally communicated to me by General Hardwicke; it is represented in the 1st fig. of the viii. plate. The indication which this larva affords of the gradual passage towards the Chilopodiform stirps has already been indicated on the 41st page of the introduction; and the details of the gradual variation of form as they show the proximity of the next stirps, will be given in the sequel. The most striking peculiarities of the pupa and of the perfect insect have been detailed in the introduction, p. 42, 44, and on the Synoptic table; the more minute modifications of form are given in the generic characters. The subdivision of this stirps into families is reserved for another occasion.

**Genus COLIAS.**


**Clouded yellows. Haworth.**

**Character.** *Larva* cylindrica, gracilis, utrinque attenuata, obsolete transversim scutata, punctis elevatis, minutis tenuiter annulata, rarius subtomentosa, lateribus striga laetiore ornatis: capite parvo rotundato. (Tab. iii. fig. 14, Tab. iv. fig. 6. 7.)

*Chrysalis* glabra, subcompressa, obtusè angulata, suprà carinata, medio subarcuata, anticè murcron solitario definita; abdomen attenuato arctè adnexo, filo mediano laxo rectè aut horizontali suspensa. (Tab. iv. fig. 6, a; 7, a.)

*Imago*: *Antenna* mediocres, valide, abruptè truncate: in sectione prima de basi ad apicem sensim incrassate: in altera ultra medium filiformem in capitulum elongato-obconicum producte.

*Palpi* compressi, brevissimi, capiti adnati, penicillo clypei omnino reconditi, rarius apice libero porrecti; articulo basilari elongato, arcuato, nunc subtûs squamis linearibus teneris, radiatim patentibus vestito, nunc setis longis diffusis hirsuto; articulo secundo oblongo, pilis aequalibus
The genus *Colias*, as at present limited in our systems, comprises two sections, which differ both in the perfect insect and the metamorphosis. In the former the antennae are gradually and uniformly thickened towards the tip; the palpi are covered with short delicate bristles or scales of uniform length and disposition, and the third joint is somewhat lengthened and attenuated; in the latter the antennae are filiform at the base and swelled at the extremities into a perceptible club of a lengthened-ovate or obconic form, occupying about one-third of the organ; the covering of the palpi is less regular; lengthened, straggling hairs are mixed with the villi and scales, and the third joint is small, round, and obtuse. The first is perhaps exclusively a tropical form. The metamorphosis is exhibited in the sixth figure of our fourth plate, and *Colias Scylla* of the following catalogue may be adduced as typical of the perfect insect. The antennae and palpi are beautifully illustrated in the fifth plate of Mr. Swainson's Zoological Illustrations. The latter appears to belong to northern climates, and I refer to the 242d plate of Mr. Curtis's British Entomology, for the peculiarities of this subdivision as far as regards the antennae and palpi.

In offering these remarks I have much pleasure in repeating the acknowledgment of the assistance received from Mr. Swainson, more particularly in the arrangement of this genus; and I trust I shall have his sanction in applying to the second great division of the genus *Colias*, as a subgeneric distinction, the name of *Eurymus*, by which he designated this form about eight years ago in my private collection, and which I have preserved in manuscript. The propriety of this separation appears further from the peculiarities of the larva of *Colias Hyale*; and we are greatly indebted to Mr. Curtis for the copy of it exhibited in his 242d plate from Hübner. Whoever will compare this with the larva of true *Colias*, as exhibited in our fourth plate, will notice the gradual approach to the form of *Pontia*, which is confirmed by the perfect insect.

* Larva utrinque attenuata, punctis elevatis minutis tenuiter annulata: antennae a basi ad apicem sensim incrassatae: palpi villis squamisque brevibus, teneris, equalibus obtectae, articulo ultimo ovato attenuato, nonnamquam subelongato.

**Colias stricte sic dicta.**

53. **Colias Pyranthe.** *Ale alba, suprad maris limbis exteriore et posteriore antecarum, feminae limbo posteriore communi nigris; antica insuper natam discoidal nigrum, in mare linearis transversa minuta in femina orbiculari insigni subtius cinereo-undulata, puncto discoidal singularum argenteo iride lilacind cincto.* (Exp. alar. 2 unc. 3 lin.—3 unc.)

Wings white above; in the male, fore-wings with exterior and posterior borders, in the female, both pairs with a common posterior border black; anterior wings with a discoidal mark, which is linear, transverse and minute in the male, large and oval in the female: underneath with numerous, close, transverse, cinereous undulations, and on each wing a minute, argentine discoidal spot, surrounded by an irregular iris of a lilac tint.
Papilio Aleyone. Cram. Pl. 58. fig. A. B. C.

Candor alarum supra in virescenscentem argenteam, subtus in virescentem vergens: antice subtus in sequenti immaculato; singula strigae distinctiore undulata inter discum marginenque posteriorem mediis. Puncta ocellaria paginae inferioris pallida argentea iride lilacina cincta; nonnumquam vero, in mare, omnino desunt, vel rarius, praesertim in feminis sesquialteras. Saccus glandularis oblongus, subbasalis, opacus, pulverulentus, saturate sulphureo tinctus, discrimen sexuale maris suppeditat; neuro exteriori areae discoidealis adhaerens, penicillo plano ex villis sericeis elongatis efformatus, et margine interiore alarum anticaurum exerto occultatur: feminam discrepant limbo exteriore anticaurum nigro, insigniore, apiceque dilatiore. Corpus suprâ villis sericeis longis albis ornatur: antennae pallide lilacinse cinerascente pulverulentze.

This species, which was originally described by Linnaeus with the name of P. Pyranthe, has from its accidental and sexual varieties received different denominations. Those occurring in the works of Fabricius are judiciously analysed and disposed by the authors of the Encyclopédie. Cramer's figure represents that variety of the male in which the under-side is without ocellate spots: our collection contains several individuals of the same description. Two of our specimens, a male and female, are from Java, and more than twelve of both sexes from various parts of continental India. The specimen of Gnoma preserved in the Banksian cabinet, bears Fabricius' original mark. Donovan, in his Chinese insects, has figured the female.

54. Colias Philippina. Aile suprâ alba, marginem versus flavido lavate; antice limbis exteriore et posteriori punctoque medio nigris: subtus dilute flavicantes cinereo-undulato, serie maculari distinctiore disco marginique postico intermedia; antice puncto ocellari solitario, postice punctis tribus discoideis argenteis, singulis annulo lilacino cinctis. (Exp. alar. 2¼ unc.)

Wings above white, with a yellowish tint exteriorly increasing in strength towards the margin; in the fore-wings the exterior and posterior borders and a round dot on the disk, are of an intense black colour: underneath pale yellowish, with numerous transverse cinereous undulations, among which a more distinct macular series passes between the disk and margin through both pairs; fore wings with a single, hinder wings with three argentea discoidal spots, which are individually surrounded with a circle of a lilacine tint.

Papilio Philippina. Cram. pl. 361. fig. C. D.


This species greatly resembles Colias Pyranthe; it is however clearly distinguished by the ocellate spots of the hinder wings underneath: the macular band of the lower surface is likewise more pronounced than in that species, and the spots have a decided wedge-shaped form. The diffuse yellow border of the fore-wings above is likewise, as far as appears from our materials, peculiar to this species. Our insect is also closely allied to Colias Florella of Fabricius, found at Sierra Leone, of which a specimen is preserved in the Banksian cabinet.

Colias Philippina was not found in Java: we have several Continental and Ceylonese specimens; they supply nothing to the history of this species.

55. Colias Glaucepe. Aile alba, suprâ antice dimidio apicale vivide fulvo, limbis exteriore et posteriori
posteriore limite mediano flexuoso discum oblique transeunte, serie intramarginali macularum
venisque apicalibus nigris, postice maris immaculate albis, feminæ sordidé flavicantes, limbo
posteriore intus arguté dentato sericique interiore punctorum nigris: subtus albae,
flavido lavate; antice dimidio apicali, postice paginâ totâ fusco cinereoque nebulosa, notis
saturioribus infuscate. (Exp. alar. unc. 2\frac{1}{2}—4.)

Wings white; upper surface in the fore-wings with the apical half vivid fulvous, the exterior and
posterior borders, an oblique medial boundary passing flexuose across the disk, a series
of wedge-shaped marks parallel with the margin, and the exterior veins black; hinder
wings, in the male whitish immaculate, in the female dirty yellowish, the posterior border
with acutely dentated inner edge and a parallel series of minute dots of a black colour:
underneath whitish slightly tinged with yellow; fore-wings with the apical dimidial portion,
hinder wings with the whole surface delicately dotted and undulated with brownish-gray,
small clouds and patches, sprinkled with more saturated dots and marks, being irregularly
scattered over the surface.

Plate IV, fig. 7; 7, a. The larva and chrysalis.


It appears from the preceding list of Synonyms, that our species is arranged, in the Encyclopédie, in
the genus Pieris. I found my present determination not only on the metamorphosis, which closely resembles
that of Colias, (as appears from the 6th and 7th figures of my fourth plate) but also on the character of
the perfect insect: the antennæ agree in all points with those of that genus; the palpi are very similar; a
slight peculiarity which they present can only be exhibited satisfactorily by a dissection.

Colias Glaucippe is not unfrequent in Java, and various specimens were obtained by breeding. The larva
feeds on a species of Capparis, distinguished by the native name of Wanwannan. Our museum contains
numerous specimens of both sexes from Java and from the continent of India. It has an extensive range
through intratropical India, and is found in most collections. Linnaeus gave an early account of it.

56. Colias Alcmeone. Aæ supra albe, maris ad basin fasciâ latâ sulphureo-flavâ discum versus
irregulariter laciniată, antice limbo exterioire apiceque tenuissimo,—feminae limbis posticis sin-
gularum, exterioribvs antica rum, puncto insuper discoidali orbiculari nigris: subtus singulae flavi-
cantes immaculate. (Exp. alar. unc. 2\frac{1}{2}—2\frac{1}{2}.)

Wings above, in the male, white, with a broad common sulphureous-yellow basal fascia, irregularly
laciniated along the edge which looks towards the disk; anterior wings very narrowly edged
with black at the apex and adjoining portions of the margins; in the female, posterior
borders of both pairs, as well as the exterior costal border and a circular dot on the fore-
wings, black: underneath all the wings, in both sexes, yellowish and immaculate.

Aæ supra albe, fasciâ flavâ basali, in mare discum versus margine irregulariter sinuato abruptè
definitâ; feminae limbo communì postico dilatiori, intus evanescente vel obsoletè sinuato nigro,
apice nigrîcante alboque variegato; costâ margine angusto nigro-limbâtâ, intra medium dilatotre,

This species is very abundant in Java, and we have numerous specimens of both sexes. It is also contained in our continental collections. Fabricius gives a distinct description of it in all his systematic works; it has not as yet been figured.

57. **Colias Jugurthina.** *Alae* suprà albae, ad basin fasciâ latâ discum versus evanescente flavâ, limbo communi postico punctoque discoïdali antecarum nigris; apice migricante alboque variegato, costâ limbo negro basin versus in dentem dilatato: subtûs straminea nitentes ad basin saturatiores dimidio interiore antecarum albicante; striâs maculari communi posticâ fusescente, singulis insuper puncto solitari discoïdeo obsoleto flavice in antecis sepius deficiente. (Exp. alar. unc. 24–25).

Wings above white, with a broad yellow fascia at the base, gradually paler towards the disk; posterior margins of both pairs and a discoidal spot of the fore-wings black, while the apex is paler and variegated with irregular spots of the ground colour; costal border also black, and spreading towards the base to a dentiform process, which sometimes touches the discoidal spot; underneath straw-coloured yellow and shining, the base being more saturated, while the interior portion of the fore-wings is nearly white; a macular series of obsolete brown spots passes behind the disk through both pairs, while each wing has in the middle of the disk a single obscure yellowish dot, which is sometimes wanting in the fore wings.

**Papilio Jugurtha.** Cram. pl. 187. fig. E. F.
**Papilio Statira.** Cram. pl. 120. C. D.
**Papilio Crocale.** Cram. pl. 55. C. D.

I have found it difficult in the comparison of a very extensive number of specimens, to discriminate this species from its neighbours in the series, and I admit it with some uncertainty regarding its real distinctness. The specimens in our collection agreeing with the character above given are all females, and it remains to be determined whether they are not mere varieties of the 56th or 58th species. In several male specimens, which resemble those of *C. Alcmeone* in all other points, a very faint discoidal spot is however observable. I have followed the authors of the Encyclopédie in the appropriation of the synonyms. We have specimens agreeing with the individual figures of Cramer above cited: but those of *P. Crocale* and *P. Statira*, are most strongly marked. The dot on the under-surface of the hinder wings is in many cases sesquialterous; and this confirms the affinity to the next species.

58. **Colias Hilaria.** *Alae* suprà maris albae, fasciâ latâ sulphureâ discum versus irregulariter laciniatâ, marginibus ad apicem tenuissimè negro-limbatis; feminæ pagina toā, nonnullis dimidio basiariis tantum, latè flave, antice limis exteriore ut postico, puncto discoïdali sequè obsoletâ intramarginali macularum cuneaturum, ex apice discum versus oblìque divergente nigris; postico limbo posteriori continuo vel interrupto maculari negro: subtûs in utroque sexu flavâ vel ex pallidè stramineo micantes; antice puncto discoïdali solitario flavido vel ochraceo, postico puncto sesquialtero vivide argenteo micante insigne, singulis circulo simplici aut duplici circunscrips vel in macula diffusa lilacina vel ferrugineâ nitidantibus. (Exp. alar. unc. 24–25).

Wings
Wings above in the male, white, with a broad common sulphureous-yellow basal fascia irregularly laciniate along the edge which looks towards the disk, the extreme borders being very delicately edged with black at the tip; in the female, the entire surface or in some cases the basal portion alone bright yellow; the fore-wings (in this sex) having the exterior and posterior borders, a discoidal spot and an obsolete series of wedge-shaped marks passing obliquely from the apex towards the disk black, while the hinder wings are confined by a continued or interrupted border of the same colour: underneath in both sexes yellow, or covered with a pale stramineous yellow shining tint; fore-wings with a single pale yellowish or ochraceous discoidal spot; hinder pair with a sesquialterous spot, larger in size and of a bright silvery tint; these spots being individually surrounded by a single or double ring, or entirely bedded in a broad spot of a lilach or ferruginous tint.

_Papilio Hilaria_. Cram. pl. 339. fig. A. B. (The male.)


_Papilio Catilla_. Cram. pl. 229. fig. D. E. (Variety of the female.)


The proposed union of two species, the _Colias Hilaria_ and _C. Catilla_ of Cramer, which are kept distinct by the authors of the Encyclopédie, is founded on the examination of a very numerous series of specimens. In all these the male exhibits an uniform character, and is clearly distinguished by the glandular sac above described, and its covering, which consists of a beautiful silky brush protruded from the inner edge of the anterior wing near the base.

I have endeavoured to indicate clearly the characters by which the preceding species are distinguished; in the upper surface they all greatly resemble each other, and, as in all species of this genus, we must be directed in the discrimination of them by the markings of the under-side. This species is extremely abundant: we have at least forty specimens exhibiting all its varieties. The under-side of the female in many cases, assumes a light, stramineous, shining tint, resembling that of the male.


_Papilio_
Papilio Scylla. Cram. pl. 12. fig. C. D. Sulz. Ins. edit. Rœm. tab. 15. fig. 6. (The male.)

This species is very uniform in its markings: the sexes are very clearly distinguished on the upper surface; they agree underneath, with this modification, that the marks of the female have a more saturated tint and are more diffuse. Colias Scylla presents no prominent varieties: the description given of it in the Encyclopédie is quite satisfactory, and requires no explanatory details. The male is provided, as in the allied species, with a glandular sac near the base of the hinder wings, and with a corresponding brush-like covering protruded from the inner margin of the fore-wings. The metamorphosis is represented on our fourth plate, fig. 6; and 6, a. The larva feeds on various species of Cassia, particularly on the Cassia fistula and C. obtusifolia, and in this habit, it agrees with the C. Pyranthe, according to Dr. Koenig and with the P. Stannus of Linnaeus figured by Abbott. It is, however, occasionally found on other plants: it is extremely abundant, particularly in the early part of the rainy season, after the renewal of the foliage of these plants.

I must, however, remark, that the various species of Colias contained in this catalogue resemble each other so closely in the larva state, that the distinction of species is extremely difficult. The greatest number of specimens obtained by breeding belong to the species now described; but in examining the series put up in Java in illustration of the drawings prepared during the progress of this research, I now observe several specimens of Colias Jugurthina and Colias Alcmeone, a circumstance which shows their near resemblance in the larva state. Among these specimens is contained that remarkable variety of Colias Jugurthina, figured by Cramer with the name of Papilio Crocole.

** Larva lineari-cylindrica, subtomentosa: antenne basi utraque medium filiformes, capituto elongato-ovato vel obconico: palpi setis villisque longis diffusis hirsuti, articulo ultimo obovato, obtuso.

Subgenus EURYMUS. Swainson.

Observation.—This form appears to be confined exclusively to extratropical regions; no individuals belonging to it are contained in our collection. Mr. Swainson gives Colias Hyale as the type of this subgenus, and I refer again to Mr. Curtis's distinct illustration contained in his lxi. No. pl. 242: the larva evidently leads to the next modification of form.

Genus TERIAS.


Character. Larva lineari-cylindrica, gracilis, utrinque obtusa, obsoleté transversim scutata, villis brevibus hirta, striá pallidá laterali signata: capite parvo, obtuso, obscro. (Tab. iv. fig. 8.) Chrysalis glabra, recta, subcompressa; supra carinata, arcuata, utrinque attenuata, mucrone solitario definita. (Tab. iv. fig. 8; 8 a.)

Imago: Antenne mediocres, graciles, basi filiformes, apicem versus sensim in clavam, elongato-fusiformem, subcompressam abunentes.

Palpi brevissimi, articulis inferioribus latis, compressis, capití adnatis, basilari subelongato, squamis brevissimis aqualibus arcú vestito; articulo secundo paululum breviore, extis rotundato, undique squamulis minutiissimis villis interspersis densè objecto; tertio minuto, attenuato, nudo, porrecto. Proboscis elongatus, validissculus.

Caput breve, nutans, alarum arcur costali subreconditum; postìc thoracis cristà transversâ margi-
natum. Oculi mediocre, nudi. Thorax dilatior; anticamente ad latera cristā subarcuatā, ex pilis erectis serieis ornatus. (Abdomen elongatum, gracile, in maribus sex-articulatum, articulo ultimo duoibus uncis approximantibus; valvis latissimis, incrassatis, truncatis, aduncis. Swains.) Ate large; antice oblongae, obtusae, margine costali thoracem versus fortiter arcuato; postice late, rotundatē, sulco abdomen excipiendo pallescente: areolā discoidā singularum clausū. Pedes graciles, elongati: anticī in utroque sexu conformes; tarsi singulorum quinque-articulātī; articulo basilari elongato, reliquis subequalibus, ultimo unguibus duoibus minimis, bifidis et pulvillo intermedio instructo.

This genus was first established with great judgment by Mr. Swainson, in the fourth number of his Zoological Illustrations; and I am very happy to be enabled to add to the character there limited from the perfect insect, a complete representation of the metamorphosis of Terias Hecabe, the species which is adduced as the type of the genus, and to illustrate it by a careful dissection. See Plate iv. fig. 8; 8, a; 8, b; 8, c; 8, d; 8, e; 8, f. It is here placed between Colias and Pontia; and an inspection of the plate will show that this is its natural situation. Terias resembles Colias in the form of the chrysalis and in several properties of the perfect insect, particularly the structure of the palpi, and the form and painting of the wings; the larva, on the contrary, and the antennae, have a much nearer relation to Pontia. I must however state, that these remarks apply exclusively to the Oriental group of which T. Hecabe is the type: the American species I am unacquainted with, and they appear to possess some peculiarities. Of the genus Terias as above defined, we have five species from Java: they greatly resemble each other in colour, painting, and external character, but I trust the following details will sufficiently elucidate their specific peculiarities.

60. Terias Hecabe. Ale supra letissimē flave, limbo communì postico nigro, in antīcis lato costam versus arcuato attenuato, juxta marginem interiorem transversim definito, in area mediana sinu recto profundo exciso; in posticis angustiore margine prorsus parallelo, intus denticulato; suntrium communē flavescēntē: subtēs flave; singulis notē discoidā annulato-ovata irregularē subgemīdā; antice insuper ad basin notē duobus minutis, exteriorē subangularē; postice notē minutis tribus subannulatis basilariibus fuscis, fasciāque arcuata marginalē latē interruptā ex notē subflexuosis confātā: femina fasciā anticarum accessorium insigni diminuēt apicālē violaceo-fuscō a mare manifestē discretēt. (Exp. alar. une. 1½—2.)

Wings above bright yellow, with a common posterior border of a black colour, which is very broad in the fore-wings, passes in an arch towards the middle of the costa, is abruptly transverse near the interior margin, the middle being deeply excavated in the direction of the nervures and marked with a medial tooth, pointing towards the disk; in the hinder-wings the border is narrow, parallel with the margin and denticulated at its inner edge; all the wings are confined by a common extreme yellowish marginal thread: underneath yellow; each pair on the disk with a brown annular-ovate irregular mark, transversely divided in the middle; fore-wings bearing besides, near the base, two minute marks, of which the exterior is angular, hinder-wings with several brown delicate sub-annular characters at the base, and a very obsolete series of widely interrupted clouded or sub-flexuose spots passing at a small distance from the posterior margin in an irregular arch across the disk.

Plate I. fig. 12. (The female). Plate IV. fig. 8; 8, a. The larva and chrysalis.

Papilio
This is one of the most common diurnal Lepidoptera, having a wide range through intratropical Asia and the Eastern Islands. We have specimens from various parts of India. Those from Java were chiefly obtained by breeding and are in high perfection. The larva feeds on the *Echynonome Sesban*, and is found abundantly from January to April. The specimens, in whatever country collected, agree closely in their markings, and present no varieties: the distinctive mark of the female, as above indicated, is, as far as my observation extends, permanent, and it is confirmed by the habit of the body. One of the varieties indicated by the authors of the Encyclopédie is described in the sequel as a distinct species.

61. **Terias Sari.** *Ale suprâ sulphuree, limbo communi postico nigro, in anticis ad apicem largissimo ultra medium costae arcuatum attenuatum, ad marginem interiorem recte transverso, in area mediana sinu simplici profundo eccesso extus obliquâ intius rectâ definito; limbo posticarum discum versus evanescente: subtus latè sulphurea, singulis notâ discoidali lineari-annulatâ subsimplici; antice plagâ apicali maximâ quadrâ violaceo-fusci, macula oblongâ obscurâ nigricante intra angulum apicale inferiore versusque basin signo tenui solitario flexuoso; postice notis duabus sub-obsoletis basilaribus, maculâ obscurâ fusco-irroratione ad medium costâ ordineque macularum obsoletarum intra marginem posticarum.* (Exp. alar. 1 unc. 9 lin.)

Wings above sulphureous, with a common posterior black border, which in the fore-wings is very broad at the apex, whence it passes in a gradual curve beyond the middle of the costa; at the interior margin it is regularly transverse, and in the medial area it is excavated by a deep notch having an oblique flexuose exterior, and a regular longitudinal inner edge; in the hinder-wings the border is parallel with the posterior margin, having its inner edge gradually evanescent: underneath bright sulphureous, each wing bearing a simple linear-annulated mark on the disk; fore-wings with a large quadrangular violaceous-brown spot at the apex, a smaller oblique blackish mark near the inner apical angle, and a delicate flexuose character of the same colour, near the base; hinder-wings with two obsolete sub-annular basal characters, an obscure brownish cloud near the middle of the costa, and a very obsolete series of clouded wedge-shaped marks within the posterior margin.

This insect is distinctly indicated in the Encyclopédie. In that work it is considered as a variety of *Terias Hecabe*. But it appears from the preceding remarks, that in an extensive series of more than forty specimens of the latter insect, no variation is observed but that arising from the distinction of the sexes. I therefore consider the indication alluded to as a confirmation of our species: according to my research it is clearly distinguished from *T. Hecabe*, by the breadth and interior outline of the posterior border of the fore-wings above, as well as by the large quadrangular apical spot and the peculiarity of the markings underneath. Our collection contains a single specimen in high perfection.

62. **Terias Tilaha.** *Ale suprâ sulphurea, antice limbo posteriori ad apicem largissimo intius subequaliter sinuato oblique, in medio costae versus angulum apicale inferiorem extusus, limboque interiore lato margine parallelo nigricante-fuscis; postico limbo apicali, intius obsoletâ dentato evanescente ejusdem coloris; subtus palidâ sulphurea; singulis notâ discidiali lineari-annulatâ.*
Wings above sulphureous; fore-wings having the posterior border of a black colour, very broad at the apex, with a nearly regularly sinuated inner edge, extending oblique from the middle of the costa towards the inner apical angle; a regular border along the inner margin being of the same tint; hinder wings with the posterior border obsolete dentated within and subevanescent, also blackish brown: underneath pale sulphureous; each wing with a linear-annulated mark on the disk, and a few very obsolete characters near the base brown; fore-wings having the interior margin bordered with a blackish stripe.

Differt haec species a Pieride Licinia Fabricii cui simillima, alis supra sulphureis, subtus omnibus immaculatis, corporeque flavido.

hinder pair with a linear annulated mark on the disk, about three minute scattered dots near the base, all of a brown colour; finally within the posterior margin an irregular series of oblong and wedge-shaped clouds of delicate brown irrorations.

_Terias Drona_ nostra _Papillioni Smilaci_, insecto Novae Hollandiae a Dom. E. Donovan depicto, valde similis est, differt tamen alis posticis ad paginam superiorem limbo apicali distincto et sinuato, etiamque notarum inferiorum numero, colore ac distributione. Exemplaria tria in Musæo asservantur.

**Genus PONTIA.**


**Character.** _Larva_ lineari-cylindrica, gracilis, utrinque vix subattenuata, pilosiuscula, strigis ornata longitudinalibus, laetioribus obscurioribusque alternantibus, strigâ dorsali insigniore; segmentis obsoletis; capite parvo, rotundo.

_Chrysalis_ glabra, angulata, antice mucrone solitario, brevisculum vel elongato munita, modò levâis, modò tuberculata, dorso carinato; tuberculo anteriore pectorali solitario, brevisculo; lateralis utrinque patentibus, insignioribus; posticè adnexa, filoque mediano erectè ferè suspensa.

**Imago:** _Antenna_ mediocres vel rariùs subelongatae, e basi ultra medium filiformes, clavâ obconicâ, obtusa, subcompressâ vel subfusiformi definita.

_Palpi_ subcylindriceae; breves vel mediocres; parallele correti vel subdiergentes; articulis inferioribus suprà squamis minutis tecti, subtûs pilis setosis, laxis, diffuso-potentibus, alternatim longis brevisculis, subfasciculis vestitis; articulo basilarii robustiore, elongato, posticè arcuato, capiti adpresso, ultra medium soluto; articulo secundo mediocris, oblongo vel ovato, prorecto, subassurgentis; articulo tertio magnitudinem et formam valde variabilis; nunc graciili, attenuato, secundum longitudinem superante, modò orbiculato, minimis, obtusis, squamis teneris pilis interspersis vestito.

**Proboscis** longus, gracilis.

_Caput_ breve. _Oculi_ mediocres, nudi. _Corpus:_ thorace subdilatato-convexo, antice et ad latera, fasciculis pilorum ornato; _abdomine_ gracili, subelongato, posticè in mare sepiûs penicillato. _Alæ antice_ oblongae, breves, margine postico recto, vel subelongatae, apicem versus attenuatae, in angulum productae, margine postico obliquo: _postica_ obtusa, rotundata, rariùs angulum analem versus subattenuate. _Pedes_ graciles, elongati; antici in utroque sexu conformes; tarsi singuli iniquo-articulati; articulo basilarii elongato, sequentibus subequalibus, ultimo unguibus dubius, brevisibus, lateraliis, bifidis, pulvillo intermedio appendiculisque exterioribus munito.

The extensive genus above described, with _Colias_ and _Terias_ which precede, and _Pieris_ which follows, as well as the genera _Gonepteryx_ of Leach, and _Leucophasia_ of Stephens, were all originally included in a single subdivision of the genus _Papilio_ of Linnaeus. The paleness of tint by which the individuals of this group are generally characterized, suggested the designation of Danai Candidi, to which the name of Whites has been accommodated in the English nomenclature. From this group, which at the time of its limitation was tolerably natural, the genus _Colias_ was separated as early as the year 1776, by the acute authors of the Wiener Verzeichnis. They were led to this judicious separation by their extensive researches regarding the metamorphosis.
metamorphosis of Lepidoptera, in which they noticed the peculiarities that distinguish this group from the Whites. The name of Danai flavus, in our nomenclature clouted Yellows, was accordingly assigned to the family of Pallidiventres (Seitenstreifraupen), which, as has been shown in the introduction, p. 14, is the representative of the genus Colias. As science advanced, further subdivisions became necessary. Mr. Swainson noticed the peculiarities of the Papilio Hecabe of Linnaeus, and from it and its associates defined the genus Terias; and both Mr. Curtis and Mr. Stephens agree in confirming the distinctness of the genus Leucophasia, of which Pontia Sinapis is the type. The observations which will be made in the sequel, will clearly show the ground on which the genus Pieris rests. After all these subdivisions, the genus Pontia, as now defined, does not consist of an assemblage of uniform species; in the limited Indian series contained in our collection, five distinct types of form are comprised, on which as many sectional distinctions are founded. The characters of the sections are chiefly derived from the modifications of the antennæ, palpi and outline of the wings. The metamorphosis, as far as its more minute modifications have hitherto been discovered, has also been consulted; and the pupa affords a very clear discrimination, in two of the sections. The peculiarities of the nervures of the wings confirm, as far as I have yet observed, the subdivisions now proposed, but I have not been enabled to follow this character into more minute variations, by a comparison of all the species in our own collection, which thus remains for a future enterprise. Each of the sections is designated by a proper name derived from the typical species, which will provisionally characterize the group as a patronymic, until the further accumulation of species shall indicate the necessity of raising the sections to the rank of subgenera.

* Palpi capite breviores, chyope penicillato reconditi; articulo basilari longissimo, secundo mediori, orbiculato, tertio ovato, minutissimo. Antenne graciles, elongate, clavā tenui, subfusciformi. Ate antice apice subrotundato. Valeria.

65. Pontia Valeria. Ate supra virescenti vel carulescenti-albide, maris limbo communi postico, costali antica rum venisque nigris; feminea limbo latioribus ad discum externis, in ferrugineum vergentibus, venis dilatatis serieque postico communi punctorum, interiore macularum obligrum albarum: subtis maris lactee glaucino-nitentes nervis obscuris nigris, limbo obsoletissime fusco-irrorato; feminea canescenti-fusce nitore violaceo; antice basi saturatiori, postica cinerascenti-flava, singulis punctis maculisque pagina superioris notatae venisque latioribus. (Exp. alar. unc. 2—3.)

Wings above, in the male, greenish or bluish white, with a common posterior border, the costal border of the fore wings and the nervures of a black colour; in the female grayish white or yellowish, with broader borders along the margins generally, which spread to the disk and assume a blackish-brown tint, the nervures being throughout more diffuse; this sex bears near the hinder margin and parallel with it a regular series of white dots, extending through both pair, and within the same, tending towards the disk, a less regular series of obsolete longitudinal spots of different sizes, of the same colour: underneath the wings are cream-coloured with a glaucous gloss in the male, and marked with delicate black nervures, while the posterior border of the fore-wings appears only in a strong light, the wings bearing towards the margin at the nervures clouds of obsolete brownish irrorations; in the female the wings are grayish brown with a faint violet lustre; the fore-wings having a more saturated tint near the base, the hinder being grayish yellow, while in all the wings the nervures are broader and the dots and spots of the upper surface are distinctly apparent.
Papilio Valeria. Cram. pl. 85. fig. A. (Variety of the male.)

Our collection contains four male and four female specimens from Java. We have also several continental specimens, in which, however, the sexual distinction is less apparent. The latter possess that peculiarity assigned to this species in the description given of it in the Encyclopédie, having a series of white dots in the marginal border of the fore-wings, while our description represents the insect agreeing strictly with Cramer's figure, which is considered as a variety by MM. Latr. and Godt., having in the male a simple posterior border in all the wings. Our insect possesses another peculiarity, the colour inclining more to bluish than to greenish-white. The remarkable difference in the painting of the sexes is also to be considered in the description of our species. In the female the border is undefined spreading over the entire disk, and even to the base, while the intermediate white patches are slightly covered with brown irroration, over which, towards the base, a saturated yellowish or grayish shade is thickly spread. Indeed the female assumes the external habit of an Euphlebia; but in the modifications of the nerves it closely agrees with the male. Bearing in mind these peculiarities of the Javanese insect, it remains for future inquiries to determine whether it be not specifically distinct from the continental species.

** Palpi capite longiores, articulis exterioribus subequalibus, ultimo gracili, attenuato. Antenne elongatae, clavae subfusiformis, acutae. Ale breves; antice orbiculato-rotundate. NINA.

66. Pontia Nina. Ale nivee tenere nitide; antice utrinque macula maxima mediand ante discum sita subangulata apiceque paginae superioris obliquum migranticis-fuscis; postice immaculata; subtus antice margine costali basi apiceque glaucino-cinereo irrorata; postice paginae totae cinereo-viridi nebulose, strigis tribus undulatis distinctioribus. (Exp. alar. lin. 16—19.)

Wings snow-white, somewhat glossy and of a delicate texture, anterior having on both sides a large subangular mark in the medial area a little behind the disk, with the obliquely defined apex of the upper surface blackish brown; hinder-wings immaculate; underneath fore-wings with the costal margin as well as the apex and base irrorated with ash-gray; hinder-wings having the whole surface delicately variegated with the same tint, slightly verging to green; three more distinct undulated strigæ passing at regular distances parallel with the posterior margin across the whole surface.


Hæc species a Papilione Alcesta Cramerii nisi cautâ comparatione distingué non potest: differt tamen alis omnibus brevioribus magis abruptè rotundatis; ut et notis sequentibus: anticarum nempe macula discoidali obscurè fuscæ, nitore hyalino prorsus carente; posticarum paginae totæ cinereo-nebulosæ in virecentem vergentem strigisque tribus distinctioribus undulatâ.

A specimen of this insect, preserved in the Banksian cabinet at the Linnean Society, is marked with a ticket bearing the name of Papilio Xiphia in Fabricius' own handwriting. It also appears with this name both in the Species Insectorum and in the Mantissa, but in the Entomologia Systematica Emendata published at a period subsequent to those works, we find the name of Nina applied to this insect, in order to prevent a "double emploi" of one name in the genus Papilio, Xiphia having previously been given to one of the Nymphales.
The specimen in the Banksian collection agrees closely with those I brought from Java, where it is by no means unfrequent. Our insect may easily be confounded with the *Papilio Alcesta* of Cramer, from the Coast of Guinea, to which the name of *Narica* is applied both by Fabricius and the authors of the Encyclopédie. I have endeavoured in a preceding note to point out the distinction.

\[ ** Palpi articulo ultimo subabbreviato. Antennae breves; clavā ovata, obtusā, compressā. \]

\[ Ale antice rotundata. Chrysalis antorsum longē-attenuata, medio arcuāta, absque appendiculis laterālibus. **Mancipium. \]


Wings above pale testaceous, assuming a reddish brickdust slightly fulvescent tint at the base, with a blackish brown border bearing a double series of dots of the ground colour: underneath greenish yellow with a black discoidal dot.


Ten specimens from various parts of Continental India are contained in our collection.

68. **Pontia Danae.** *Ale utrinquē albe; antice parte dimidiā posticā obliquā nigrā, ad apicem latē chermesina, in femina serie insuper transversā punctorum; postice limbo continuō vel interruptō nigro: subtēs antice apicem versus fulvescentes, taniō arcuātā dimidiātā saturatiōre punctis quadratis seriātis nigrīnibus fretā; utrinquē ad discum punctō nigro; posticā strīgā post-

Wings white on both sides; anterior having the extreme dimidial portion, separated by an oblique boundary line black, the apex being covered with a broad crimson patch defined according to the outline of the wing, which in the female bears a transverse row of black dots; hinder pair with a continued or interrupted posterior border of a black colour: underneath fore-wings fulvescent towards the apex, with a more saturated curved dimidial band, bearing a series of quadrangular blackish dots; and a round discoidal spot on both surfaces; hinder pair with a regular row of dots beyond the middle, and a spot on the disk of a fulvous colour irrorated with black.


\[ Papilio Danae. Donov. Ind. Ins. (With a figure.) \]

\[ Papilio Eborea. Cram. pl. 352. fig. C. D. E. F. \]


We have four specimens of this insect.

69. **Pontia Titea.** *Ale albe; antice maris suprā apicē fulva, margine crenulato punctoquē postico nigris; feminae apicē dilutiores, fasciā arcuātā costā punctoquē discoidalī nigrīs; postice serie maculāri margināli nigrā in femina insigniōre; subtēs antice basi sulphureae apicē fulvescentes strīgā costā arcuātā nigrā in femina satūratōre; postice maris fasciā
Wings white; anterior in the male above with a fulvous tip, the crenulated margin of which and a posterior dot being black; in the female, apex pale inclining to fulvescent, and marked with a curved band, which as well as a dot on the disk is also black; hinder pair with a macular band of the same colour, which is more distinct in the female: underneath fore-wings sulphureous at the base and fulvescent at the tip, with an arcuated black costal striga, which is more saturated in the female; hinder pair in the male with a very obsolete interrupted brown band beyond the middle, while in the female the entire surface is clouded with delicate fulvous, grey, and pearly marks, a more saturated ferruginous band consisting of two interrupted portions occupying the middle of the surface.

**Papilio Aurora.** Cram. pl. 299. fig. A. B. C. D.


We have specimens of both sexes, collected chiefly in the neighbourhood of Madras. Query: should this species be united with the *P. Eucharis* of Fabricius? A specimen of the latter in the Banksian Museum possesses no obvious distinction.


**70. Pontia Mesentina.** *Ale albo, (foemine basi versus flavescente lavata), limbo postico commoni nigro albo-maculato; antice utrinqué fascia costali incurvad nigrae: subtis postice flavo venosa.* Enc. Méth. (Exp. alar. unc. 24—23.

Wings white, (in the female with a yellow tint spreading to the base), the posterior border in both pairs black spotted with white; anterior marked on both sides with a short arched costal band; underneath hinder pair yellow, with strongly pronounced brown nervures.


**Papilio Mesentina.** Cram. pl. 270. A. B. (The male.)


The metamorphosis of this species was observed by Maj. Gen. Thomas Hardwicke, who, with his accustomed liberality, communicated to me an excellent drawing of the insect in all its states. The larva is long, slender, slightly attenuated at each end, and longitudinally marked with bands of different colours. Along the middle of the body is on each side a yellow, and beneath this a black abdominal band: the band along the back is green. The whole surface of the larva is covered with delicate whitish hairs. In other respects it agrees with the character given in the generic description; and the pupa exhibits in great perfection the peculiarities which belong to this section.

This insect was not found in Java. Numerous specimens have been sent to our museum from the coast of Coromandel.

**71. Pontia Marianne.** *Ale suprî coerulescenti seu flavescenti-albo; antice opice (medio fulvo) nigrae: subtis singulae flavidae, puncto ocellari medio strigide moniliform postice.* Ent. Méth. (Exp. alar. unc. 24.)

Wings above bluish or yellowish white; fore-wings with a black apex, which is covered to within a small
a small distance of the margins with a fulvous patch: underneath all the wings yellowish, bearing in the middle a solitary and towards the posterior margin a continued regular series of ocellate dots.

_Papilio Marianne._ Cram. pl. 217. fig. C. D. E.


Several male specimens, imperfectly preserved, have been sent to our museum from the Coromandel Coast. Donovan gives a figure representing the upper surface of _P. Sesia._

72. **Pontia Ænippæ.** _Alæ flave; antice suprâ apice latâ nigro fasciâ flavâ seu fulvâ: subitâ singula punctis ocellaribus serie posticâ digestis, punctoque discoidalâ anteriorum nervo transversali intersecto._ (Exp. alar. unc. 2. lin. 2—4.)

Wings yellow; the anterior above with a broad black apex marked with a yellow or fulvous band; underneath a posterior series of ocellate dots passes through all the wings, while the fore-wings have besides a dot on the disk, which is intersected by the transverse nervure.


_Papilio Ænippæ._ Cram. pl. 105. fig. C. D. pl. 157. fig. C. D. pl. 229. B.C. (A variety.)


This insect was not observed in Java, but various specimens from Continental India are contained in our museum, among which is a variety resembling in its upper surface the insect figured on Cramer’s 229th plate. Although the peculiarities of our 71st, 72d and 73d species are detailed with considerable perspicuity in the Encyclopédie, their discrimination requires some attention, in consequence of their resemblance in habit and painting. Having examined the specimen of _Pap. D. C. Sesia_ of Fabricius contained in the Banksian Cabinet, I have been induced to annex the synonym of that insect to the _P. Marianne_ of Cramer; and from a similar examination of the _P. Rhexia_, I have to state, that I cannot discover any difference between that insect and _P. Pirene_ as described in the Enc. Méth.

73. **Pontia Pirene.** _Alæ flave; antice suprâ apice (medio fulvo) nigre: subtûs singula puncto medio fusco._ Enc. Méth. (Exp. alar. unc. 21)

Wings yellow; the anterior above with a black apex, bearing in the middle a fulvous patch; underneath all the wings have a brown dot on the disk.


_Papilio Pyrene._ Cram. pl. 125. A. B. C.


Our specimens, two in number, are from Continental India.

74. **Pontia Venilia.** _Alæ flave; antice suprâ plâgâ medianâ fulvâ, margine puncto discoidalâ nigris; feminae plâgâ fulvâ ampliore, serie insuper posticâ macularum flavarum cuneatarum; basi cinereo-irroratâ; postica limbo posteriori nigro: subtûs singula puncto centrali nigro: feminae in posticis serie postmedianâ macularum fusâe cinereo-irrorâtâ._ (Exp. alar. unc. 21;)

Wings yellow; anterior pair above with a large medial fulvous patch, the border and a discoidal spot being black; in the female the fulvous patch is more extensive, and spreads towards the base, which is irrorated with gray, and the posterior margin bears a series of yellow wedge-shaped spots; hinder wings in both sexes with black posterior border: underneath all the wings
wings are marked with a black dot in the middle; the female having in the hinder pair a widely interrupted macular band of a brown colour irrorated with gray.


The great similarity of the species last enumerated has already been pointed out: they are however clearly discriminated in the preceding description, in which I have followed the authors of the Encyclopédie, but not without subjecting each to a close examination. _Pieris Venilia_ is first described in the work just cited; it appears to be, in Java, the representative of the three former. Our collection contains a single pair in perfect preservation.

75. **Ponta _Judith._** _Ate_ subconcolor; _antice alba, venis limboque nigris; postica flavae, limbo nigro, angulum analem versus aurantiace._ (Exp. alar. unc. 14—23.)

Wings agreeing in colour on both sides; anterior white with black nervures and posterior border; hinder pair yellow, with black border; the anal angle and its immediate confines having a more saturated orange tint.


This is, in Java, one of the most abundant species of _Pieris._ The specimens in our collection are numerous, diversified as to size, but agreeing in colouring and markings.

76. **Ponta _Coronis._** _Ale supræ albe, limbo postico communi nigro, anticearum dilatiorae albo-maculato venisque distinctioniribus; subeis virecenti-griseae venis latoribus subconfluentibus fasciisque postico fuscis, ferrugineo vel griseo-irrorationibus pulverulentis; postice maculae basali ad costam attenuatae triangulari insigni saturatissimae fulvo-pulverulentae._ (Exp. alar. 1 unc. 10 lin.—2 unc. 3 lin.)

Wings white above, with a common posterior black border, which is broader in the fore-wings and spotted with white, the nervures also in these being more pronounced; underneath greenish-gray with broader spreading subconfluent nervures covered with opaque ferruginous irrorations, and a posterior band of a brown colour; hinder wings at the base with a deep-fulvous triangular mark extending attenuated along the costa, its covering being opaque and pulverulent.

_Plate IV, fig. 9; 9; a._ The Larva and Chrysalis,


_Papilio Corononis._ Cram. pl. 44. fig. B.C.


The metamorphosis of this species is distinctly represented on our fourth plate. In the chrysalis an excellent illustration of this organ, as modified in the present section, is afforded. Our specimens, many of which were obtained by breeding, are numerous; they exhibit no variation in the markings, but little in their colouring; in a few individuals the posterior wings have underneath a grayish tint, and the basal mark is obscure and whitish, but in no single instance have the wings a yellow tint. In the species next following, the whole surface of the hinder wings underneath is covered with an uniform bright yellow colour, and the triangular basal mark, which is so prominent in the _Pieris Coronis_, is entirely wanting; and as our collection contains more than twelve specimens, which all essentially agree among themselves and with Cramer's figures of _P. Evagete_, I have introduced that species with his original denomination. All our specimens are from Continental India.
EXPLANATION OF THE PLATES.

PLATE V.

2; 2, a. Neptis Vikasi. n.
5; 5, a. Aconthea (Gen. Nov. n.) Lubentina (the male). Papilio Nymphalis Lubentina. Fab.
6. Aconthea Alankara. n.
7; 7, a. Melanitis Dusara. n.
8; 8, a. Hipparchia Medura. n.
9; 9, a. Hipparchia Makuta. n.

PLATE VI.

1. Idea? Gaura. n.

PLATE VII.

1. Vanessa Asterie: larva. 1, a: chrysalis. 1, b: Palpi. 1, c: Antenne. 1, d: Proboscis. 1, e: Fore leg of the male. 1, f: Fore leg of the female. 1, g: Mid leg. 1, h: Last joint of the tarsus of the mid leg magnified, showing the claws, appendages, &c. 1, i: Appendage separated.
4. Cynthia Cardui, from Java: larva. 4, a: chrysalis. 4, b: Palpi. 4, c: Antenne. 4, d: Proboscis. 4, e: Fore leg of the male. 4, f: Fore leg of the female. 4, h: Last joint of the tarsus of the mid leg magnified.
6. Ariadne Coryta? n: larva. 6, a: chrysalis. 6, b: Palpi. 6, c: Antenne. 6, d: Proboscis. 6, e: Fore leg of the male. 6, f: Fore leg of the female. 6, g: Mid leg. 6, h: Terminal joints of the fore leg of the female magnified.
7. Limenitis Sibilla: larva. 7, a: chrysalis. (According to Roesel.)
8. Neptis? n. (Limenitis Auct.) Populi: larva. 8, a: chrysalis. (According to Roesel.)
EXPLANATION OF THE PLATES.

9. Neptis Aceris? (from Java) larva. 9, a: chrysalis. 9, b: Palpi. 9, c: Antennæ. 9, d: Proboscis. 9, e: Fore leg of the male. 9, f: Fore leg of the female. 9, h: Last joint of the tarsus of the mid leg magnified.


11. Morpho? Celinde: larva. 11, a: chrysalis. 11, b: Palpi. 11, c: Antennæ. 11, d: Proboscis. 11, e: Fore leg of the male. 11, f: Fore leg of the female. 11, h: Last joint of the tarsus of the mid leg magnified.

PLATE VIII.

1. Papilio dissimilis: larva. 1, a: chrysalis. (From General Thomas Hardwicke’s series of Indian Drawings.) 1, b: Palpi. 1, c: Antennæ. 1, d: Proboscis. 1, e: Fore leg.

2. Acreea Violæ: larva. 2, a: chrysalis. (General T. Hardwicke.)


6. Aconthea primaria: larva. 6, a: chrysalis. 6, b: Palpi. 6, c: Antennæ. 6, d: Proboscis. 6, e: Fore leg of the male. 6, f: Fore leg of the female. 6, h: Last joint of the tarsus of the mid leg magnified.


8. Melanitis undularis: larva. 8, a: chrysalis. 8, b: Palpi. 8, c: Antennæ. 8, d: Proboscis. 8, e: Fore leg of the male. 8, f: Fore leg of the female. 8, h: Last joint of the tarsus of the mid leg magnified.

9. Hipparchia Leda: larva. 9, a: chrysalis. 9, b: Palpi. 9, c: Antennæ. 9, d: Proboscis. 9, e: Fore leg of the male. 9, f: Fore leg of the female. 9, h: Last joint of the tarsus of the mid leg magnified.
The object and extent of this work, the materials whence it is produced, the treatment and distribution of the subjects, and the design and arrangement of the illustrations afforded by the plates, have been distinctly detailed in my original prospectus. It was further stated that the parts would follow each other with every degree of expedition consistent with the style in which the work had been commenced; and a prospect was held out of publishing the successive parts at intervals of six months.

In conducting the second part, every exertion has been made to adhere to this engagement; twelve months have, however, elapsed since the publication of the first part. The drawings, dissections, and engravings have occupied more than one half of this period, and the remainder has scarcely been sufficient for the completion of the colouring of the plates in the style in which they are offered. It is therefore incumbent on me, respectfully to inform the honourable patrons of this work, as well as my friends and the public at large, that the remaining parts will individually require, one year, on an average, for their completion. The third part, now in progress, will accordingly be published in the course of the year 1830, with every expedition consistent with my plan.

It is also my duty to state, in anticipation of any objection which might arise to the work, from the extent and copiousness of the characters and descriptions, that a modification has been adopted in the second stirps of the Diurnal Lepidoptera, by which I am enabled to obtain every degree of brevity and conciseness required for the completion of the work within the limits proposed. In the Vermiform stirps I thought it advisable to adhere to the form originally adopted in the descriptions of the numerous novel and interesting subjects it contains; but in commencing the Chilognathiform stirps, I have adopted the following modifications. The generic character is given in Latin alone: yet although the detailed English translation is dispensed with, the explanatory observations and historical remarks will be continued after the model of the Vermiform stirps. In the Latin technical character of the species, a greater degree of conciseness is employed, and a more or less literal translation is added in place of a free and copious English description. Species already well known and clearly described are given with the name, and several of the most important synonyms. New species, if necessary, will be illustrated by concise Latin remarks. The miscellaneous observations containing the history of those individuals traced by me through their various stages of existence, and of which our collection contains representations in their larva and chrysalis states, as well as the peculiarities I have noticed in Java, regarding their relative abundance or scarcity, their food, habits, and season of appearance, will be continued as heretofore; and the object will be perpetually kept in view, of rendering the work generally useful and interesting to the British naturalist.