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WITH THE ASSISTANCE OF

**GENTLEMEN EMINENT IN SCIENCE AND LITERATURE.**

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IN EIGHTEEN VOLUMES.

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M.DCCC.XXX.

Crusades.  
Effects of the crusades upon religion.

ance, on the part of the sufferers, and to that exertion and illumination of mind, which terminated in the Protestant reformation.

We conclude with repeating, that the favourable results which we have attempted to trace to the crusades, even should the fairness of the deduction be admitted, will by no means exculpate their authors from the charge of criminal ambition, or enthusiastic folly. In manners, policy, and commerce, they had neither wisdom to foresee, nor virtue to design any improvement:

and if their conduct produced advantages to literature and religion, these being diametrically opposite to their desires, implied as much demerit of intention, as the injudicious violence against a victim under torture, which exasperates a sullen tumour into an open ulcer, and thus accelerates the cure of an evil which it was expected to increase. See *Gibbon's History*; *Histoire Generale de Voltaire*; *Histoire des Croisades de Maignbourg*; *Esprit des Croisades*. (J. W.)

Crusades.

## CRUSTACEOLOGY.

Crustaceology.

CRUSTACEOLOGY treats of the characters of two classes in Zoology, viz. CRUSTACEA and ARACHNIDES. Formerly, both these were arranged by Linné and his followers under the general denomination INSECTS, (*Insecta*); but the more extended, and consequently more accurate, observations of modern zoologists, have authorised the separation of the CRUSTACEA and ARACHNIDES from INSECTA; a division perfectly warranted,

not only by the difference of most important characters, but also the great facilities which it affords the student of nature. In the following pages, we shall first treat of the CRUSTACEA, and then take into consideration the characters of the class ARACHNIDES, which holds an intermediate place in the system of nature between the CRUSTACEA and INSECTA, and point out their systematic connection and arrangements.

Crustaceology.

### CLASS I. CRUSTACEA.

Crustacea.

THIS name, by which the class is distinguished, derives its origin from *crusta*, a *crust* or *shell*, because the animals have all a covering of that kind. The animals themselves are known under the familiar appellations of *crabs*, *lobsters*, *shrimps*, *prawns*, *centipedes*, *millepeds*, &c. These were considered by the ancients as a subclass of fishes, connecting true fish with the testaceous vermes (*mollusca*); and this opinion prevailed, with very little variation, as recently as the time of Linné, who, in the great revolution which he effected in every part of natural history, separated the CRUSTACEA from fishes and worms, and placed them with insects. After Linné, our industrious countryman Pennant seems to have been the first to separate the crustacea from insects. He has, however, neglected to assign any reason for this change, which renders it rather an innovation than a reform, and deprives him of any claim of priority which he might otherwise have deserved. He appears to have been rather influenced by caprice, than by any conviction of the correctness of his principles, (as we infer, from his wantonly re-connecting the whales with fishes, and in other instances, in which his chief aim appears to have been, to differ from his immortal predecessor Linné,) and on these grounds we shall not farther insist on his claims.

The illustrious French zoologists Cuvier, Lamarck, Latreille, and Dumeril, separated the *Crustacea* from *Insecta*, abandoning all the former opinions prevalent on the subject. How far they may have been right in thus rejecting the doctrines sanctioned by so many men of eminence, remains to be examined; and we are much disposed to think, that the grounds on which they have acted, will be found sufficiently firm to warrant the steps they have taken. In such enquiries, we are not to be governed by prejudice or veneration for the works of older writers, in those points where our own judgment may be employed with equal or even greater certainty. The *magni nominis umbra* has something so imposing on the minds of those too strongly inclined to worship it, that it cannot be too sedulously guarded against. Much caution is however, necessary, in the examination of innovations, and the utmost impartiality is to be used. It is true, that animals may have a decided re-

semblance in their external characters, whilst their internal structure is totally different. This has been considered the case with the classes in question, although it appears to us very absurd to have placed together animals so very distinct: How ridiculous must it appear even to the most cursory observer, to be told that crabs and lobsters are insects! yet such was the opinion of Linné, and even at this time (although the continental writers unanimously agree in considering them distinct) many collectors, either from accustomed habit, or veneration for Linné, still consider the crustacea as a branch of Entomology, and as they both agree in having articulated limbs and antennæ, they are admitted by most British collectors into their cabinets as genuine *insects*; their internal structure, economy, and external appearance, being disregarded.

We shall now lay before our readers, the observations of Cuvier, Dumeril, Latreille, and Lamarck, and endeavour to point out the most obvious distinctive characters of the Crustacea. It appears, that they agree with insects, in having in common with them articulated limbs and antennæ, but differ most essentially in anatomical structure. The CRUSTACEA breathe by *gills* like the Mollusca, and have generally four *antennæ* or *horns*, and often six *mandibules* or *jaws*; likewise a *heart* like the Mollusca. They undergo little or no transformation; and lastly, they breed more than once. INSECTA, on the contrary, breathe by *tracheæ* or *windpipes*, have never more than two *antennæ*, no *mandibules*, no heart, and they all undergo more or less transformation, and perish as soon as the procreation of their species is effected.

Such are the most remarkable characters of the two classes, which warrant, upon every principle, their separation from each other. Indeed Linné himself, with that clearness and accuracy which distinguished his general views in every department of natural history, has laid the foundations of these recent changes effected by the foreign zoologists. That great man has taught us to consider the internal organization "a natural, certain, and unerring guide in the classification of animals." We feel, therefore, fully convinced, that

Crustacea.

History.

Crustacea.

these changes will meet the views of all those who are competent to appreciate the true principles that should regulate every philosophical arrangement.

In the arrangement of the three classes CRUSTACEA, ARACHNIDES, and INSECTA, we have adopted certain alterations suggested by Mr Leach, of which we shall give some account: He has proposed to take from the class Arachnides, the orders, I. Tetracera, II. Myriapoda of Latreille, and add them to the Crustacea; and also to take from the same class, the order Parasita of the same author, and add it to Insecta, which, by this alteration, will include all those animals having two antennæ and six legs; the Arachnides, by the same improvement, will take in all that have no antennæ; and, lastly, the Crustacea will comprehend the remainder. On this mode of arrangement we shall say nothing, except that it seems well adapted to facilitate the progress of the student, and on this ground appears to deserve attention.

The following are the characters of the class Crustacea:

*Anatomical Character.*

Heart single; branchiæ for respiration; no vertebræ; spinal marrow with many knots or ganglia; muscles for moving the feet.

*External Character.*

Body with naked jointed feet, formed either for swimming or running; no wings; covering crustaceous, horny, or membranaceous, either shield-shaped, or bivalve. Branchiæ placed under the shell.

This class is divided into three orders. 1. Entomotraca. 2. Malacostraca; and, 3. Myriapoda. The latter was placed in the class Arachnides, by Latreille; but, as already mentioned, we are inclined to place it with the Crustacea, for several reasons which we shall state in their proper place. We now proceed to define the Orders, Tribes, Families, and Genera of the class Crustacea.

ORDER I. ENTOMOSTRACA.

FEET either branchial, or furnished with leaf-like processes. BODY, with a coriaceous or membranaceous covering, which is either shield-shaped or bivalve. EYES, generally sessile or fixed; in some few pedunculated, or placed on a footstalk. PALPI, double. MANDIBULES, obscure or wanting.

In this order the antennæ are sometimes wanting, in some they are very obscure, in others pencil-shaped, or branched. The eyes are generally two in number, in some distinct, in others united, so as to appear as one; the mouth, furnished either with jaws or a proboscis. The mandibules without palpi. *Maxillæ* or *jaws*, four or six. *Feet*, generally ten in number, formed for swimming. *Tail*, furnished with lamellæ or setæ, and sometimes with a sword-like process.

*Observation.* Some of the animals of this order undergo changes during their growth; these peculiarities will be noticed when the individual species are described.

TRIBE I. THECATA.

SHELL, shield-shaped.

FAMILY I. XIPHOSURA.

The clypeus or shield double, completely covering

the body; the feet simple and unequal in size; tail sword-shaped; antennæ scarcely visible; mouth with mandibules.

GENUS I. LIMULUS. Shell composed of two pieces; mandibules double-jointed; tail horny and sword-shaped.

FAMILY II. PNEUMONURA.

The clypeus single; feet simple, and unequal in size; mouth with a rostrum; tail fibrous, or leaf-shaped.

GENUS II. CALIGUS. No mandibules; tail with two filaments; the anterior feet terminated by a hook, the rest formed for swimming.

GENUS III. BINOCULUS. No mandibules; tail with two lobes; the anterior pair of feet terminated by a nail, the second pair conic, the rest formed for swimming.

FAMILY III. PHYLOPODA.

The clypeus single; all the feet furnished with leaf-like fins; tail fibrous or filamentous.

GENUS IV. APUS. Mouth with mandibules; tail with two setæ; the feet leaf-shaped.

TRIBE II. OSTRACODA.

SHELL bivalve; EYES most frequently confluent.

FAMILY IV. MONOPHTHALMA.

Eyes confluent, or running together so as to appear but one.

\* Two eyes.

GENUS V. LYNCEUS. Head exerted; antennæ capillary.

\*\* One eye.

GENUS VI. DAPHNIA. Head exerted; antennæ branched.

GENUS VII. CYPRIS. Head concealed; antennæ terminated by a brush.

GENUS VIII. CYTHERE. Antennæ hairy; head concealed.

TRIBE III. GYMNOTA.

SHELL without any covering.

FAMILY V. PSEUDOPODA.

Head closely united to the thorax; feet obscure or obsolete.

GENUS IX. CYCLOPS. One sessile eye implanted in the front of the thorax.

FAMILY VI. CEPHALOTA.

Head large, and evidently distinct from the thorax.

\* Eyes sessile.

GENUS X. POLYPHEMUS. One eye; two branched feet extending horizontally.

GENUS XI. ZOE. Two eyes; rostrum longer than the thorax, and perpendicularly placed.

\*\* Eyes pedunculated.

GENUS XII. BRANCHIOPODA. Body filiform.

ORDER II. MALACOSTRACA.

FEET either formed for swimming or running, the TARSUS being furnished with a horny tail. BODY, with a calcareous covering; two moveable and pedunculated eyes, (in the third Family the eyes are fixed.) ANTENNÆ in all the genera four, four double. PALPI attached to the MANDIBULES.

Crustacea.

In this order the covering is always calcareous, and is generally shield-shaped. *Antennæ* always four in number; the interior pair often divided. *Eyes* generally pedunculated, or placed on a footstalk; in some they are immersed in a socket. *Mouth* armed with jaws. The *mandibles* two in number, bearing palpi. *Maxillæ* six in number, placed in a longitudinal line, one above the other. Four double *palpi* situated under the maxillæ. *Feet* ten, in some fourteen, formed for swimming or walking; the tarsus terminated by a horny nail. *Tail* simple, or armed either with lamellæ or styles.

*Observation.* The animals of this order undergo no transformation; they are for the most part produced from eggs. In the last Family, the females carry about their young, until they are large and strong enough to provide for themselves.

\*  
TRIBE I. BRACHYURI.

TAIL shorter than the body, having no caudal fin.

FAMILY VII. CANCERIDES.

Shell transverse, or heart-shaped in some; round or square in others. The longitudinal very rarely exceeding the transverse diameter. *Antennæ* inserted into excavation on the middle of the clypeus.

I. Anterior part of the shell rounded; posterior margin straight.

\* Hinder feet formed for swimming, the last joint being much compressed.

GENUS XIII. *PODOPHTHALMUS*. Peduncle of the eyes reaching the external anterior margins of the shell.

GENUS XIV. *PORTUNUS*. Peduncle of the eyes much shorter than the external anterior margins of the shell.

\*\* Hinder feet, as well as all the rest, formed for running, the last joint being conic.

GENUS XV. *DROMIA*. Hinder feet placed on the back. Shell very convex.

GENUS XVI. *CALAPPA*. Posterior angles of the shell arched, so as to receive the hinder feet when contracted. Hands crested.

GENUS XVII. *HEPATUS*. The second joint of the peduncle of the external double palpi triangular.

GENUS XVIII. *CANCER*. The second joint of the peduncle of the external double palpi quadrangular.

II. Shell more or less square.

GENUS XIX. *OCYPODE*. Eyes with an elongated footstalk inserted into the middle of the anterior margin of the shell.

GENUS XX. *GRAPSUS*. Eyes with a short peduncle inserted in the anterior angles of the shell. Interior antennæ concealed by the inflexed clypeus.

GENUS XXI. *PLAGUSIA*. Eyes with a short peduncle inserted at the anterior angles of the shell. Interior antennæ inserted into two little foveolæ on the upper part of the clypeus.

GENUS XXII. *PINNOTHERES*. Shell roundish-square. The internal footstalk of the exterior double palpi one-jointed.

FAMILY VIII. OXYRHYNCHI.

Shell somewhat oval or triangular. The longitudinal exceeding the transverse diameter. The anterior antennæ generally exserted.

I All the tarsi conic.

GENUS XXIII. *LEUCOSIA*. Eyes and antennæ minute. The footstalks of the external double palpi equal.

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GENUS XXIV. *MAJA*. Eyes distant from one another, and not small. The joints of the internal footstalk of the external double palpi with two broad joints. Hinder feet not spurious.

GENUS XXV. *MACROPEDIA*. Eyes distant from one another. External double palpi porrected. The second joint of the footstalk elongated. Hinder feet not spurious.

GENUS XXVI. *LITHODES*. Eyes near each other at their base. Hinder feet minute and spurious.

GENUS XXVII. *CORYSTES*. External antennæ porrected as long as the body. The second joint of the internal peduncle of the external double palpi lengthened, and gradually narrowing towards the apex.

GENUS XXVIII. *MICTYRIS*. The first joint of the internal footstalk of the external palpi very large.

GENUS XXIX. *DORYPPE*. The four posterior feet placed on the back.

II. The posterior feet compressed.

\* All the feet inserted in the same horizontal line.

GENUS XXX. *ORYTHIA*. The two posterior feet terminated with a swimming joint.

GENUS XXXI. *MATUTA*. All the feet, except the anterior pair, terminated by a swimming joint.

\*\* The four posterior feet placed over the others.

GENUS XXXII. *RANINA*. All the feet, except the anterior pair, formed for swimming.

TRIBE II. MACROURI.

TAIL longer than the body; the apex furnished with moveable lamellæ, which are termed fins. Feet ten or fourteen.

FAMILY IX. PAGURH.

The caudal, lamellæ, or fins, placed at a distance from the middle lamellæ, and not forming with it a fan-shaped fin.

1. Some of the feet formed for swimming, the last joint being compressed.

\* Hands with one finger.

GENUS XXXIII. *ALBUNEA*. Posterior feet small and filiform. The three anterior pair compressed, and armed with a hook.

GENUS XXXIV. *REMPES*. Arms shorter than the second pair of feet; the rest formed for swimming.

\*\* Hands simple.

GENUS XXXV. *HIPPA*.

2. Hands with a finger and thumb. Feet not formed for swimming.

GENUS XXXVI. *PAGURUS*. Tail armed with hooked processes.

FAMILY X. PALINURII.

The lateral lamellæ meeting the middle process, and forming with it a fan-shaped fin. Peduncle of the antennæ very long, armed at the apex with a jointed seta.

1. All the feet (arms included) terminated by a conic tarsus.

GENUS XXXVII. *SCYLLARUS*. Exterior antennæ short and broad. Eyes distant.

GENUS XXXVIII. *PALINURUS*. Exterior antennæ very long and setaceous. Eyes placed on a common peduncle.

II. The two anterior feet, or arms, with a compound hand. Posterior feet spurious.

GENUS XXXIX. *PORCELLANA*. Shell roundish-square.

GENUS XL. GALATHEA. Shell oblong-oval.

FAMILY XI. ASTACINI.

The lateral caudal lamellæ meeting the middle process, and forming with it a fan-shaped fin. The interior antennæ with a short peduncle, armed with jointed setæ.

I. Feet ten. Hands didactyle.

\* Interior antennæ with two setæ.

A. Antennæ placed in the same horizontal line.

GENUS XLI. ASTACUS. Six anterior feet compound.

GENUS XLII. THALASINA. Four anterior feet compound.

GENUS XLIII. UPOGEBIA. Two anterior feet compound.

GENUS XLIV. CALLIANASSA. The four anterior feet compound; third pair monodactyle.

B. Exterior antennæ inserted below the interior ones, with a large squama at their base.

GENUS XLV. ALPHÆUS. The four anterior feet compound.

GENUS XLVI. PENÆUS. The six anterior feet compound.

\*\* Interior antennæ with three setæ.

GENUS XLVII. PALÆMON. The four anterior feet compound.

II. Hands monodactyle, or with a moveable hook.

GENUS XLVIII. CRANGON.

III. Feet more than ten. Hands simple.

GENUS XLIX. PRAUNUS.

FAMILY XII. SQUILLARII.

Eyes pedunculated. The first joint in the body the largest.

GENUS L. SQUILLA. Interior antennæ with three articulated setæ.

GENUS LI. MYSIS. Interior antennæ with two articulated setæ.

TRIBE III. GASTERURI.

EYES sessile. The joint of the body which receives the head, of the same size with the rest.

FAMILY XIII. GNATHONII.

Mandibles two, prominent. Antennæ nearly equal. Feet ten, all armed with a fixed nail. Tail with two moveable plates on each side, forming, with a middle process, a swimming tail.

GENUS LII. GNATHIA.

FAMILY XIV. GAMMARINI.

Tail armed at its extremity with several styles. Feet fourteen. Tail not distinct from the body.

\* Superior antennæ shorter than the peduncle of the inferior.

GENUS LIII. TALITRUS. Anterior pair of feet largest.

GENUS LIV. ORCHESTIA. Anterior pair of feet smallest.

\*\* Inferior antennæ shortest.

GENUS LV. GAMMARUS. The four anterior feet equal, furnished with a moveable nail. Superior antennæ with a seta on the third joint of the peduncle.

GENUS LVI. MAERA. Anterior feet with a moveable nail, the second pair with a compressed hand and moveable thumb.

GENUS LVII. MELITA. Anterior feet with a compressed hand furnished with a moveable thumb.

GENUS LVIII. LEUCOTHŒ. Anterior pair of feet with

a finger and thumb, the second pair with a moveable thumb. Crustacea.

FAMILY XV. COROPHONII.

Body elongated; tail with four bifid styles; feet fourteen, anterior pair with a moveable thumb. The under antennæ as long as the body, (feet-like.)

GENUS LIX. COROPHIUM.

FAMILY XVI. CAPRELLINI.

Body six-jointed; all the articulations except the second and third bearing feet. Two oars on each side, placed on the sides of the second and third joint.

GENUS LX. CAPRELLA. Body linear; oars globular.

GENUS LXI. CYAMUS. Body depressed; oars elongated.

FAMILY XVII. APSEUDII.

Body six-jointed; tail also six-jointed; the end armed with appendices. Feet fourteen; the anterior pair armed with a finger and thumb; second pair compressed and denticulated. Inferior antennæ bifurcated.

GENUS LXII. APSEUDES.

ORDER III. MYRIAPODA.

BODY, with seven or more feet-bearing articulations. ANTENNÆ, filiform, two or four in number. PALPI, single. EYES, immoveable.

The animals which compose this order were placed in the class Arachnides, by Lamarck and Latreille; but, from the characters we have given in the introduction to this article, it is more correctly referable to Crustacea.

Observation. The animals of this order undergo no transformation; it has been stated, however, that some of the Scolopendrides increase the number of their feet during their growth: this Mr Leach denies, for, in his cabinet, most of the indigenous species may be seen, from the smallest size to the mature state, agreeing in all points with full grown specimens.

TRIBE I. TETRACERA.

ANTENNÆ, four or two in number. FEET, fourteen. The anal segment of the body without feet, being sometimes armed either with lamellæ or styles.

FAMILY XVIII. ASELLIDES.

Antennæ generally very distinct, sometimes obscure; the internal or middle as long as the peduncle of the external ones. The last segment of the body generally largest.

I. The four antennæ very distinct.

\* The foliaceous appendices of the tail very large, each one formed of a double scale; the two scales parallel and meeting together.

GENUS LXIII. ASELLUS. Tail formed of one segment, with two bifid styles; the four antennæ setaceous, the outermost division being formed of a vast number of little joints.

GENUS LXIV. IDOTEA. Tail formed of two or three segments, without styles; superior antennæ filiform, having four great divisions, the outermost composed of a great many smaller joints.

\*\* Foliaceous appendices of the tail formed of one or two processes, placed on a common peduncle situated on each side of the tail.

Crustacea.

A. Two processes on each side of the tail.

GENUS LXXV. ANTHOURA. Tail with two broad lamellæ on each side, and a middle process; antennæ short, the upper pair longest. Anterior pair of feet furnished with a moveable hook.

GENUS LXXVI. CYMOTHOA. Tail composed of many segments; the body not rolling into a ball; the feet armed with strong nails.

GENUS LXXVII. SPHEROMA. Tail composed of two segments; body capable of rolling into a ball; the tarsal nail of a moderate size.

B. One process on each side of the tail.

GENUS LXXVIII. NESÆA. Peduncle of the superior antennæ large, and long; body six-jointed, the last joint largest.

GENUS LXXIX. CAMPECOPEA. Peduncle of the superior antennæ not large, but longer than the inferior; the process at the side of the tail long and curved.

II. The four antennæ obscure or wanting.

GENUS LXX. BOPYRUS.

## FAMILY XIX. ONISCIDES.

The internal antennæ very short and obscure.

GENUS LXXI. LIGIA. External antennæ terminated by an articulated seta.

GENUS LXXII. PHILOSCIA. External antennæ eight-jointed; the base naked; the first joints of the tail abruptly narrower than the last joints of the body.

GENUS LXXIII. ONISCUS. External antennæ with eight joints, inserted under the margin of the head.

GENUS LXXIV. PORCELLIO. External antennæ with seven joints, inserted under the margin of the head; lateral styles of the tail conical and projecting.

GENUS LXXV. ARMADILLO. External antennæ with seven joints, inserted in a fovea, in which the margin is elevated; lateral styles of the tail not projecting, terminated by a triangular joint; (body capable of rolling into a ball.)

## TRIBE II. MILLEPEDA.

FEET above fourteen. ANTENNÆ two. All the segments of the body, the anal, and head excepted, bearing feet.

## FAMILY XX. JULIDES.

The maxillæ adhering to the lip, or wanting. Palpi tuberculiform and obscure.

\* Body crustaceous.

GENUS LXXVI. GLOMERIS. Body elliptical, convex above, arched beneath; rolling itself into a ball when touched.

GENUS LXXVII. JULUS. Body oblong; eyes granular, and very distinct.

GENUS LXXVIII. POLYDESMUS. Body long; eyes obscure.

\*\* Body soft.

GENUS LXXIX. POLLYXENUS. Body oblong, terminated by a pencil.

## FAMILY XXI. SCOLOPENDRIDES.

Two very distinct maxillæ, connected at their base. Maxillary palpi two, which are filiform. Labial palpi also two in number, terminated by a little hook (hamulus.)

I. Each segment bearing two pair of feet.

GENUS LXXX. SCUTIGERA.

II. Each segment bearing one pair of feet.

A. Antennæ conico-setaceous.

\* Feet forty-two.

GENUS LXXXI. SCOLOPENDRA. Eyes eight.

GENUS LXXXII. CRYPTOPS. Eyes obscure.

\*\* Feet thirty.

GENUS LXXXIII. LITHOBIUS. Eyes granular.

B. Antennæ filiform.

GENUS LXXXIV. GEOPHILUS.

Crustacea.

## ORDER I. ENTOMOSTRACA.

ENTOMOSTRACA.

## FAMILY I. XIPHOSURA.

Genera and species.  
1. LIMULUS.

GENUS I. LIMULUS. Shell coriaceous, of a rounded oval form, rather narrower behind than before, notched and flattened. Clypeus double. Shell divided, the anterior division the largest, somewhat moon-shaped, with three elevated ridges on the back. Eyes two in number, small, oval, and obscure, placed on the under side of the carinæ or ridges. Back carinated, with a deep sulcus or groove on each side. Tail horny, attached to the body by a hinge-like joint. No antennæ. Two double jointed, cylindrical mandibles, situated on the under part of the anterior division of the shell; the outermost digitated, furnished with a finger and thumb, the former being moveable. Feet ten, all (excepting the anterior pair, which are most frequently simple,) furnished with a finger and thumb. The branchiæ, or gill-like lungs, situated under a horny lamella on the sides of the body.

Sp. 1. *Polyphemus*. All the feet digitated; tail three-sided, frequently somewhat notched above; the middle carina of the anterior scutum spiny.

Inhabits the ocean of South America, where it is well known to sailors under the name of *king-crab*.

*Monoculus polyphemus* of Linné.

*Limulus cyclops* of Fabricius. See Plate CCXXI. Fig. 1.

PLATE  
CCXXI.  
Fig. 1.

Sp. 2. *Moluccanus*. All the feet digitated; tail three-sided, notched above from the base to the apex. The middle carina of the scutum without spines.

A native of the East Indian ocean. Latreille, Gen. Crust. et Ins. tom. i. p. 11.—*Molucca crab*.

Sp. 3. *Heterodactylus*. The four anterior feet simple. Inhabits China.

Heterodactylus.

*Limule hétérodactyle*. Lat. Hist. Nat. des Crust. et des Insect. tom. iv. p. 89.

*Limulus heterodactylus* of Latreille's *Genera Crust. et Ins.*

Sp. 4. *Virescens*. The anterior pair of feet simple. Inhabits the East Indian seas.

Virescens.

*Limulus polyphemus* of Fabricius.

Observation. *Limulus nocilucus*, discovered by Captain Horsburgh, and described by James Macartney, Esq. in an ingenious paper on luminous animals, *Phil. Trans.* 1810, Plate xv. p. 292, evidently belongs to a distinct genus, at present unknown to us.

## FAMILY II. PNEUMONURA.

GENUS II. CALIGUS. Shell heart-shaped. Two eyes placed at a distance from one another, on the anterior margin of the shell. Antennæ minute, setaceous. Mouth with a conic rostrum, which is bent downwards. Feet either eight or ten; two or four of which are furnished with an inflexed nail, and are formed for walking; the pair following these walking feet are armed with setæ, (sometimes with a double nail,) the rest bearing leaf-like lamellæ. Abdomen exerted, and nar-

2. CALIGUS.

- Crustacea. rower than the shell, the apex armed with two round filaments.
- Piscinus. *Sp. 1. Piscinus.* Body short; tail bifid, with one leaf-like process.  
A very common species, attaching itself to various fish, especially the hohibut (*pleuronectes hippoglossus*).  
*Caligus curtus* of Müller. *Monoculus piscinus* of Fabricius and Linné. *Binoculus piscinus* of Otho Fabricius.  
*Oniscus lutosus* of Slabber.
- Productus. *Sp. 2. Productus.* Body elongated; tail with three laminae.  
Found on the same fish with the preceding; common on the cod.  
*Monoculus salmonicus* of Fabricius. *Caligus productus* of Müller.
3. ARGULUS. GENUS III. ARGULUS. Shell oval, plain, and membranaceous; in front with two contractions, notched behind. Eyes two, placed at a distance from one another, on the sides of the anterior edge. Antennæ two, in some four, of a very small size, composed of three joints, conic at their base, but gradually tapering towards the apex, inserted between the eyes. Mouth with a conic pectoral rostrum. Feet twelve; the anterior pair tubular, and somewhat hemispherical, by means of which the animal attaches itself to any body; the second pair conic, composed of four joints, notched at their base. The other four pair double jointed, and formed for swimming.
- Argulus. *Sp. 1. Argulus.* Body greenish-grey.  
*Binocule du gasteroste*, Geoffroy.  
*Argulus dephinus*, Müller.  
*Monoculus argulus*, Fabricius.  
*Monoculus gyrini*, Cuvier.  
*Binoculus gasterostei*, Latreille.  
*Argulus foliaceus* of Jurine.  
Inhabits fresh waters, adhering to tadpoles and fish of various kinds, as carp, tench, &c.  
*Observation.* A most scientific paper on this species, *Argulus foliaceus*, is given by young Jurine in the *Annales du Muséum d'Histoire Naturelle* for 1806, in which he accurately describes its anatomical structure and economy. *Argulus charon* of Müller is merely the young of *Argulus foliaceus*, as has been shewn by young Jurine in the above mentioned paper.
- FAMILY III. PHYLLOPODA.
4. APUS. GENUS IV. APUS. Body soft, covered either with a membranaceous or semi-crustaceous shell, of a roundish-oval shape, deeply notched behind. Two moon-shaped prominent eyes, placed very near each other, on the anterior part of the head. Antennæ hair-like and double jointed. Mandibles two, one on each side, nearly of a cylindrical shape, very short and hollow within, somewhat waved at the apex, and compressed; the extreme point notched. Four depressed, horny, transverse maxillæ, two on each side, placed under the mandibles. About sixty pair of lung-like feet. The tail elongate, somewhat conic, truncated at the end; composed of many very short and obscure joints.
- Canceriformis. *Sp. 1. Canceriformis.* The dorsal carina blunt behind; no lamella between the caudal setæ.  
Inhabits marshes and stagnant pools.  
*Limulus palustris*, Müller.  
*Monoculus apus*, Fabricius.  
*Apus canceriformis*, Latreille.
- Productus. *Sp. 2. Productus.* The dorsal carina spined behind; a lamella inserted between the caudal fins.  
Found in the same situations as the preceding species.
- Is the *Monoculus apus* of Linné, well described by Crustacea. him in *Fauna Suecica*, ed. sec. p. 498. "*Cauda setis duabus validis, interjectâ lamellâ.*"
- FAMILY IV. MONOPHTHALMA.
- GENUS V. LYNCEUS. Eyes two. Antennæ two or 5. LYN- four in number, setaceous or hair-shaped. Feet eight CEUS. in number. Head exserted.
- Sp. 1. Brachyurus.* Antennæ four; shell globose; Brachy- tail deflexed.  
Inhabits ponds and marshes.  
*Monoculus brachyurus* of Fabricius.  
*Lynceus brachyurus* of Latreille.
- Sp. 2. Sphæricus.* Antennæ two; shell globose; Sphæricus, tail deflected.  
Inhabits ponds and marshes.  
*Monoculus sphericus* of Fabricius.  
*Lynceus sphericus* of Latreille.
- GENUS VI. DAPHNIA. Müller, Latreille. Eye one. 6. DAPHNIA. Head exserted. Antennæ two, branched. Feet eight. (or twelve).
- Sp. 1. Pulex.* Tail inflected; shell pointed behind. Pulex.  
*Daphnia pennata* of Müller.  
*Monoculus pulex* of Linné and Fabricius.  
*Daphnia pulex* of Latreille.  
*Pulex caudatus* of Schæffer.  
Inhabits Europe.
- GENUS VII. CYPRIS. Muller, Latreille. Eye one. 7. CYPRIS. Head concealed under the shell. Antennæ setaceous, branched, and inserted above.
- Sp. 1. Conchacea.* Shell oval, transparent, and hairy. Conchacea.  
*Monoculus conchaceus*, Linné and Fabricius.  
*Cypris pubera*, Müller.  
*Cypris conchaceus*, Latreille.  
Inhabits fresh waters.
- Sp. 2. Detecta.* Shell somewhat kidney-shaped, and Detecta. transparent.  
*Cypris detecta*, Müller.  
Inhabits Europe.
- Sp. 3. Reniformis.* Shell kidney-shaped and green. Reniform-  
*Cypris reniformis*, Dardebart de Férussac, fils. mis.  
Inhabits France and Britain. First described by the son of Dardebart de Férussac, in the *Annales du Muséum d'Histoire Naturelle* for 1806. It has been taken in Duddingston Loch, near Edinburgh, and in various ponds in Devon, by Mr Leach. See Plate CCXXI. PALTE CCXXI. Fig. 2.
- GENUS VIII. CYTHERE. One eye. Head concealed. 8. CYTHERE. Antennæ two, inserted above, and hairy.
- Sp. 1. Viridis.* The shell green, kidney-shaped, and Viridis. tomentose.  
*Cythere viridis*, Müll. Ent. p. 64. tab. 7. fig. 1, 2; Latreille, *Gen. Crust. et Ins.* tom. 1. p. 19.  
*Cytherée verte*, Latreille, *Hist. Nat. des Crust. et des Ins.* tom. iv. p. 252.  
*Monoculus viridis*, Fab. Ent. Syst. tom. ii. p. 494.  
Inhabits fuci and marine confervæ of the north of Europe.
- FAMILY V. PSEUDOPODA.
- GENUS IX. CYCLOPS. Müller, Latreille. Eye one. 9. CYCLOPS. Body elongate, ovate-conical form. Antennæ two or four. Feet six or ten.
- Sp. 1. Quadricornis.* Antennæ four; tail straight Quadricor- and bifid. nis.  
*Monoculus quadricornis* of Linné, Fabricius, Donovan.  
*Cyclops quadricornis* of Müller and Latreille.  
Inhabits ditches and gently running streams of water.  
*Amymones nauplii* of Müller, is merely the young of this species, or of some other.

Crustacea.  
Longicornis.

*Sp. 2. Longicornis.* Two very long antennæ; tail bifid.

*Monoculus longicornis*, Fabricius.

*Cyclops longicornis*, Müller, Latreille.

Inhabits the Norwegian Sea.

*Observation.* The above species are very distinct and well marked; but we are sorry to inform our readers that this is not the case with the others, all of which inhabit fresh waters, but are by no means distinctly defined. The species alluded to are *Cyclops rubens*, *cæruleus*, *claviger*, and *mulleri*. On the latter, a long and elaborate paper is given in the *Annales du Muséum d'Histoire Naturelle* for 1806, but we have heard from good authority, that it has been described under another name in the works of Müller. We shall therefore be silent on the subject, and pass it without further notice.

#### FAMILY VI. CEPHALOTA.

\* Eyes sessile.

10. POLYPHEMUS.

GENUS X. POLYPHEMUS. Head distinct from the thorax. One eye. Thorax distinct from the abdomen, which is oval and crustaceous, compressed and crooked. Tail very much inflected. Two bifurcate processes extended horizontally. Eight short retuse feet, armed with setæ.

Oculus.

*Species 1. Oculus.* Body greenish-grey, oars blackish.

Inhabits marshes and lakes. Besides this, Mr Leach believes there are many other species which have been confounded with it: It is *Polyphemus oculus* of Müller and Latreille, *Monoculus pediculus* of Fabricius, *Cephaloculus stagnorum* of Lamarck.

11. ZÖE.

GENUS XI. ZÖE. Head indistinct, with two large globose eyes. Rostrum nearly perpendicular, rather larger than the thorax, with the apex acute. Four antennæ inserted beneath the eyes; the interior simple, the exterior geniculated and bifid. Thorax somewhat oval. Back produced into a recurved spine twice as long as the thorax. Feet short, and hid under the thorax, with the exception of the hindermost pair, which are long, and formed for swimming. Tail, length of the thorax, and often inflected or bent up under it, composed of four joints; the first four very narrow, the last largest and lunated.

Pelagica.

*Species 1. Pelagica.* Colour cinereous.

Inhabits the sea every where.

*Zöe pelagica*, Bosc, *Hist. Nat. des Crust.* tom. ii. p. 135. *Monoculus taurus* of Slabber.

\*\* Eyes with a distinct peduncle.

12. BRANCHIOPODA.

GENUS XII. BRANCHIOPODA. Body filiform, and very soft. Head divided from the thorax by a very narrow but distinct neck. Two lateral moveable eyes. Two short, double-jointed, capillary antennæ, inserted behind and above the eyes. Front armed with two moveable tentaculæ or horns, (broader towards the apex in the male,) which are notched: those of the female jointed, and bearing a papilla on their point. In the front of the male, at the base of the tentaculæ, are two long hair-like filaments; the clypeus in this sex is double. In both sexes, the mouth has a hooked rostriform papilla, supported by four little processes. The trunk of the body keel-shaped, consisting of eleven joints, each bearing two branchial feet; the anterior pair with two, the posterior with three lamellæ. The tail about the length of the body, composed of six? or nine? obscure joints; the anal segment bearing two fins. The organs of generation situated at the base of the tail.

stagnalis.

*Species 1. Stagnalis.* Body transparent, of a light-

brown colour, slightly tinged with green or blue, particularly on the head and legs.

*Cancer stagnalis* of Linné and Shaw, *Gammarus stagnalis* of Fabricius, *Branchiopoda stagnalis* of Lamarck and Latreille, *Apus piciformis* of Schæffer.

A most ingenious and accurate paper has been written on this species by Dr George Shaw, in the *Transactions of the Linnean Society of London*, vol. i. of which we shall here avail ourselves.

“It is generally found in such waters as are of a soft nature, and particularly in those shallows of rain-water which are so frequently seen in the spring and autumn, and in which the *Monoculus pulex* of Linné, and other small animals, abound. At first sight, it bears some resemblance to the larva of a dytiscus; but when viewed closely it is found to be of a much more curious and elegant appearance than that animal. The legs, of which there are several pair (eleven?) on each side, are flat and filmy, and have the appearance of so many waving fins, of the most delicate structure imaginable. The whole animal is extremely transparent, and the general colour is brown, slightly tinged with bluish-green. These creatures should seem, by their appearance, to be of a predaceous nature, the structure of their fangs seeming to be particularly adapted to the purpose of seizing their prey; yet (Dr Shaw observes) I never observed those which I kept to attack any of the animalcules which were in the same water; on the contrary, *Monoculus conchaceus* of Linné very frequently assaults them, and adheres with such force to their tails or legs, as sometimes to tear off a part in the struggle. It delights much in sunshine, during which it appears near the surface of the water, swimming on its back, and moving in various directions, by the successive undulations of its numerous fin-like legs, and moving its tail in the manner of a rudder. On the least disturbance, it starts in the manner of a small fish, and endeavours to secrete itself, by diving into the soft mud. It changes its skin at certain periods, as is evident, from the exuvia or slough being frequently found in the water in which these animals are kept.

Linné, as appears in the last edition of the *Fauna Suecica*, had observed this animal, but, though he particularly mentions the appearance of the ovarium, he proposes a most extraordinary doubt, whether it may not prove to be the larva of some species of ephemera. He repeats this question in the *Systema Naturæ*.

“In March and April, the females deposit their eggs without any settled order, and perfectly loose in the water. They appear to the naked eye like very minute globules of a light brown colour. Each ovum, when magnified, closely resembles the farina of a mallow. It is thickly beset with spines on every side, and coated over with a transparent gelatinous substance, reaching just to the extremities of the spines, and is most probably intended to assist in causing them to adhere to the substances on which they may chance to fall, or as a security from the attacks of smaller insects. In about a fortnight or three weeks, the eggs are hatched, and the young animals may be seen to swim with great liveliness, by means of three very long pair of arms or rowers, which appear disproportionate to the size of the animal, and indeed it bears in this very small state not much resemblance to the form it afterwards assumes; but, in the short space of a very few hours, the body assumes a lengthened form, and begins to acquire the tail-fin. The eyes in this state do not appear pedunculated. On the seventh day after hatching, they approach pretty nearly the form of the perfect animal; they,

Crustacea.

Crustacea. however, still retain the two first pairs of rowers or arms. The legs are at this period very visible. About the ninth day it loses the long oars, and appears still more like the animal in its advanced state." Its growth is but slow, and it is highly probable that a very considerable time elapses before the insect acquires its full size; but this the Doctor tells us he cannot presume to determine, as those he kept died before they had acquired any considerable size. When first hatched, they are scarcely larger than the common mite.

*Cancer paludosus* of Müller (*Zool. Dan.* p. 10, tab. 48, fig. 1.) is a distinct species, if his figure be correct. It differs in its tentacula and tail. Latreille thinks it very probable that *Cancer sabinus* of Linné, and *Cancer paludosus* of Otho Fabricius, may also belong to this genus.

## ORDER II. MALACOSTRACA.

### FAMILY VII. CANCERIDES.

MALACOSTRACA. A. The last joint of the hinder feet flattened, and formed for swimming.

13. PODOPTHALMUS. GENUS XIII. PODOPTHALMUS. The peduncle, or footstalk, on which the eyes are placed, as long as the external angles of the shell.

Vigil. *Sp. 1. Vigil.* Anterior claws, and external anterior angle of the shell, spiny.

A native of the shores of India.

*Podophthalmus spinosus*, Lamarck; *Portunus vigil*, Fabricius. (*Suppl. Ent. Syst.* 365.)

14. PORTUNUS. GENUS XIV. PORTUNUS. The peduncle of the eyes much shorter than the anterior angle of the shell.

\* Shell with more than five teeth on each side; hinder spine very long. Gen. *Lupa*, Leach's MSS.

Pelagicus. *Sp. 1. Pelagicus.* The shell on each side with nine teeth, the posterior tooth largest; hands on the front feet angulated; the front with four equal teeth; two teeth-like processes are on each side, at the internal angle of the eyes.

Inhabits the sea every where, attaching itself to the *Fucus natans*, or floating tangle.

It is *Portunus pelagicus* of Fabricius; *Cancer pelagicus* of Linné.

See *Lupa* in Index.

*Lupa pelagica*, Leach's MSS.

\*\* Shell with five teeth on each side; transverse much greater than the longitudinal diameter.

a Orbit of the eye behind, with one fissure. Gen. *Carcinus*, Leach's MSS.

Mænas. *Sp. 2. Mænas.* Shell smooth, with five teeth on each side; clypeus with three rounded teeth or lobes. When alive green, mottled with black; hands with one tooth; wrists with a spine.

Inhabits the rocky shores of the European ocean, lurking under stones and tangle. Vast numbers are sold in London to the poor, who esteem them as great delicacies. The young, or fry, are frequently mottled or bordered with white.

*Cancer mænas* of Linné, Fabricius, Latreille, Pennant, &c.

b Orbit of the eye behind, with two fissures. Gen. *Portunus*, Leach's MSS.

1. Hinder nails with an elevated rib; wrists with two teeth.

Puber. *Sp. 3. Puber.* Shell covered with a velvet-like down, five equal teeth on each side; the front beautifully denticulated; hands striated, with one spine on the upper side; wrists with two teeth.

Inhabits the Mediterranean and British seas.

Crustacea.

This is *Cancer puber* of Linné; *Portunus puber* of Fabricius and Latreille; *Cancer velutinus* of Pennant.

This species, when alive, is a most beautiful animal. The anterior claws are mottled with blue and black; the eyes likewise exhibit a rich scarlet colour striped with blue. It is by no means uncommon on the rocky coasts of Devonshire, being found at low tide under stones and fuci. It is probably the species taken notice of by Aristotle, on account of the broad feet, which he says assist them in swimming, as webbed feet do the water fowl.

2. Hinder nails, with an elevated rib; wrists with one tooth.

*Sp. 4. Corrugatus.* Shell with transverse serrate-granulated lines, ciliated with hair; front with three short teeth, middle one largest; sides with five nearly equal in size; wrists with a sharp tooth.

*Cancer corrugatus* of Pennant.

*Mus. Montagu.*

*Sp. 5. Emarginatus.* Shell convex, with abbreviated lines of granules; sides with five teeth, the fourth smallest; front notched; wrists with a strong tooth.

*Portunus emarginatus*, Leach's MSS.

Discovered at Torcross; we have seen the female only.

*Mus. Leach.*

*Sp. 6. Arcuatus.* Front arcuated, in other respects exactly like *Portunus emarginatus*.

*Mus. Sowerby, Leach.* The female has not occurred.

Mr Montagu considers this as the male of *Portunus emarginatus*. Mr Leach thinks that *Emarginatus* may prove to be an accidental variety of this species; but considers the distinctions as too strong for usual sexual distinction.

3. Hinder nails without an elevated rib; wrists with one tooth.

*Sp. 7. Depurator.* The clypeus and shell on each side, with five nearly equal teeth; the wrists internally with a sharp spine; shell with oblique granulated lines; front with three teeth, middle one rather longest; hands above with one spine.

Inhabits the European ocean. It is found on all the shores of Great Britain, inhabiting water of twenty fathoms. It is well known to the fishermen under the name of flying crab, and is supposed by them (though erroneously) to destroy oysters, by insinuating its flattened hinder foot into the shell, when the animal opens for food.

*Portunus depurator* of Fabricius; *Cancer depurator* of Linné.

*Sp. 8. Lividus.* The clypeus with three teeth, middle one rather longest; shell on each side with five nearly equal teeth; hands above with one tooth; wrists internally with a sharp spine; shell smooth, and more depressed than in *Depurator*.

A single specimen was taken by Mr Leach at New-haven, since which time he has seen another in the collection of Mr Montagu. The eyes are smaller, and the antennæ are shorter, than in *Portunus depurator*.

*Portunus lividus*, Leach's MSS.

*Sp. 9. Marmoreus.* Shell convex and smooth, with very obsolete granulations; front with three equal teeth, sides with five; hands smooth; wrists with one sharp tooth within.

*Cancer pinnatus marmoreus*, Montagu's MSS.

*Portunus marmoreus*, Leach; *Malacost. Brit.*; *Portunus*, Tab. A.

The shell, when alive, most beautifully marbled with

- Crustacea. red and white. Discovered at Torcross in the southern coast of Devon, by G. Montagu, Esq. where it is not uncommon.
- \*\*\* Shell with five teeth on each side; longitudinal equal, or nearly equal, to the transverse. Orbit of the eye entire. Gen. *Portumnus*, Leach's MSS.
- Variegatus. *Sp. 10. Variegatus*. Shell somewhat triangular, with five teeth on each side. Three teeth on the clypeus, and one over each eye. Last joint of the posterior feet somewhat lanceolated.
- Inhabits the sandy shores of Great Britain, and is esteemed a rare species. When alive, is of a yellowish white colour, mottled with purplish brown.
- See *Portumnus*. Index.
- Portumnus latipes*, Leach's MSS.
- Cancer latipes* of Pennant.
- Cancer latipes variegatus*, Plane.
- B. Hinder feet, as well as the rest, formed for walking.
15. DROMIA. GENUS XV. DROMIA. Hinder feet placed on the hinder part of the back. Shell very convex.
- Rumphii. *Sp. 1. Rumphii*. Shell hairy, with five acute teeth on each side. Arms and feet smooth.
- Inhabits the East Indies, and is the only species of the genus known.
- Cancer dromia* of Linné; *Dromia rumphii*, Fabricius and Latreille.
16. CALAPPA. GENUS XVI. CALAPPA. Hinder angles of the shell arched, receiving the feet when contracted. Hands crested.
- Tuberculata. *Sp. 1. Tuberculata*. Shell warty; the posterior angle with six wrinkled teeth; the posterior angle with two obscure teeth or spines.
- A native of New Holland.
- Calappa tuberculata* of Fabricius.
- Fornicata. *Sp. 2. Fornicata*. Posterior angles of the shell rounded and smooth.
- Inhabits New Holland.
- Cancer calappa* of Linné; *Calappa fornicata*, Fabricius and Latreille.
- Granulata. *Sp. 3. Granulata*. Shell tuberculated, with the posterior angles spined, the hindermost spines very sharp and large; posterior margin notched a little at the base of the tail.
- Inhabits the shores of the Mediterranean Sea, and is found at low tides lurking under fuci.
- Cancer granulatus* of Linné; *Calappa granulata* of Fabricius and Latreille.
17. HEPATUS. GENUS XVII. HEPATUS. The second joint of the footstalk, or peduncle of the external double palpi, triangular, becoming gradually narrower towards the apex.
- Fasciatus. *Sp. 1. Fasciatus*. Shell banded with brown.
- Inhabits America.
- Calappa angustata* of Fabricius; *Hepatus fasciatus* Latreille.
18. CANCER. GENUS XVIII. CANCER. Shell narrow behind. The second joint of the footstalk of the external double palpi quadrangular, notched at the apex internally, for the insertion of the following joint.
- \* Arms of the male considerably longer than those of the female.
- Pagurus. *Sp. 1. Pagurus*. Shell on each side, with nine folds; the apex of the hand black.
- Cancer pagurus* of Linné, Fabricius, Latreille, and Pennant.
- The common crab of our markets, the *Crabe pagure* of French writers, is in season between Christmas and Easter, and about harvest, and is esteemed the most delicious species of the genus. Its natural history is but little known. During summer, it inhabits all our rocky coasts, generally preferring twenty fathoms water. In the winter, it is rarely met with, during which time it is said to burrow in the sand. The tips of the claws were formerly used in medicine, to correct acidities in the stomach: this absurd practice is now deservedly rejected.
- It is taken in wicker baskets resembling a mouse trap, or in nets with large meshes, which are sunk to the bottom, and baited with garbage.
- Sp. 2. Incisus*. Back wrinkled. Sides of the shell with four obtuse teeth. Fingers black. Colour when alive florid.
- Cancer floridus* of Montagu.
- Cancer incisus* of Leach, MSS.
- Inhabits the shores of Europe. In Great Britain it is considered extremely rare, having been taken only by Mr Montagu, and Mr Leach, on the rocky coasts of Devon at low tides, where it is common.
- Not *C. floridus* of Linné, which is an unknown species, as the description in the *Amœnitates Academicæ* will evince.
- Mus*. Leach, Montagu, Sowerby.
- \*\* Arms of the males not evidently larger than those of the female.
- Sp. 3. Hirtellus*. Body and legs hairy; the shell with five dents on each side; claws somewhat muricated on the outside.
- Inhabits the European ocean. In England it is esteemed a great rarity, having only been found hitherto on the coasts of Devonshire.
- Cancer hirtellus*, Pennant. *Bristly crab*.
- Mus*. Donovan, Leach, Montagu.
- Sp. 4. Spinifrons*. Shell smooth, with teeth on each side; the second and third teeth bifid; the front and claws with many spines.
- Inhabits the European ocean.
- Cancer spinifrons* of Fabricius, *Sup. Ent. Syst.* p. 339; and of Latreille.
- Sp. 5. Denticulatus*. Shell tuberoso, with the sides spiny; clypeus with five teeth, the middle one longest, the basilar ones shortest; arms angulated.
- Inhabits England and Scotland.
- Described and named by George Montagu, Esq. in the *Transactions of the Linnæan Society of London*, vol. ix. from a specimen sent him by Mr Boys of Sandwich. He mentions having seen a Scotch specimen in the collection of Edward Donovan, Esq. F. L. S. &c. Lately taken in Devon by Mr Prideaux, an assiduous naturalist.
- GENUS XIX. OCYPODE. Eyes with an elongated footstalk, inserted into the middle of the anterior margin of the shell. Shell rhomboidal, or heart-shaped.
- See *Gecarcinus* in Index.
- Sp. 1. Uca*. Shell somewhat truncate-cordate, with the sides abruptly convex; feet hairy; the tarsi with five or six elevated lines, which are rather warty; hands tuberculated with tufts of hair both above and below.
- Cancer uca* of Linné; *Ocypode uca* of Latreille.
- Inhabits South America. Latreille.
- We strongly suspect this to be the species commonly known by the name of land crab, of which Sloane, Catesby, and others, have given such detailed accounts. The following, selected from such authorities, may probably not prove unacceptable. "These animals live not only in a kind of orderly society in their retreats in the mountains, but regularly march once a year down to the sea side, in a body of some millions at a time, as

Crustacea.

they multiply in great numbers. They choose the month of April or May to begin their expedition, and then sally out by thousands from the stumps of hollow trees, which they excavate, from the holes which they dig for themselves under the surface of the earth, clefts of the rocks, and other hiding places. At that time, the whole ground is covered with this band of adventurers; there is no setting down one's foot without treading on them.

"The sea is their place of destination, and to that they direct their march with the utmost precision. They never turn to the right or left for any obstacles that intervene, if they can possibly pass over them; and even if they meet with a house they will attempt to scale the walls. But though this be the general order of the route, they are upon other occasions obliged to conform to the face of the country; and if it is intersected with rivers, they are seen to wind along the course of the streams; but if only a small rivulet occurs, they force a passage across it. The procession sets forward from the mountains with the regularity of an army, under the guidance of an experienced commander. They are said to be commonly divided into three battalions, of which the first consists of the strongest and boldest males, that, like pioneers, march forward to clear the route and face the greatest dangers. They are often obliged to halt for want of rain, and to go into the most convenient encampment till the weather changes. The main body of the army is composed of females, which never leave the mountains till the rain is set in for some time, and then descend in regular order, being formed into columns of fifty paces broad, and three miles deep, and so close, that they almost cover the ground. Three or four days after this, the rear guard follows, a straggling undisciplined troop, consisting of males and females, but neither so robust nor so vigorous as the former. The night is the chief time of proceeding, but if it rains by day they do not fail to profit by the occasion; and they continue to move forward in a slow uniform manner. When the sun shines and is hot upon the surface of the ground, they halt and wait until the cool of the evening. When they are terrified, they march backward in a confused and disorderly manner, holding up their nippers. They try to intimidate their enemies by clattering their nippers together, as if it were to threaten those who come to disturb them. Their disposition is carnivorous, though they most commonly subsist on vegetables; for if, by any accident, one should get maimed in such a manner as to be incapable of proceeding, the rest fall on him and devour him on the spot, and then pursue their journey.

"After a march of sometimes two or perhaps three mouths, in this manner they arrive at their destined spot on the sea-coast, and then proceed to cast their spawn. The eggs are as yet within their bodies, and not excluded and retained, as is usual with animals of this kind, under the tail; for the creature waits for the benefit of the sea water to facilitate their exclusion. For this purpose, the crab has no sooner reached the shore, than it goes eagerly to the edge of the water, and lets the waves wash over its body two or three times. This has been thought necessary by some to ripen the spawn in the ovaria, as the crab appearing satisfied after a slight bathing, immediately retires, and seeks a lodging on the land. After this they say the spawn grows larger, is excluded from the body, and adheres to the cilia under the tail. This bunch is seen as big as a hen's egg, and exactly resembling the

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roes of herrings. In this state of pregnancy they once more seek the shore for the last time; and shaking their spawn into the water, leave them to the chance of fortune and accident to bring them to maturity. At this time large shoals of hungry fishes are at the shore in expectation of this annual supply; the sea, to a great distance, seems quite black with them, and about two-thirds of the eggs are immediately devoured by those rapacious invaders. The eggs that escape are hatched under the sand, and soon after millions at a time of those little crabs are seen quitting the shore and slowly travelling up to the mountains. The old ones, however, are not so active to return; they have become so feeble and lean that they can hardly crawl along, and the flesh at the time changes colour. The greater part of them, therefore, are obliged to continue in the plains and lower parts of the country, until they recover, making holes in the earth which they cover with leaves and dirt, so as to exclude the light and air. In this cavity they throw off their old shells, which they leave behind them, as it were quite whole. At this time they are quite naked, and almost without motion for six days together, when they begin to grow fat, and are then most delicious eating. It is said they have under their stomachs four large white calcareous stones, which gradually decrease as in proportion the shell hardens, and when they come to perfection entirely disappear. Soon after this the animal is observed slowly making its way back, and all this is commonly performed in the space of six weeks. This animal, when possessed of its retreats in the mountains, is impregnable; for only subsisting on vegetables, it seldom ventures out; and its habitation being in the most inaccessible places, it remains for a greater part of the season in perfect security. It is only when impelled by the desire of bringing forth its young, and when compelled to descend into the flat country, that it is taken. At that time the natives wait for their descent in eager expectation of their arrival, and destroy thousands; but disregarding their bodies, they only seek for the small spawn which lies on each side of the stomach, within the shell, of about the thickness of a man's thumb. They are much more valuable on their return, after they have cast their shells; for being covered with a skin resembling sort parchment, almost every part except the stomach may be eaten. They are taken in the holes by feeling for them with an instrument; they are sought after by night, when on their journey, by flambeaux light. The instant the animal perceives itself attacked, it throws itself on its back, and with its claws pinches most dreadfully whatever it happens to fasten upon. But dextrous crab-catchers take them by their hinder legs in such a manner that they cannot make use of their nippers, and thus throw them into their bags. Sometimes also they are taken when they take refuge in the bottoms of holes in rocks on the sea-side, by clapping a stick to the mouth of the hole, which prevents their getting out; and then soon after the tide coming, enters the holes, and the animal is found, upon the water retiring, drowned in its retreat.

"These crabs are of various colours: some are reddish, variegated with black; some yellowish, and others black, inclining to blue. Those of a light colour are esteemed most, and when full in flesh are well tasted. In some of the sugar islands they are eaten without apprehension of danger, and form no inconsiderable part of the food of the poor negroes."

They vary much in size; the largest grow to about

**Crustacea.** six inches wide; they walk sidewise. They are said to be poisonous, and to have killed several people who have eaten them, particularly the black kind. The lighter coloured varieties are most esteemed, and are frequently fattened for the table.

**Ruricola.** *Sp. 2. Ruricola.* Shell of a somewhat truncated heart-shape; with the sides very abruptly convex; the tarsi with six serrated elevated lines; hands smooth.

Inhabits South America, and most probably has the same habits with the preceding species, with which it has undoubtedly been confounded by many writers.

*Cancer ruricola* of Linné. *Ocypode tourlourous* of Latreille.

**Cordata.** *Sp. 3. Cordata.* Shell as in the two foregoing species, with the sides gently sloping; tarsi with four elevated lines, which are serrated.

Inhabits the same country with the two preceding species.

*Cancer corpatus* of Linné. *Ocypode cordata* of Latreille.

**Ceratophthalmia.** *Sp. 4. Ceratophthalma.* Shell of a rhomboidal-square form; arms granulated; hands cordated; with the apex of the peduncles of the eyes produced beyond them into a smooth spine.

Inhabits the shores of the East Indies and Mediterranean.

*Ocypode ceratophthalma* of Fabricius and Latreille; *Cancer ceratophthalmus* of Pallas, and probably *Cancer cursor* of Linné.

Colour, when alive, light, prettily mottled with reddish brown. About sunset it comes up the shores and wanders about the strand, running at intervals with great velocity. The right claw is commonly larger than the left, and both are equally rough.

*Vide Index, Ocypode, Goneplat, and Gecarcinus.*

**Vocans.** *Sp. 5. Vocans.*

This species, of which Linné has given a very imperfect character, is said to inhabit Jamaica, where it conceals itself under stones, and when caught emits a cry. It grows to the size of three inches in diameter.

*Cancer vocans* of Linné; *Cancer vocans major* of Herbst; *Ocypode marucoani* of Latreille.

Another species allied to this is figured by Herbst; it apparently differs in nothing but size from the above, and may probably be the young of it.

**Angulata.** *Sp. 6. Angulata.* Shell nearly quadrate; armed near the anterior angle with one spine, (sometimes two, one behind the other).

Colour red; eyes half the length of the shell. Arms of the male about five times the length of the body; those of the female only twice.

Inhabits the western coast of Britain. First noticed as British by Mr Pennant; it has since been taken in great abundance in Salcombe Bay, Devonshire, by George Montagu, Esq. F. L. S.

*Cancer angulatus* of Linné, Fabricius, and Pennant. *Ocypode bispinosa* of Lamarck; *Goneplat bispinosa*, Leach, MSS. *Vide Goneplat* in Index.

*Mus. Donovan, Leach, Montagu, Sowerby.*

**30. GRAPSUS.** GENUS XX. GRAPSUS. Eyes with a short peduncle, inserted at the anterior angles of the shell, which is depressed and quadrangular. Interior antennæ hid by the clypeus, which is inflexed.

**Pictus.** *Sp. 1. Pictus.* Shell with four tooth-like folds in the anterior part; fingers concave at the apex; a strong tooth on the inner wrist.

Inhabits South America and the West India islands.

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*Cancer grapsus* of Linné and Fabricius.

**Crustacea.**

It is rather rare. The colour is whitish, variously but beautifully varied with red, or red spotted with white, sometimes with minute red dots and streaks on a white ground, the speckled appearance pervading the whole upper surface of the thorax and legs. The hand claws are comparatively very small, rough, and of a rufous colour, bordered with white; body beneath pale.

*Obs. Cancer tenuicrustatus* of Herbst, of which he figures a large and small variety, (probably the sexes), is merely a variety of this species.

*Sp. 2. Varius.* Front of the shell with four folds; arms short; the extremities of the fingers concave.

Inhabits the Mediterranean Sea.

*Grapsus varius* of Latreille, on whose authority it is here inserted.

*Sp. 3. Cruentatus.* Front of the shell with four smooth folds; fingers conical; wrists tuberculated and spiny.

Inhabits South America.

*Grapsus cruentatus* of Latreille.

GENUS XXI. PLAGUSIA. Eyes with a very short peduncle affixed to the anterior angles of the shell, which is quadrangular. The anterior antennæ fixed into two little foveolæ on the upper part of the clypeus.

*Sp. 1. Clavimana.* Hands clubbed; shell depressed, with the front of the clypeus and sides of the shell with four teeth.

Inhabits the Indian ocean.

*Plagusia clavimana* of Latreille. *Seba Mus. tom. 3. fig. 21.*

*Sp. 2. Depressa.* Shell depressed, the sides on each side with five, and the middle of the clypeus with two teeth; the tubercles on the back naked.

Inhabits the shores of the Mediterranean.

*Cancer depressus* of Fabricius; *Plagusia depressa* of Latreille.

*Sp. 3. Squamosa.* The tubercles on the back ciliated; the sides of the shell with five, and the middle of the clypeus with two, dentiform processes.

Its habitation is unknown.

*Plagusia squamosa* of Latreille.

*Sp. 4. Semicylindrica.* Shell elevated; sides without teeth.

Inhabits the Indian ocean.

*Cancer semicylindricus* of Fabricius; *Plagusia semicylindrica* of Latreille, who is of opinion that this species and *Cancer auritus* of Fabricius, (both species unknown to us), should constitute a distinct genus.

GENUS XXII. PINNOTHERES. Shell roundish square, or oval round. The internal double palpi joined at their base.

The animals of this genus inhabit bivalve shells; and some of the species were known to the ancients, who believed them to have been the consentaneous inhabitants of the pinnae and other bivalve shells; which being too stupid to perceive the approach of their prey, were warned of it by their vigilant friend. Oppian tells the fable prettily:

In clouded deeps below, the pinna hides,  
And through the silent paths obscurely glides;  
A stupid wretch, and void of thoughtful care,  
He forms no bait, nor lays the tempting snare;  
But the dull sluggard boasts a crab his friend,  
Whose busy eyes the coming prey attend:  
One room contains them, and the partners dwell  
Beneath the convex of one sloping shell;

Deep in the wat'ry vast the comrades rove,  
And mutual interest binds their constant love;  
That wiser friend the lucky juncture tells,  
When in the gaping circuit of hill shells  
Fish wandering enter; then the bearded guide  
Warns the dull mate, and pricks his tender side;  
He knows the hint, nor at the treatment grieves,  
But hugs th' advantage, and the pain forgives;  
His closing shells the *pinna* sudden joins,  
And twist the pressing sides the prey confines.  
Thus fed by mutual aid, the friendly pair  
Divide their gains, and all the plunder share.

Pisum.

*Sp. 1. Pisum.* Shell orbicular, of a reddish colour; hands oblong.

PLATE  
CCXXI.  
Fig. 3.

Inhabits various species of mussels. In one hundred of *Mytilus modiolus*, Mr Leach found three of this species. Male unknown. See Plate CCXXI. Fig. 3.

Varians.

*Sp. 2. Varians.* Shell of an oval-round, somewhat narrow in front, very convex, solid and marbled; hands oval; fingers arched. Female unknown.

*Pinnothère des moules.* Latreille *Hist. Nat. des Crust. et des Ins.* tom. vi. p. 83. pl. 48.

*Cancer varians.* Oliv. *Encycl. Meth. Hist. Nat.* t. vi. p. 155.

*Pinnotheres mytilorum.* Latr. *Gen. Crust. et Ins.* vol. i. p. 35.

It is highly probable that *Cancer pinnophylax* and *Pinnotheres* of Linné belong to this genus. They are unknown to all the naturalists of the present time. See *Pinnotheres mytili, modiolii, pinnæ, pisum, varians*, and *mytilorum* in the Index, as we have obtained some interesting facts lately, respecting the genus and its species.

All the feet with conic tarsi.

## FAMILY VIII. OXYRHYNCHI.

*Observation.* It is very evident that *Cancer rhomboidalis* of Montagu (*Linnean Transactions*, vol. vii. tab. 6. p. 84.) belongs to this family, but is not referable to any genus hitherto established; and as a specimen of it has never come under our inspection, we shall describe it in his own words.

"*Cancer rhomboidalis*: with an uneven rough thorax, destitute of spines, but furnished with three large tubercles on the fore part, and two others near the tail: front, a broad thin concave plate, projecting into a long sharp-pointed proboscis: antennæ two, setaceous, longer than the proboscis: eyes vastly large, prominent, reticulated, pedunculated, nearly half the diameter of the thorax; arms large in proportion, smooth; on the first joint beneath, a hooked spine turning upwards; fangs toothed; legs eight, subulate, a long spine on the first joint of each, underneath; tail nearly as long as the body, slender, cylindric-depressed, formed with five joints; the end truncated, hirsute: colour, when alive, light olive-green. Length from the point of the proboscis to the end of the tail, a quarter of an inch. Found amongst *sertulariæ* or the back of *Cancer dodecos*."

23. LEUCOSIA.

GENUS XXIII. LEUCOSIA. Shell somewhat oval and convex. (The greater part in most of the species smooth.) The double external palpi with equal narrow footstalks; the second joint narrowing towards the point, and reaching the anterior margin of the shell. *Antennæ and eyes minute.*

Nucleus.

*Sp. 1. Nucleus.* The clypeus with two teeth-like processes in front: the posterior margin of the shell with two folds and a minute spine on the upper side; arms of an equal size and elongated.

Inhabits the Mediterranean Sea.

*Cancer nucleus* of Linné; *Leucosia nucleus* of Fabricius and Latreille.

*Sp. 2. Craniolaris.* Shell granulated; anterior part depressed above, posterior margin wrinkled, without spines; one tooth-like process in the middle of the clypeus; arms warty beneath; hands cylindrical and compressed; fingers conical, the internal side with sharp teeth.

Inhabits the shores of Malabar.

*Cancer craniolaris* of Linné; *Leucosia craniolaris* of Fabricius and Latreille.

GENUS XXIV. MAIA. Shell nearly triangular, (generally rough and rostrated in front.) The internal foot-stalk of the external double palpi with two broad joints. Space between the eyes very wide. Feet nearly equal in size and shape: *the hinder feet being neither small nor spurious.* See *Ilyas Inachus*, in the Index.

Division I. Arms very thick, and extending in a right angle.

*Sp. 1. Horrida.* Shell spinous, the upper surface very unequal and irregular: tail as if worm eaten; hand oval.

Inhabits the Asiatic Ocean.

*Cancer horridus* of Linné; *Parthenope horrida* of Fabricius; *Maia horrida* of Latreille.

It is described by Petiver under the name of the great warty crab; is the *Rotskrabbe* of Rumphius, the *Die schreckliche* of Herbst.

For *Cancer horridus* of Pennant, see *Lithodes maja*, Genus 26.

*Sp. 2. Giraffa.* Shell spiny, with the spines branch- ed: hind claws very long and tuberculated beneath.

Inhabits the East Indies.

*Cancer giraff* of Fabricius.

*Sp. 3. Muricata.* Shell unequal and hairy, with a double line and two dorsal spines on each side; marginal spines four; legs hairy.

Habitat unknown.

*Cancer muricatus* of Fabricius. *Ent. Syst.*

Division II. Arms extended forwards, and not remarkably thick.

\* Second pair of feet neither three times the length of the body, nor very slender.

*Sp. 4. Araneus.* Thorax rough and tuberculated; rostrum bifid; claws oval.

Inhabits the European seas, frequenting all our sandy coasts, particularly the mouths of rivers, where it resides in deep water, and is taken by the oyster dredgers, who name it harper or spider crab; and, as they suppose it injurious to the beds, always bring it ashore and destroy it. It is very frequently covered with barnacles, alcyonia, sponges, fuci, and other marine substances. Its common size is about ten inches across from the tip of one arm to the other, but it sometimes measures sixteen from these points. The arms of the male are considerably longer than those of the female. It spawns during the greater part of the year.

*Cancer araneus* of Linné and Pennant.

*Sp. 5. Armata.* Shell of an elongated triangular form, hairy, with three dents behind; clypeus with two strong spines; hands elongated.

*Maia armata* of Latreille. *Inachus opilio* of Fabricius.

Inhabits the Mediterranean Sea.

*Sp. 6. Squinado.* Shell rough; the front with two spines, the sides with six elongated conic spiny processes; the arms scarcely longer than the following pair of feet; hands cylindrical and smooth; fingers tuberculated.

*Cancer maja* of Scopoli. *Cancer spinosus*, Oliv. *Encycl. Method. Hist. Nat.* tom. vi. p. 173. *Maja squinado* of Latreille.

Inhabits the Mediterranean Sea. To this division belong *Cancer asper*, *Dorsettensis*, and *Tetraodon* of Pennant's British Zoology.

\*\* Second pair of feet very slender, and three times the length of the body.

Sagittaria. *Sp. 7. Sagittaria.* Rostrum very long, and surrounded by spines; feet spiny, arms elongate.

*Maja sagittaria* of Latreille. *Inachus sagittarius* of Fabricius.

Inhabits the island of Guadaloupe.

Phalangium. *Sp. 8. Phalangium.* Rostrum long and bifid, contracted at its base. Shell somewhat hairy, with three acute spines in the anterior part, obtuse tubercles behind: snout bifid.

Inhabits the northern seas, and is very abundant on many of our coasts, being frequently taken by the oyster dredgers, who imagine it to be the young of araneus.

PLATE CCXXI. Fig. 4. *Cancer phalangium* of Pennant. *Leptopodia phalangium*, Leach's MSS. See Plate CCXXI. Fig. 4. and Appendix.

25. MACROPODIA. GENUS XXV. MACROPODIA. Shell nearly triangular (unequal and rostrated in front;) external double palpi narrow and porrected: the second joint of the internal peduncle pretty long. Eyes distant: feet alike, the hinder ones neither spurious nor minute.

Longirostris. *Sp. 1. Longirostris.* Shell hairy, with three erect spines on the front; the hinder part with obtuse tubercles; rostrum bifid.

*Cancer dodecos* of Linné?

*Inachus longirostris* of Fabricius. *Macropus longirostris* of Latreille. *Macropodia longirostris*, Leach's MSS.

26. LITHODES. GENUS XXVI. LITHODES. Shell nearly triangular and unequal, the anterior part rostrated. The external double palpi with narrow cylindrical footstalks. Eyes near each other at their base, but diverging above the shell. Hinder feet minute and spurious.

Maja. *Sp. 1. Maja.* Claws, feet, and shell spiny; rostrum spiny, with the apex bifurcate; flesh-coloured when alive.

Inhabits the northern and British seas. It is very rare in this country, being found only on the rocky coasts of Yorkshire and Scotland. It has been mistaken by Pennant for *Cancer horridus* of Linné, which we have already shown to belong to a distinct genus. *Vid. Gen. 24. Maia horrida.*

*Cancer maja* of Linné. *Inachus maja* of Fabricius. *Lithodes arctica* of Latreille. *Cancer horridus* of Pennant.

*Mus.* Donovan, Montagu, Neill, Leach, Fleming, Sowerby.

27. CORYSTES. GENUS XXVII. CORYSTES. Shell somewhat oval. External antennæ porrected, as long as the body. The second joint of the internal peduncle of the external double palpi lengthened, and gradually narrowing towards the apex. Arms of the male three times the length of the body.

Cassivelanus. *Sp. 1. Cassivelanus.* Thorax rugulose, with four teeth on each side. Wrists with two or three spines. *Cancer cassivelanus* of Pennant.

Inhabits all the sandy shores of our island, where it is frequently cast ashore, after a brisk gale of wind. Between the second and third spine, there is a small projecting process. Colour, when alive, flesh red.

*Obs.* *Coristes longimanus* of Latreille is merely the male of this species.

GENUS XXVIII. MICTYRIS. Shell nearly oval, elevated, and truncated behind. Antennæ short. The basilar joint of the internal footstalk of the external double palpi very large. Arms at the base of the wrist jointed.

*Sp. 1. Longicarpus.* Body nearly oval, thick, rather narrower in front, truncated behind, soft, and of a pale yellow colour. Length about nine lines. Shell with two longitudinal impressed lines; the anterior margin inflexed and rounded, and lateral external angles (as in some of the *Ocyppodes*) produced into a tooth behind the eyes; the posterior margin ciliated with short black hairs. Eyes globular, with a short peduncle, placed under the anterior margin of the shell, (as in the *Ocyppodes*.) Arms exerted forwards and downwards; the base of the second joint internally with a strong spine; the next joint triangular, the apex below being armed with three little processes. The wrist lengthened, somewhat arched, and hairy on the inside. Hand short, much compressed, with elevated lines. Fingers elegantly lengthened. Thumb with a strong single tooth. The other feet twice as long as the body, and much compressed; the tarsi furrowed and compressed; the second and first pair the largest, and nearly of an equal size.

Inhabits the East Indies. This rare and curious animal was first described by the French author Latreille, (whose system we are nearly following,) from a specimen in the Parisian Museum of natural curiosities. Our description is made from his, and the MSS. of Mr Leach, who described it from a specimen in the collection of the Royal College of Surgeons, London; and who had not seen Latreille's work at the time he drew up his description.

GENUS XXIX. DORIPPE. Shell somewhat oval, depressed, narrow before, and truncated. The four posterior feet dorsal; the last joints shortest.

*Sp. 1. Quadridens.* Middle of the clypeus with four teeth; those placed externally shortest. Sides of the shell with one tooth; the four anterior thighs somewhat notched.

*Cancer lanatus* of Linné; *Dorippe quadridens* of Latreille and Fabricius.

Inhabits the Mediterranean Sea, and figured by Plancus.

\*\*\* Some of the feet formed for swimming, the last joint being compressed and foliated.

GENUS XXX. ORITHYIA. The two hinder feet alone formed for swimming.

*Sp. 1. Mamillaris.* *Orythia mamillaris* of Fabricius and Latreille, on whose authority we have inserted it here. They refer to a figure in *Herbst*, tab. 18. fig. 101.

Inhabits the Indian Ocean.

GENUS XXXI. MATUTA. All the feet, with the exception of the brachia, inserted in the same horizontal line, and furnished for swimming.

*Sp. 1. Victor.* Shell punctured on all sides, but not striated behind.

*Matuta victor* of Fabricius and Latreille.

Inhabits the Indian Ocean.

*Sp. 2. Herbstii.* Shell with impressed dots; deeply striated behind.

*Matuta Herbstii*, Leach's MSS.

A new species, described in the manuscripts of Mr William Elford Leach, from a specimen in the British Museum, and named by him, after the celebrated crustaceologist Herbst, author of a large work in the German language, entitled *Von Krabben*, illustrated with correct plates.

- Crustacea. GENUS XXXII. RANINA. All the feet, except the brachia or arms, formed for swimming, two pair being placed above the others. Hand without the thumb; the finger much bent or arched; hands from the base to their extremities, gradually broader and much compressed.
32. RANINA. *Sp. 1. Serrata.* Arms very spiny; anterior margin of the shell with toothed lobes. *Cancer raninus* of Linné and Fabricius; *Ranina serrata* of Latreille. Inhabits the Indian Ocean.
- Serrata. *Sp. 2. Dorsipes.* Anterior margin of the shell with seven teeth; the hands with a few tooth-like processes. *Cancer dorsipes* of Linné; *Albunea dorsipes* of Fabricius; *Ranina dorsipes* of Latreille.
- Dorsipes.
- FAMILY IX. PAGURII.
- \* Peduncle of the anterior antennæ much shorter than the two articulated setæ. Hands with one finger or none. Some of the feet formed for swimming, the last joint being compressed and leaf-shaped.
33. ALBU- GENUS XXXIII. ALBUNEA. Hands with one finger. Hinder feet minute, filiform, and spurious; the last joint of the other feet compressed and hooked.
- NEA. *Sp. 1. Symnista.* Anterior part of the shell smooth. *Cancer symnista*, Linné; *Albunea symnista* of Fabricius and Latreille.
- Symnista.
34. REMI- GENUS XXXIV. REMIPES. Arms shorter than the second pair of feet; last joint hooked. The upper part rather convex. The feet, with the exception of those mentioned, formed for swimming.
- PES. *Sp. 1. Testudinarius.* Shell about an inch in length, rather oval, of a reddish yellow colour, finely wrinkled; the anterior part with five teeth, the middle being shortest. Eyes placed on a very slender cylindrical peduncle, and inserted under the lateral teeth of the anterior margin. The middle antennæ somewhat bent backwards, ciliated with fine hair, and furnished with a thick peduncle. The exterior antennæ bent inwards under the others, with its peduncle flattened and jointed, having an elongated hairy footstalk. *Remipes testudinarius*, Latreille; *Hippa adactyla* of Fabricius? Inhabits New Holland.
- Testudinarius.
35. HIPPA- GENUS XXXV. HIPPA. Hands compressed, oval, and simple. The tarsus of the second and third pair of feet lunated; of the fourth triangular (rarely subquadrate); the posterior feet minute, spurious, and filiform.
- PES. *Sp. 1. Emeritus.* Tail inflexed; the last joint oval. *Cancer emeritus* of Linné? *Hippa emeritus* of Fabricius and Latreille. Inhabits the Indian Seas.
- Emeritus.
- \*\* Peduncle of the interior antennæ longer than the two articulated setæ. Feet formed for walking. The tarsi conic. Hands compound, furnished with a finger and thumb.
36. PAGU- GENUS XXXVI. PAGURUS. This being the only genus of the division hitherto discovered, no generic character is necessary. All the species are parasitical, inhabiting the empty cavities of turbinated shells, the animals of which they are supposed to attack and devour, to gain possession of their shell. They change their habitation with their growth, first occupying the shells of the common periwinkle or trochus, then perhaps a nerite as large as a walnut, and after that a whelk. The tail is naked and slender, being covered only with a skin of very delicate texture; but it is furnished at the extremity with one or more hooks, by means of which it secures itself to the shell which it makes choice of. It is really astonishing with what facility these animals move, bearing at the same time the shell, which serves them as a covering, on their back. All the species are termed indiscriminately *Soldier-crabs* and *Hermit-crabs*, from the idea of their living in a tent, or retiring to a cell.
- Crustacea.
- Sp. 1. Bernhardus.* Arms hairy and rough, the right (generally) largest; hands somewhat heart-shaped; fingers broad. The appendix of the exterior antenna somewhat produced. *Cancer bernhardus* of Linné and Pennant. *Pagurus bernhardus* of Fabricius and Latreille. The common soldier-crab of our seas. It was not unknown to the ancients; Aristotle has very accurately described it under the name *καρχηδον*. A variety with equal claws sometimes occurs. It is considered by the vulgar as the young of the common lobster; it rarely exceeds six inches in length, from the tip of the claw to the tail.
- Bernhardus.
- Sp. 2. Araneiformis.* Resembling the foregoing species, but only one fourth its size. Inhabits the shells of smaller univalve testacea. It is not uncommon in the Frith of Forth, where it was first observed by Charles Stewart, Esq. and described by him in a work entitled Elements of Natural History, under the name *Cancer araneiformis*. It differs from the foregoing species merely in size; and is considered by Mr Leach, who found several of them in spawn (at Porto-Bello near Edinburgh, after a hard easterly wind, and now has them in his collection) as the young of *Bernhardus*; most of the crustacea having the power of producing young before they attain their full growth.
- Araneiformis.
- Sp. 3. Latro.* Shell at the suture four-cleft; tail simple and ventricose beneath. *Cancer latro* of Linné. Inhabits the East Indies, living in holes and cavities of rocks, from whence it wanders abroad in the night, and is said to climb cocoa-nut trees, in order to procure the fruit, which it throws down, and then descending tears them open with the two fore claws. The flesh is eaten by the natives after the entrails are removed, which they think poisonous. Probably referable to another genus.
- Latro.
- Sp. 4. Diogenes.* Hands rough and pubescent; left hand largest. *Pagurus diogenes* of Fabricius. *Cancer diogenes* of Gmelin. Inhabits the Indian seas, and is called by the natives *Gami na al Koona*. The general colour when alive is pale-testaceous, or yellow-brown.
- Diogenes.
- "It is very diverting to observe this animal when about to change its shell, at which time it is seen busily parading the shore along that line of pebbles and shells which is formed by the extremest wave; still, however, dragging its own incommodious habitation at its tail, unwilling to part with one shell, even though a troublesome appendage, till it can find another more convenient. It is seen stopping at one shell, turning it and passing it by; going on to another, contemplating that for a while, and then slipping its tail from its old habitation to try on the new; this also is found inconvenient, and it quickly returns to its old shell again. In this manner it frequently changes, till at last it finds one light, roomy, and commodious; to this it adheres, though the shell be sometimes so large as to hide the body of the animal, claws and all. Yet it is not till after many trials and many combats also, that the soldier is thus completely equipped: for there is often a

- Crustacea. contest between two of them for some well-looking favourite shell for which they are rivals. They endeavour both to take possession; they strike with their claws, they bite each other till the weakest is obliged to give up the object in dispute. It is then the victor immediately takes possession, and parades in his new conquest three or four times back and forward upon the strand before his envious antagonist."
- When taken, it is said to utter a feeble cry, endeavouring to seize the enemy with its nippers; which, if it fastens upon, it will sooner die than quit the grasp.
- They frequent those parts of the sea-shore which are covered with shrubs and trees, producing various wild fruits, on which they subsist; though they will also feed on garbage of all kinds when much in want of food. When roasted in the shell they are esteemed delicate food.
- Custos. *Sp. 5. Custos.* Left claw largest; hand smooth; legs with very long smooth claws.
- Pagurus custos* of Fabricius, described by him from a specimen in the museum of Daldorff; much akin to the following species, but distinct.
- Inhabits the East Indies.
- Miles. *Sp. 6. Miles.* Left hand largest; hand rough and tuberculated on each side; legs with very long serrated claws.
- Pagurus miles* of Fabricius.
- Inhabits the East Indies.
- Aniculus. *Sp. 7. Aniculus.* Thorax ovate, ciliated at the sides; legs rugose and hairy.
- Pagurus aniculus* of Fabricius, described from a specimen in the Banksian cabinet.
- Inhabits the South Seas.
- Tubularis. *Sp. 8. Tubularis.* Body nearly cylindrical; shell with excavated dots.
- Cancer tubularis* of Linné. *Pagurus tubularis* of Fabricius.
- A native of the Mediterransan Sea, inhabiting the shell of *Serpula glomerata*.
- Oculatus. *Sp. 9. Oculatus.* Hands equal and rough; peduncles of the eyes as long as the thorax, with a small tooth at the base. Arms with a blood red spot on each.
- Pagurus oculatus* of Fabricius.
- Inhabits the empty shell of *Murex brandaris*, and is about six inches in length when full grown.
- Alatus. *Sp. 10. Alatus.* Hands smooth, with three wing-like processes; right hand largest.
- Pagurus alatus* of Fabricius.
- This species was discovered in Iceland by Dr Köenig. It is rather smaller than *Pagurus bernhardus*; under side of the wrist rugose.
- Canaliculatus. *Sp. 11. Canaliculatus.* Hands and wrists grooved, with elevated serrated margins; legs with hairy tufts.
- Cancer canaliculatus* of Herbst.
- The habitat of this species is very doubtful.
- FAMILY X. PALINURINI.
- \* The two anterior feet simple, with conic tarsi, rather larger than the others, but of the same form. Hand, without the finger. Exterior antennæ not inserted behind the eyes.
57. SCYLLARUS. GENUS XXXVII. SCYLLARUS. Exterior antennæ with broad squamiform joints, resembling a crest. Eyes distant.
- Latus. *Sp. 1. Latus.* Shell granulated; squamiform joint of the external antennæ entire.
- Scyllarus latus* of Latreille, who supposes it to be distinct from *Scyllarus australis* of Fabricius; and as this is the opinion of the London collectors also, we have followed him in giving the above name, and adopted it as a distinct species.
- Sp. 2. Australis.* Plates of the antennæ roundish and smooth.
- Discovered in the South Seas by Sir Joseph Banks, from whose collection Fabricius drew the above vague description; and as the plates of the antennæ were taken away by Fabricius, we cannot pronounce, with that degree of certainty we could wish, this to be really sufficiently distinct from *Scyllarus latus*.
- Sp. 3. Arctus.* Plates of the antennæ aculeated and hairy; the anterior part of the shell in front, with five spines.
- Cancer arctus* of Linné. *Astacus arctus* of Pennant. *Scyllarus arctus* of Fabricius and Latreille.
- Inhabits the European ocean. It is rather larger than *Astacus marinus* (the common lobster). The shells are tuberculated, of a brown colour, spotted with yellow; legs spotted; thighs spinous.—It is very rare in England, if ever found on the coast, which we doubt.
- Sp. 4. Tridentatus.* Shell dentated above; the squamiform of the external antennæ with three strong teeth.
- Its habitat is unknown. The above description was copied from the manuscripts of Mr William Elford Leach, who observed it in the collection of William Comyns, Esq. of Mount Pleasant, near Dawlish, Devonshire.
- Observation.* Fabricius has described three other species under this genus, which being unknown to British collectors, and unnoticed by other authors who have written on this branch of natural history, we can only describe them in the words of the author.
- "*Sp. 5. Antarcticus.* Rough and hairy; thorax and plates of the antennæ serrated and ciliated. Inhabits India.
- "*Sp. 6. Æquinoctialis.* Rough; thorax and plates of the antennæ wrinkled. Inhabits South America.
- "*Sp. 7. Orientalis.* Rough; anterior part of the thorax on each side armed with three spines. Inhabits the East Indies."
- GENUS XXXVIII. PALINURUS. External antennæ very long and setaceous. Peduncle of the eye transversely broad.
- Sp. 1. Vulgaris.* Spines placed over the eyes, which spines are dentated below; the segments of the abdomen with a transverse impressed line, which is interrupted in the middle.
- Palinurus quadricornis* of Fabricius. *Palanuris vulgaris* of Latreille.
- Inhabits the Mediterranean Sea.
- Sp. 2. Homarus.* Thorax prickly on the anterior part, with two spines in front; base of the antennæ spinous.
- Cancer Homarus* of Linné. *Astacus homarus* of Fabricius.
- Inhabits our rocky coasts, is taken for food, and commonly sold in London under the name of Thorny Lobster.
- Astacus homarus* of Pennant.
- \*\* Two anterior feet different from the rest, being furnished with a finger and thumb; hand compressed; hinder feet minute. Exterior antennæ inserted behind the eyes. The middle lamella of the tail either divided into two by a longitudinal groove, or the posterior margin notched.
- GENUS XXXIX. PORCELLANA. Shell of a roundish square form. The internal side of the basillary joint of the internal footstalk of the external double palpi, dilated.
- Sp. 1. Hexapus.* The anterior margin of the shell

Crustacea. with three wrinkled processes; the middle tooth being deeply notched. Arms smooth.

*Cancer hexapus* of Linné and Fabricius. *Porcellana hexapus* of Latreille.

Inhabits the European Ocean; is very common on our coasts, being frequently thrown ashore after a storm, adhering to the roots of *Fucus digitatus*.

Longicornis. *Sp. 2. Longicornis.* Clypeus with three wrinkled teeth, the middle tooth being entire. Arms striated.

*Cancer longicornis.* Linné.

Inhabits the European Ocean.

Platycheles. *Sp. 3. Platycheles.* Anterior margin of the shell with three entire teeth; the arms very large; the internal sides of the wrists with teeth; hands externally ciliated.

*Cancer platycheles* of Pennant, *Porcellana platycheles* of Latreille.

Inhabits the European Ocean.

It was discovered by Mr Pennant in Anglesea and the Hebrides, and described by him in his British Zoology. Some naturalists have supposed it to be *Cancer hexapus* of Linné. It is found on the coast of Devonshire at low tide, adhering to the under side of large stones.

40. GALATHEA. GENUS XL. GALATHEA. Shell oval. The basillary joint of the internal peduncle of the external double palpi, neither plain nor dilated on its internal margin.

Strigosa. *Sp. 1. Strigosa.* Upper part of the hands, wrists, and arms ciliated with spines on every side: under side of the hands as if plaited; hairy between the fingers; rostrum with seven dents.

*Cancer strigosus* of Linné and Pennant. *Galathea strigosa* of Fabricius and Latreille.

Inhabits the European Ocean; is very common on several of our rocky coasts, being known by the name of *Plaited Lobster*. It is very active, and when taken, flaps its tail against its body with great violence and noise. Upper part when alive, brown inclining to reddish brown, with the sutures blue. Length six inches.

Squamifera. *Sp. 2. Squamifera.* Hands plaited, with their external margin spiny; wrists and arms plaited, internal margin armed with strong spines. Rostrum with seven dents.

Inhabits England.

*Astacus squamifer.* Montagu's MSS.

A new species discovered by Montagu on the south coast of Devon, where it is by no means uncommon. The above characters will point out their specific characters with sufficient accuracy. It has probably been confounded with *Galathea strigosa*, from which it is however very distinct. Length five inches.

Banffia. *Sp. 3. Banffia.* Thorax anteriorly wrinkled and spiny; rostrum with three teeth: arms very long and slender.

*Galathea rugosa* of Fabricius, *Astacus banffius* of Pennant, *Cancer rugosus* of Gmelin.

Inhabits the European Ocean.

It was discovered in this country by the Rev. Mr Cordiner, near Banff, and sent to Mr Pennant; two others have since occurred on the same coast, which are preserved in the collections of Donovan and Sowerby. Length of tail and body five inches; arms six inches and a half.

Observe. Two other species are described under this generic title by Fabricius, but as they have never come under our inspection, we conceive it better to describe them in his words; as they may be referable to some other genus.

Gregaria. *Sp. 4. Gregaria.* Thorax with ciliated plates; snout with three teeth; anterior feelers very long. *Fabricius.* Much smaller than the preceding species (*i. e. Galathea strigosa* and *rugosa*.)

Crustacea. "Inhabits the sea round Patagonia, where it occurs in such vast shoals that the sea appears perfectly red; that being the prevailing colour of them when alive: it has a brown spot on the back; hand claws rough. *Donovan.*"

*Sp. 5. Amplectens.* Thorax smooth; rostrum very short and notched; middle pair of legs very long. The body is small, whitish, and transparent, dotted with red. Thorax smooth, roundish behind, and broad, narrowing towards the front; four cetaceous antennæ, which are very long; abdomen of five segments; middle process or lamella of the tail tongue-shaped.

"This kind is luminous at night; it inhabits the Atlantic near the coast of Brasil." *Fabricius.*

#### FAMILY II. ASTACINI.

Division I. Hands compound, that is furnished with a finger and thumb.

\* Antennæ inserted under the eyes, furnished with two articulated setæ.

GENUS XLI. ASTACUS. Antennæ inserted in nearly the same transverse horizontal line; the peduncle of the exterior either supported by a small lamella or none. Six anterior feet compound; the anterior ones largest. The middle table of the swimming tail-fin broader at the base than at the apex.

In *A. gammarus* and *fluviatilis* the external antennæ are simple, in *Norvegicus* furnished with a scale at their external base: this last is considered as a distinct genus by Mr Leach, under the name of *Nephrops*, from the kidney shaped eye.

*Sp. 1. Gammarus.* Shell, tail, and feet, smooth, beautifully studded with minute excavated dots. Sides of the rostrum with four or more teeth, a strong tooth likewise at the base on each side. Eyes globose, or rather hemispherical. Hands with four, five, or six teeth on their internal margin. Tarsi beautifully ornamented with tufts of hair. Exterior lamella of the tail, at the junction of the accessory plate, with distinct obtuse spines. Ciliæ of the tail testaceous. Colour, when alive, purplish-black, often inclining to violet, elegantly mottled, (particularly on the under side,) with white; cream white and reddish. One claw always larger than the other; the fingers of one armed internally with minute teeth, of the other with tubercles.

*Cancer gammarus* of Linné. *Astacus gammarus* of Pennant. *Astacus marinus* of Fabricius and Latreille.

The middle lamella of the tail, in the *male* with the apex nearly straight, in the *female* rounded.

Inhabits the European Ocean; is the common lobster of our markets. It is found in great abundance on the north coast of Scotland, particularly amongst the Orkney Isles; but it is far more frequent on the coast of Norway, from whence the metropolis is well supplied at most seasons of the year, and these are generally preferred for the table.

Little can be said with regard to the natural history of the *lobster* beyond what has already been stated by Mr Pennant, and his friend Mr Travis of Scarborough. We shall therefore avail ourselves of the observations of these gentlemen, and detail at full length all they have remarked, but we cannot vouch for the perfect accuracy of all their observations.

"The habitation of this species is in the clearest water at the foot of rocks which impend over the sea. This has given opportunity of examining more closely into the natural history of this animal than many others, who live in an element that prohibits most of the human researches, and limits the inquiries of the most inquisitive: Lobsters are found on most of the shores of

Crustacea. Great Britain. Some are taken by the hand, but the far greater number in pots, a sort of trap formed of twigs, and baited with garbage, (called *kreeels*) formed like a mouse-trap, so that when the lobster gets in, there is no return. These are fastened to cords and sunk into the sea, and their place marked by a buoy.

"They begin to breed in the spring, and continue breeding most part of the summer. They are highly prolific; Dr Baster counted 12,444 eggs under the tail of one female, besides those which remained in the body unprotruded. They deposit these eggs in the sand, where they are very soon hatched."

"Lobsters change their crust annually, and previous to their putting off their old one, they appear sick, languid, and restless. They totally acquire a new coat in a few days; but during the time they remain defenceless, they seek some very lonely and remote place, lest they should be devoured by such of their brethren as are not in the same weak situation." Pennant.

They are exceedingly voracious animals, and feed on all sorts of dead bodies, sea-weeds, or garbage.

Some very interesting particulars were communicated to Mr Pennant by Mr Travis, from a variety of observations made by himself on the coast of Scarborough. "Lobsters," he observes, "are found in great abundance and very fine on that coast. The larger ones are in general, in their best season, from the middle of October till the beginning of May. Many of the small ones, and some of the larger sort, are good all the summer. They are, in general, from four to four inches and a half from the tip of the head to the extremity of the back shell. Commonly the pincers of one of the lobster's large claws are furnished with knobs, and those of the other serrated; with the former, it keeps firm hold of the stalks of submarine plants, and with the other it cuts and minces its food very dexterously. The knobbed or numb-claw, as the fishermen sometimes call it, is sometimes on the right side, and sometimes on the left indifferently. It is more dangerous to be seized by them with the cutting claw than the other, but in either case, the quickest way to get disengaged, is to pluck off the creature's claw; a new one will be produced in its place, though it will never attain the size of the former. The female or hen lobster, does not cast her shell the same year that she deposits her ova, or in the common phrase, *her berry*. When the ova first appear under her tail, they are very small, and extremely black, but they become in succession almost as large as ripe elder berries before they are deposited, and turn of a dark brown colour, especially towards the end of her depositing time. They continue full and depositing the ova in constant succession as long as the black substance can be found in their body, which, when boiled, turns of a beautiful red colour, and is then termed coral. Hen lobsters are found in berry all the year. It is a common mistake that a berried hen is always in perfection for the table. When her berries appear large and brownish, she will always be found exhausted, watery, and poor. Though the ova be cast all the year round, they seem only to come to life during the summer months of July and August. Great numbers of them may be then found under the appearance of tadpoles swimming about the little pools left by the tide amongst the rocks, and many also under their proper form, from half an inch to four inches in length.

"In casting their shells, it is hard to conceive how the lobsters are able to draw the flesh of their large claws out, leaving the shell entire and attached to their body; in which state they are constantly found. The

fishermen say the lobsters pine before casting their shell, till the flesh of its large claw is no thicker than a goose quill, which enables them to draw its parts through the joints and narrow passages near the trunk. The new shell is quite membranaceous at first, but hardens by degrees. Lobsters only grow in size whilst their shells are in a soft state. They are chosen for the table by their being heavy in proportion to their size; and by the hardness of their shells on the sides, which, when in perfection, will not yield to moderate pressure. Barnacles, and other marine animals adhering to them, are esteemed certain indications of superior goodness. Cock lobsters are in general better than the hens in winter; they are distinguished by their narrow tails, and by having a strong spine upon the centre of each of the transverse processes beneath the tail, which support the four middle plates of the tails. The flesh of the lobster's claw is more tender and delicate than that of the tail. The Scarborough fishermen do not take them in pots or kreeels, as is usual in still and deep waters; they use a bag-net, fixed to an iron hoop, about two feet in diameter, and suspended by three lines like a scale. The bait is usually fish-guts tied to the bottom and middle of the net. They can take none in the day-time except when the water is thick: they are most frequently taken at night, but even then it is not possible to take any when the sea has a luminous appearance: (This is accounted for, by James Macartney, Esq. in a paper given by him to the Royal Society, and published in the Philosophical Transactions for 1810, p. 292.) In summer, the lobsters are found near the shore, and thence to about six fathoms water; but in winter, they are seldom taken in less than twelve or fifteen fathoms. Like insects, they are much more active and alert in warm than in cold weather. In the water, they can run nimbly on their legs or small claws, and if alarmed, can spring tail foremost, to a surprising distance, as swift as a bird can fly." (This observation has been confirmed by that indefatigable observer of nature, Patrick Neill, Esq. secretary to the Wernerian and Horticultural Societies of Edinburgh, who, in a tour made by him to the Orkney Isles, says they skimmed along the surface of the sea with amazing rapidity as the boats approached the shore.) "The fishermen can see them pass about thirty feet, and by the swiftness of their motions, suppose they may go much farther. When frightened, they will spring from a considerable distance to their hold in the rock; and what is not less surprising than true, they will throw themselves into their holds in that manner through an entrance barely sufficient for their bodies to pass; as is frequently seen by the people who endeavour to catch them at Filey Bridge. In frosty weather, if any should happen to be found near the shore, they are quite torpid and benumbed."

Immense numbers of lobsters are annually sent to London from the Orkney Isles. Pennant mentions, in his Tour to Scotland in 1772, that 60,000 or 70,000 are yearly sent from Montrose alone. They are said to fear thunder, and to cast their claws on a great clap; it is said they will do the same on the firing of a great gun; and that when men of war meet with a lobster boat, a jocular threat is used, that if the master does not sell good lobsters, *they will salute him*. When frightened or irritated, they frequently throw off their claws; the same thing happens when the poor animals are plunged into the boiling pot for dressing. When first caught, if only taken by one claw, they will throw it off and so effect their escape.

The circumstance of the reproduction of their claws,

Crustacea.

though surprising, is nevertheless true; lobsters as well as crabs will renew their claws, if by accident they should be torn off, within the space of a few weeks after the mischief has happened.

A small lobster, according to Mr Pennant, differing in nothing but size from the above, is found near Llyn in Caernarvonshire, where it burrows in the sand; from which last circumstance, we suspect it to be distinct, and well worth the examination of any naturalist who may happen to visit that place.

The lobster was well known to the ancients, and is well described by Aristotle, under the name *αστακος*.

Fluviatilis.

*Sp. 2. Fluviatilis.* Rostrum toothed. Hands tuberculated.

*Cancer astacus* of Linné. *Astacus astacus* of Pennant. *Astacus fluviatilis* of Fabricius and Latreille.

Inhabits the rivers of Europe, especially such as have a clayey bottom. It is the common *craw-fish* of English writers, and is much esteemed as food. They excavate holes for themselves in the banks of rivers in which they live, only coming abroad at night in search of food, which consists of vegetable as well as animal matters; they are taken by means of nets, which are spread across the waters which they frequent, or by the hand. Colour, when alive, dark brown approaching to black.

Norvegicus.

*Sp. 3. Norvegicus.* Rostrum acute, with many spines on each side; shell somewhat spiny in front; from which three longitudinal ridges arise. Hands angular, the angles tuberculated. Wrists spiny. Eyes kidney-shaped. Tarsi hairy. Accessory process of the tail at the base acutely spined. Tail elegantly marked with smooth and short-haired spaces placed alternately.

*Cancer norvegicus* of Linné. *Astacus norvegicus* of Pennant. *Nephrops norvegica*, Leach's MSS.

Inhabits the northern parts of Europe; is found in the Frith of Forth during the summer months, often attaching itself to the lines of the fishermen. Like the common lobster, it has one claw large, the other small; a variety with equal claws sometimes occurs. Colour, when alive, flesh red.

42. THALASSINA.

GENUS XLII. THALASSINA. Antennæ inserted in nearly the same horizontal line. The four anterior feet compound, the first or front pair largest.

Scabra.

*Sp. 1. Scabra.* Shell oval, sides compressed, and spiny. Back with two longitudinal furrows, one on each side; these converge towards the posterior margin, and include another very deep groove. Tail cylindrical, a little longer, and much narrower than the shell; composed of six segments (not including the fin) very convex above, with the lateral margin dilated, wrinkled, and rounded; the first five with an elevated carina or ridge, the fin segment with narrow, acute, and sharp appendices. The feet compressed, with the posterior and anterior margins denticulated; the four anterior feet ciliated with hairs; right arm largest; hands oval, and tuberculated, with teeth above and below; the thumb compressed and rounded. This genus was instituted by the illustrious Latreille, in his work entitled *Genera Crustaceorum et Insectorum*, who describes the above species from a specimen in the museum of natural history in Paris. Mr Leach has compared this description with a specimen in the Hunterian museum, and from his manuscript we have inserted the above account, which differs but little from that given by Latreille.

43. UROGEBIA.

GENUS XLIII. UROGEBIA. Antennæ inserted in nearly the same horizontal line. Eyes pedunculated, and concealed under the proboscis. Abdomen composed of quadrate crustaceous joints. Anterior feet compound, being furnished with a very long moveable

thumb; feet compressed, decreasing in size, the anterior being largest. Middle process of the tail nearly quadrate, the apex being scarcely narrower than the base.

Crustacean.

*Sp. 1. Stellata.* Thorax smooth behind, the anterior part set with minute spines disposed in longitudinal rows, anterior part terminating in a broad and rough rostrum, on each side of which at the base is a strong spiny spire. Under part of the hands hairy, fingers very sharp; wrists and arms angulated, and set with hairs beneath and inside. Feet somewhat compressed. Extremity of the middle process of the caudal fin slightly notched; moveable processes, with an elevated ridge, in the middle. Length two inches. Colour yellowish white, covered with minute yellow or orange spots.

Stellata.

*Cancer stellatus*, Montagu; *Upogebia stellata*, Leach's MSS.

This animal was discovered by George Montagu, Esq. and described by him in the ninth volume of the *Linnæan Transactions*. It is very rare, and inhabits the subterraneous passages made by the solenes, or razor shells.

GENUS XLIV. CALLIANASSA. Antennæ placed in nearly the same horizontal line; the peduncle of the exterior with four joints, and a seta three times as long as the peduncle; the footstalk of the interior antennæ with three joints, and a jointed seta a little longer than the peduncle. A large scale attached to the base of the internal antennæ above. Abdomen with six membranaceous joints. Feet compressed; the two anterior pair compound, the third pair with a simple moveable thumb; hands of the anterior pair jointed; wrist entire. The middle process of the tail triangular, with the point very sharp.

44. CALLIANASSA.

*Sp. 1. Subterranea.* Thorax smooth and membranaceous, the anterior part crustaceous above. Claws unequal; the larger one very smooth, with the margin and fingers ornamented with tufts of hair; inner side of the thumb denticulated; wrist triangulated, with the margins toothed, armed at the base with a hooked process; arm angulated, denticulated beneath; smaller claw with oblong, oval, and somewhat hairy fingers, the arms and wrists being simple, and not angulated. The second pair of feet with hairy fingers, and an ovate hand; the third with a moveable thumb, very much compressed and ciliated; the fourth and fifth simple, with compressed hairy tarsi.

Subterranea.

*Cancer astacus subterraneus*, Montagu, *Lin. Trans.* *Callianassa subterranea* of Leach's MSS.

This singular animal was discovered by Mr Montagu, whilst digging for *Solen vagina* in a sand bank in the estuary of Kingsbridge, on the south coast of Devon, about two feet beneath the surface. He informs us that they are rare, but that a sufficient number has been taken, to shew that the larger claw is not constant to one side. The females are very rare. Length about two inches.

*Mus.* Montagu, Sowerby, Leach, Prideaux.

GENUS XLV. ALPHEUS. The exterior antennæ situated lower than those of the middle, with a large scale attached to the peduncle, (this scale being generally notched on the external side of the point.) The four anterior feet compound. Wrists of the second pair jointed. Middle process of the tail of an oblong-triangular shape, the apex much narrower than the base.

45. ALPHEUS.

\* The anterior larger than the second pair of feet.

*Sp. 1. Avarus.* Hands unequal and difformed; rostrum short and subulated.

Avarus.

*Alpheus avarus* of Fabricius and Latreille.

\*\* The second pair of feet larger than the first.

Crustacea.  
Flavescens.

Sp. 2. *Flavescens*. Body entirely yellow.

*Alpheus flavescens* of Latreille.

Marmoratus.

Sp. 3. *Marmoratus*. Body pale rufous, mottled with red.

*Alpheus marmoratus* of Latreille.

This and the foregoing species inhabit the East Indian ocean, and are described by Latreille, from specimens in the French museum of natural history, and on his authority we introduce them here.

46. PEN-  
ZUS.

GENUS XLVI. PENZUS. The exterior lower than the internal antennæ, with a scale attached to the peduncle, (often notched on the external side of the apex). The six anterior feet compound; the anterior pair shortest. Middle process of the tail-fin oblong-triangular, the apex much narrower than the base.

Monodon.

Sp. 1. *Monodon*. Rostrum porrected, and turning upwards; serrated above, armed with three teeth below.

*Penæus monodon* of Fabricius and Latreille.

Observe. To this section another genus (not hitherto defined by any author) seems to belong, which contains *Cancer astacus gibbosus* of Montagu. *Lin. Trans.* vol. ix. pl. 5. fig. 1. But as we have never seen perfect specimens, we refrain from attempting a generic character, which must necessarily be very defective. We shall therefore describe the animal in Montagu's own words.

"Body slender, incurvated, with six joints. Thorax smooth. Proboscis long, laterally compressed, and serrated; a small spine on each side the proboscis, and another beneath each eye. Antennæ four; upper pair shortest and bifid; lower pair single, nearly as long as the body. Two anterior ciliated plates. Eyes pedunculated. Arms and legs scarcely definable; the anterior pair is terminated by a quadrifid joint; the second pair is cheliform, the other three pair appear when magnified to have a toothed claw. Besides these, there are two very long and slender appendages, which do not strictly appear to be legs, but seem to be auxiliary to the palpi, though they originate so far from the mouth, for they are always placed forwards towards the mouth; these are slightly chelate. The caudal fins are similar to those of the prawn, with a slight spine near the end of the exterior pair. Colour, when alive, red. Length about an inch. Not unfrequently taken by dredging at Torcross, Devonshire." See *Hippolyte* in the Index.

\*\* Interior antennæ with three setæ.

17. PALÆ-  
MON.

GENUS XLVII. PALÆMON. Four anterior feet compound.

A. Anterior pair smaller than the second.

Squilla.

Sp. 1. *Squilla*. The rostrum acute, and turning upwards; the superior part with seven teeth, longer than the peduncle of the internal antennæ.

*Cancer squilla* of Linné. *Astacus serratus* of Pennant. *Palæmon squilla* of Fabricius and Latreille.

Inhabits the European ocean, frequenting most of our shores, lurking amongst loose stones and algæ, in pools left by the tide, where it is taken by means of a small net fixed to a hoop. It is the common prawn of our markets. When alive, cinereous, elegantly banded with brown; but by boiling, it acquires a fine red colour. Pennant says, that it is frequently taken over thirty fathoms depth of water, but we have never observed it in such a situation. Length five inches.

Varians.

Sp. 2. *Varians*. Rostrum straight, a little longer than the peduncle of the middle antennæ, with four teeth in the upper side.

*Palæmon varians*, Leach's MSS.

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Crustacea.

A very common species on the Devonshire and Glamorgan coasts, where it is taken and sold under the name of shrimp. It may possibly be *Astacus squilla* of Pennant, but the descriptions of that author are so laconic, that we are in great doubt in this as in various other instances. Length two inches and a half or three inches.

B. Anterior larger than the second pair of legs.

Sp. 3. *Nitescens*. Rostrum without teeth.

Nitescens.

*Cancer astacus nitescens* of Montagu. *Athanas nitescens*, Leach's MSS.

Found on the southern coast of Devonshire by Col. Montagu. Length one inch, or rather less.

Division II. Hands without the finger, having only a moveable thumb.

GENUS XLVIII. CRANGON. Anterior pair of feet largest, and furnished with a moveable thumb; the other four pair unequal and simple.

48. CRAN-  
GON.

Sp. 1. *Vulgaris*. Shell smooth, rostrum short, with a single groove above. See Plate CCXXI. Fig. 5.

Vulgaris.

*Cancer crangon* of Linné. *Astacus crangon* of Pennant. *Crangon vulgaris* of Fabricius and Latreille.

PLATE  
CCXXI.  
Fig. 5.

Inhabits all the sandy shores of the European ocean; is the common shrimp of the English markets. Its colour when alive is cinereous, inclining to transparent, beautifully mottled and spotted with brown and blackish-brown.

Division III. All the feet simple, having neither finger or thumb.

GENUS XLIX. PRAUNUS. Legs on each side fourteen, set in a double series at the sides of the thorax. Female furnished with a pouch, situated at the base of the abdomen, in which she carries her young after their exclusion from the egg.

49. PRAU-  
NUS.

This genus was instituted by Mr Leach, who has derived the name from the English word *prawn*.

Sp. 1. *Flexuosus*. Middle process of the tail-fin deeply notched.

Flexuosus.

*Cancer flexuosus* of Müller. *Cancer multipes* of Montagu. *Lin. Trans.* vol. ix. tab. 5. fig. 3. *Praunus flexuosus*, Leach's MSS.

Discovered as an inhabitant of Britain by Mr Henry Boys of Sandwich. It has since been observed by Mr Montagu on the south coast of Devon, and accurately described by him in the ninth vol. of the *Linnean Transactions*. As he never saw it alive, the following account, extracted from Mr Leach's MSS. may not prove uninteresting.

"Colour when alive pellucid-cinereous. Eyes black, red at their base. Laminae of the head with a black longitudinal line, and spots. A clouded spot on each side the hinder part of the thorax, and another above the legs. Every segment of the body above beautifully marked with a reddish rust-coloured spot, disposed in an arborescent form; tail-fin spotted with the same colour, mixed with black. Pouch of the female with two rows of fuscous-black spots. Under side of the abdomen regularly mottled with rufous-black. It is found with fry from the middle of June to the middle of July. Females one-third more abundant than the males." Mr Leach observed them in great abundance in pools left by the tide in the Frith of Forth near Leith. Length an inch and a quarter."

Sp. 2. *Integer*. Middle process of the tail entire and not notched.

Integer.

*Praunus integer*, Leach's MSS.

This species was discovered by Mr Leach at Loch-Ranza, Isle of Arran, in brackish pools left by the tide,

**Crustacea.** in the month of August, in the greatest abundance. The females were with young, and the males were more abundant than the females. Like the foregoing species, it swims with its head uppermost, having a most grotesque appearance. Colour when alive, pellucid, cinereous, spotted with black and reddish-brown, varying much in their position. Mr Leach confesses, that he did not at first conceive it to be distinct from *Praunus ferox*, but on examination found that they not only differed in size, but most essentially in the middle process of the tail-fin. Length a third of an inch.

## FAMILY XII. SQUILLARIÆ.

**50. SQUILLARIA.** GENUS L. SQUILLA. Interior antennæ with three articulated setæ. Two large arms. Ten feet, with an hooked hand; the other six simple.

**Mantis.** *Sp. 1. Mantis.* Upper part of the body with several elevated longitudinal lines; thumbs with six dents. Inhabits the Mediterranean and Asiatic seas.

*Cancer mantis* of Linné. *Astacus mantis* of Pennant? *Squilla mantis* of Fabricius and Latreille.

This species has been introduced into the *British Fauna*, but the authority is questionable.

**51. MYSIDÆ.** GENUS LI. MYSIDÆ. Interior antennæ with two articulated setæ. Arms small. Twelve feet, all armed with a claw, and formed for swimming.

**Saltatorius.** *Sp. 1. Saltatorius.* *Cancer pedatus* of Otho Fabricius. *Mysis saltatorius* of Latreille.

Inhabits the Greenland Sea.

This genus is introduced from the *Genera Insectorum et Crustaceorum* of Latreille, who owns that he has never examined the species himself, but has admitted it into his work solely on the authority of Otho Fabricius.

## FAMILY XIII. GNATHIONIDÆ.

**52. GNATHIONIDÆ.** GENUS LII. GNATHIA. Mouth with two strong projected mandibles or jaws, concave above, convex below. Antennæ setaceous; the upper pair rather longest. Feet ten, all armed with a nail. Tail jointed, and furnished with a swimming tail, as in the family ASTACINIDÆ.

**Termitoides.** *Sp. 1. Termitoides.* Mandibles on the inner side armed with minute teeth; middle process of the tail triangular, apex acute.

*Cancer maxillaris* of Montagu.

*Gnathia termitoides*, Leach's MSS.

Inhabits the British Ocean, but is not common.

Mr Leach suspects, that *Oniscus cæruleatus* of Montagu, *Lin. Trans.* vol. xi. is the female of this animal.

## FAMILY XIV. GAMMARINIDÆ.

1. Superior antennæ shorter than the peduncle of the inferior antennæ. Feet fourteen.

**53. TALITRIDÆ.** GENUS LIII. TALITRUS. Anterior pair of feet larger than the second pair; no hands.

*Observe.* The animals of this genus are familiarly known under the name of *sandhoppers*, and cannot have escaped the observation of the most cursory observer, multitudes being seen, during the summer, on all our sandy shores, skipping about in all directions in the evening. Their use in the economy of nature appears to be that of contributing to the dissolution of putrid animal and vegetable matter.

**Locusta.** *Sp. 1. Locusta.* Inferior antennæ as long as the body; the last division with between thirty and forty smaller joints.

*Cancer locusta* of Pennant and Gmelin. *Oniscus locusta* of Pallas. *Gammarus locusta* of Fabricius? *Cancer*

*gammarus saltator* of Montagu. *Talitrus locusta* of Latreille. **Crustacea.**

Inhabits the sandy shores of the European ocean. It has acquired the name *Locusta* from the form of its mouth, which is protruded, and very much resembles that part of a locust. Length three quarters of an inch. Colour, when alive, corneous; when dead, whitish, and often mottled with reddish. It has never been taken in the water; it burrows in the sand, and serves as food to the shore birds, who devour it with avidity.

*Sp. 2. Littoralis.* Inferior antennæ much shorter than the body, the last segment composed of about twenty-five joints. **Littoralis.**

*Talitrus littoralis.* Leach's MSS.

Inhabits all the sandy shores of Britain. It was first observed by the Rev. J. Fleming, who communicated it to Mr Leach, from whose manuscripts it is here inserted. Length about half an inch. Colour corneous, inclining to reddish on the back. It is so common, that a more minute account is unnecessary, it having all the habits of the preceding species.

GENUS LIV. ORCHESTIA. Two anterior pair furnished with a moveable thumb, which is capable of being bent on the edge of the hand; second pair largest, having a compressed hand. **54. ORCHESTIA.**

*Sp. 1. Littorea.* Hand ovate, the part which meets the thumb slightly toothed or wrinkled. Thigh of the posterior pair of legs jointed, and very much compressed. The female wants the hands. See Plate CCXXI. Fig. 6. **Littorea.** **PLATE CCXXI.** **Fig. 6.**

*Pulex marinus* of Baxter; *Cancer gammarus littorea* of Montagu; *Orchestia littorea*, Leach's MSS.; *Talitrus gammarellus*, Latreille?

This species is the only one of the genus hitherto discovered. It is very common on many of our shores, lurking under the rejectamenta of the sea, having all the habits of the preceding genus. Latreille quotes Baxter's figure, which renders it highly probable that this may be his *Talitrus gammarellus*; but as he quotes also the *Oniscus gammarellus* of Pallas, it still remains in some doubt.

2. Superior antennæ longer, or at least as long as the inferior. Fourteen feet, the third and fourth pair smallest.

GENUS LV. GAMMARUS. The four anterior feet furnished with a moveable nail, which is capable of being bent inwards on the hand. Abdomen with thirteen joints. Peduncle of the antennæ with three joints. **55. GAMMARUS.**

*Observation.* The animals composing this genus inhabit ponds and rivulets, also the sea side. The males are considerably larger than the females, which they embrace with their claws, often swimming about with them, and not unfrequently on their back. The females carry about their young with them after their exclusion.

\* Fresh water.

*Sp. 1. Pulex.* Eyes ovate, situated on a level with the base of the superior antennæ; back near the tail with fasciculi of spines. **Pulex.**

*Cancer pulex* of Linné and Pennant; *Gammarus pulex* of Fabricius and Latreille.

This species is utterly incapable of living in the sea, although we have the authority of Linné and many of his followers to the contrary; the truth is, that Linné included the various species of this genus under the names *Cancer locusta* and *Pulex*; this shows the necessity and advantage of constituting natural genera, the only way by which we can ever hope to attain an accurate knowledge of species.

A species which Mr Leach considers as distinct from *pulex*, was discovered in water taken from a

**Crustacea.** newly sunk well, in the square of St Bartholomew's hospital, London, by Thomas Wheeler, Esq. apothecary to that institution, who sent it to Mr Leach, in whose collection it is now preserved. It is very probably a young animal; it differs principally from *Gammarus pulex*, in having the upper process of the tail much longer. The colour, when alive, was cinereous, but so translucent, that the eyes could not be discovered; it stands in Mr Leach's cabinet, under the specific name *subterraneus*, as it most probably inhabits springs under the earth.

\*\* Marine.

**Locusta.** *Sp. 2. Locusta.* Eyes lunated and placed in a line with the superior antennæ; back near the tail with fasciculi of spines.

*Cancer locusta* of Linné. Is it *Cancer gammarus locusta* of Montagu? *Linn. Trans.* vol. ix.

Inhabits pools left by the tide, on all the rocky shores of Great Britain.

Length of the male an inch.

**Camyllops.** *Sp. 3. Camyllops.* Eyes shaped like the capital letter S, extending from the upper part of the superior to the upper part of the base of the inferior antennæ. Back near the tail with fasciculi of spines.

Discovered on the shore of Arran, by Mr Leach, who named it, from the flexuous shape of the eyes, *G. camyllops*.

Length of the male half an inch, female somewhat less.

*Mus.* Leach

**Rubricatus.** *Sp. 4. Rubricatus.* Eyes angulated; situated between the superior and inferior antennæ.

*Cancer gammarus rubricatus* of Montagu. *Ampilhœ rubricata*, Leach's MSS.

Length half an inch.

Inhabits Britain.

Discovered by George Montagu, Esq. and well described by him in the *Transactions of the Linnean Society*, vol. ix. Colour, when alive, usually reddish, or pale pink, minutely and closely speckled with spots of a darker shade. Eyes crimson. It is a rare species, and possibly does not belong to this genus.

**56. MERA.** **GENUS LVI. MERA.** Anterior pair of feet with a moveable nail; the second pair with a compressed hand and moveable thumb. Peduncle of the antennæ with three joints; the superior antennæ longest.

**Grossimana.** *Sp. 1. Grossimana.* Body smooth, with eleven joints; superior antennæ nearly as long as the body. Internal edge of the palm of the second pair of feet ciliated, having a slight groove to receive the thumb.

Length five lines.

Colour, when alive, pale yellow, sometimes mottled with pink.

*Cancer gammarus grossimanus* of Montagu. *Mæra grossimana*. Leach's MSS.

Inhabits pools left by the receding tide, on all our rocky shores.

**57. MELITA.** **GENUS LVII. MELITA.** Anterior pair of feet very small; second pair with a compressed hand, and moveable nail which bends on the palm. Superior styles of the tail very long and large.

**Palmata.** *Sp. 1. Palmata.* Blackish; the tail above, with a few spines.

Inhabits the rocky shores near Plymouth in Devonshire.

*Gammarus palmata*, Montagu, *Linnean Transactions*, vol. vii. tab. 6. *Melita palmata*, Leach's MSS.

**GENUS LVIII. LEUCOTHÏE.** Anterior feet with a finger and thumb; the thumb jointed; second pair with a moveable thumb but no finger. Peduncle of the antennæ with two joints. Superior antennæ longest.

*Sp. 1. Articulosa.* Body smooth and glossy. Eyes garnet-coloured. Wrist of the second pair of feet with a projecting compressed lamella. Internal edge of the hand slightly toothed.

*Cancer articulatus* of Montagu.

*Leucothœ articulosa*. Leach's MSS.

Inhabits the bottom of the sea.

Length half an inch.

*Mus.* Montagu, Leach.

*Obs.* It is probable that *Phronima sedentaria* of Latreille, *Genera Crustaceorum et Insectorum*, vol. i. p. 56. plate 2. fig. 2. forms a distinct family; but as a specimen has never come under our inspection, we shall translate his words in this note.—“Feet ten; the third pair longest and furnished with compound hands.”

“*Cancer sedentarius* Forsk. *F. Arab.* page 95.”

He observes farther, that it inhabits the Mediterranean Sea, dwelling in a cell composed of a gelatinous matter, (perhaps the dead body of a beroe,) of a bladder-like appearance, open at both ends. It often changes its posture, but generally sits within its nest.

It has lately been discovered in Zetland amongst the rejectamenta of the sea, by the Rev. J. Fleming, one of our most zealous and enlightened naturalists.

FAMILY XV. COROPHINI.

**GENUS LIX. COROPHIUM.** Body elongated, composed of ten joints. Tail three jointed, with four bifid styles. Feet fourteen, the anterior pair furnished with a moveable thumb. The upper antennæ armed with a seta, the under ones as long as the body, very thick, more resembling feet than antennæ.

*Sp. 1. Longicornes.* The under part of the second joint of the antennæ near the apex, armed with a sharp spine.

*Cancer grossipes* of Linné; *Oniscus volutator* of Pallas; *Gammarus longicornis* of Fabricius; *Astacus linearis* of Pennant; and *Corophium longicorne* of Latreille.

Inhabits the European Ocean.

Length half an inch.

FAMILY XVI. CAPRELLINI.\*

**GENUS LX. CAPRELLA.** Body linear. Eyes situated behind the antennæ. Antennæ four jointed, the upper ones with the last segment as long as the three others, and composed of several minute articulations; the under ones somewhat compressed, half the length of the superior. The first pair of feet (*palpi* of Montagu) situated very near the mouth; the second pair with the hand denticulated on the inside. Fins of a membranaceous jelly-like substance of a globular form. The anus with two little appendices.

\* The body of these animals, exclusive of the head, is composed of six joints, all except the second and third bearing feet. The second and third segments furnished on each side with two processes, which probably serve as fins. Feet ten, all armed with a moveable nail; the anterior pair very small, and originating from the head. Mouth with two jointed palpi, armed at the point with a little hook.

The female is furnished with a pouch, situated between the fins, in which she carries about the eggs and her young after their exclusion, until they are enabled to shift for themselves.

Crustacea.  
Linearis.

Sp. 1. *Linearis*. Head with one little tubercle. Hand of the second pair of feet with three teeth on the inner edge.

*Cancer linearis* of Linné; *Astacus atomos* of Pennant; *Caprella linearis* of Latreille; *Oniscus scolopendrioides* of Pallas.

Inhabits the European Ocean; affixing itself to fuci and other marine plants. Colour, when alive, brown, inclining to cinereous, beautifully spotted with rust-colour.

Phasma.

Sp. 2. *Phasma*. The first joint of the body with two spines; a third spine on the anterior part of the second joint; a fourth spine on the head, all pointing forward. Hands of the second pair of feet with one strong spine. Colour generally pale olive green. Discovered on the coast of South Devon on fuci, by Mr Montagu, and described in vol. vii. of *Linnean Transactions*, by him.

Penantis.

Sp. 3. *Penantis*. Back without spines; anterior part of the head produced into a spine; hands of the second pair of feet with one tooth.

*Astacus atomos* of Pennant.

Common on the Devonshire coast.

Acanthifera.

Sp. 4. *Acanthifera*. Back, especially the hinder part, spiny; inner edge of the second hands lunate-excavated.

*Caprella acanthifera*, Leach's MSS.

Discovered in Devonshire, where it is not uncommon.

61. PANOPE.

GENUS LXI. PANOPE. Body depressed. Eyes situated on the vertex of the head. Antennæ four jointed; the upper pair, with the basilar joint, largest; the second and third equal, but rather shorter than the first; apical joint very small; inferior pair also composed of four joints, shorter than the first joint of the upper pair. Feet compressed and armed with strong nails; the anterior pair situated on the base of the head, the wrist jointed. Hands of the second pair armed with teeth on their inner edge. Fins of a leathery-membranaceous substance, cylindrical and elongated. Anus produced, having a few obscure small tubercles on each side and under.

The pouch of the female with four valves.

Ceti.

Sp. 1. *Ceti*. Base of the fins with a process resembling the figure 6; the hands of the second pair of feet with two obtuse teeth on the thumb side of the hands. Anus with three processes.

Inhabits the European Ocean, attaching itself to whales, and, according to Latreille, to fishes of the genus Scomber.

*Oniscus ceti* of Linné; *Pycnogonum ceti* of Fabricius. *Panope ceti*, Leach's MSS.

## FAMILY XVII. APSEUDII.

62. APSEUDES.

GENUS LXII. APSEUDES. Body six jointed, tail with six segments, the last largest, armed at the apex with appendices. Feet fourteen, the anterior pair with a finger and thumb; the second pair compressed and dentated; the third and fourth alike and simple; the fifth with a double nail; the sixth and seventh spurious. The superior antennæ with a biarticulated peduncle armed at the apex with a jointed seta; the inferior antennæ bifurcate.

Talpa.

Sp. 1. *Talpa*. Rostrum acute, with three excavated longitudinal grooves.

*Cancer gammarus talpa* of Montagu; *Aapseudes talpa*, Leach's MSS.

Inhabits the British Ocean; length four lines; colour yellowish-white; is very rare.

*Mus.* Montagu, Leach.

## ORDER III. MYRIAPODA.

Crustacea.

## FAMILY XVIII. ASELLIDES.

I. The four antennæ very distinct.

GENUS LXIII. ASELLUS. Tail composed of one piece, with two longitudinal foliaceous double-jointed lamellæ, and two bifid styles inserted about the middle of the posterior margin. Antennæ setaceous; the last segment composed of a great many smaller joints.

Sp. 1. *Vulgaris*. Colour cinereous, often spotted with grey or white.

Inhabits ditches and wells very frequent, and is considered as a proof of the goodness and purity of the water.

*Oniscus aquaticus* of Linné and Donovan; *Idotea aquatica* of Fabricius; *Entomon hieroglyphicum* of Klein; *Asellus vulgaris* of Latreille.

GENUS LXIV. IDOTEA. Tail with two or three segments, and two longitudinal plates as in the genus ASELLUS. The internal or middle antennæ composed of four joints, and placed somewhat above the exterior ones.

GENUS STENOSOMA of Leach.

\* Body linear, external antennæ very long.

Sp. 1. *Hecticus*. The segments of the abdomen laterally dilated. Colour cinereous brown, or greenish-brown, sometimes bordered with grey or cinereous brown. Inhabits the European Ocean.

*Oniscus linearis* of Pallas and Pennant; *Oniscus hecticus* of Gmelin. *Idotea tridentata* of Latreille is only a variety of this species.

\*\* Body thickest in the middle. IDOTEA, Leach.

Sp. 2. *Entomon*. Body of an oblong oval; the segments swelling at the sides; tail conical and elongated, having a tooth on each side of the base. See Plate CCXXI. Fig. 7.

Inhabits the European Ocean.

*Oniscus entomon* of Linné and Pennant; *Cymothoa entomon* of Fabricius; *Oniscus æstrum*, Donovan, in Rees' *Cyclopædia*, article ENTOMOLOGY, plate x.

It is very probable that *Oniscus marinus* of Pennant is merely a variety of this species; both are found on all our rocky coasts in the greatest plenty: it differs merely in having the tail more conical than in *entomon*, and having no teeth at the base; there are, however, so many intermediate varieties, that it cannot with propriety be considered as a distinct species.

Sp. 3. *Æstrum*. Segments of the abdomen slightly prominent at the sides. Tail deeply notched, with a very small protuberance in the middle of the notch.

Inhabits the European Ocean.

*Oniscus æstrum* of Pennant.

GENUS LXV. ANTHURA. Body linear; tail with two broad moveable plates on each side, which, when the animal is alive, much resemble a five-petaled flower. Antennæ short, the interior or upper pair rather longest. Anterior pair of feet furnished with a moveable hook or thumb.

Sp. 1. *Gracilis*. Lateral appendices of the tail obliquely truncated. Colour pale, coloured with rufous.

Inhabits the British seas, but is very rare.

*Oniscus gracilis*, Montagu; *Anthura gracilis*, Leach's MSS.

Observation. *Oniscus cylindricus* of Montagu, *Linnean Transactions*, vol. vii. p. 71. plate 6. fig. 8, seems to belong to a genus nearly allied to *Anthura*; but as no specimen has ever occurred to us, we must content ourselves with transcribing the description given by that author.

" *Oniscus cylindricus*, with a smooth, glossy, cylin-

*Crustacea.* dric, and very convex body, with seven joints independent of the head, tail, and five narrow segments at the base of the latter; central caudal fin subovate, with two smaller lateral ones on each side, which, when spread, give it a quinquedentate appearance: antennæ four, short, the upper pair not half so long as the other; legs fourteen; feet of the foremost six broad, serrated on the inside; all armed with a single claw.

"Length an inch; breadth not quite a quarter. Colour pale yellow, clouded with cinereous on the sides."

66. *Cymothoa*.

GENUS LXVI. *Cymothoa*. Tail composed of a great many segments, the last at its base bearing a double appendage on each side. Most of the segments bearing feet, their lateral margins being thickened. Antennæ setaceous and many-jointed, inserted one pair above the other, under the clypeus. Feet with strong, sharp nails.

*Asilus*.

*Sp. 1. Asilus*. Head with three protuberances or lobes on the hinder part: the hinder segments (the last excepted) arched backwards; the last segment semi-elliptical.

Inhabits the European ocean.

*Oniscus asilus* of Linné and Pallas; *Cymothoa asilus* of Fabricius and Latreille.

*Cestrum*.

*Sp. 2. Cestrum*. Body oblong oval, the last segment transverse.

Inhabits the European Ocean.

*Oniscus cestrum* of Linné and Pallas; *Cymothoa cestrum* of Fabricius and Latreille.

*Observation*. It is highly probable that *Oniscus testudo* of Montagu (*Transactions of the Linnæan Society of London*, vol. ix. page 102. tab. 5. fig. 5.) is referable to a genus akin to this; but as we have never had an opportunity of examining this species, we cannot speak with certainty on this head, but content ourselves by quoting the description given by that author.

"*Oniscus testudo*. Body subovate, composed of eight joints, rising to a ridge on the back; the plates elevated on their edges; the four first fall very low on the sides, and obscure the anterior legs; along each side of the body a row of small tubercles: the front sub-bifid: antennæ four, very short, the lower pair hid beneath: eyes prominent and black; posterior end obtusely pointed; caudal fins beneath, obscure; legs fourteen, short and strong, the three posterior pairs longest; all furnished with a simple claw.

"Length two lines.

"Colour dull red, with a white spot on the anterior part of the back, but as the animal dies this mark is lost. Rare."

67. *Spheroma*.

GENUS LXVII. *Spheroma*. Tail composed of two segments; the last furnished with a double lateral foliaceous appendage, placed on a common footstalk on each side. Body oval, capable of rolling into a globular form, composed of seven joints. Antennæ setaceous and many jointed, inserted by pairs one above the other; their bases placed very close together; the upper pair with a very large peduncle.

*Serrata*.

*Sp. 1. Serrata*. Body smooth; the anal segment of the tail rounded, the sides obliquely truncated; the lamellæ equal, elliptical, with their points sharp.

*Oniscus globator* of Pallas; *Cymothoa serrata* of Fabricius; *Spheroma cinerea* of Latreille.

Inhabits the European Ocean; is very abundant on several of our rocky coasts in pools left by the tide; when touched, it contracts into a ball. Length nearly half an inch. Colour, when alive, cinereous, very beautifully speckled with black.

*Rugicauda*.

*Sp. 2. Rugicauda*. Body smooth; the anal segment

rough, rounded at the apex; the sides obliquely truncated; the lamellæ equal, their points somewhat rounded.

*Spheroma rugicauda*, Leach's MSS.

Inhabits the Atlantic Ocean.

It was discovered on the shore of Ulva, one of the Western Isles of Scotland, by Mr Leach: he observed that it was more agile than *Spheroma cinerea*, from which species it is readily distinguished by the roughness of the anal segment, and the smaller size of the peduncle of the superior antennæ. He has since observed it in very great plenty near the Ware-head, on the river Tamer, in Devon, where the water is but brackish; a curious contrast with the original habitat in the Atlantic!

Colour, when alive, cinereous, very beautifully speckled and streaked with black. Eyes black. Length about one-third of an inch.

GENUS LXVIII. *Næsea*. Apex of the tail on each side with a single foliaceous appendage placed on a footstalk. Body oblong. Antennæ setaceous, and nearly of an equal length; the upper pair with a very large double-jointed peduncle, (the basilar joint largest,) which occupies nearly half their length. Space between the antennæ very visible. Body composed of six joints, the last largest.

*Sp. 1. Bidentata*. Last segment of the body armed with two spines or teeth.

*Oniscus bidentatu*, Linnean Transactions.  
*Næsea bidentata*, Leach's MSS.

Inhabits the British ocean: the living specimens we have seen were cinereous, faintly streaked with red.

GENUS LXIX. *Campeopea*. Base of the tail armed with a bent foliaceous process on each side. Body composed of six joints. Antennæ setaceous, the upper pair longest, with the peduncle composed of two visible joints; the intermediate space between the superior antennæ very great.

*Sp. 1. Hirsuta*. Body hirsute.

*Oniscus hirsutus*, Montagu, *Lin. Trans.* vol. vii. t. 6. f. 8. *Campeopea hirsuta*, Leach's MSS.

Colour (according to Montagu) brown, with sometimes a few faint bluish spots on the posterior joint. Length one-eighth of an inch.

Inhabits the European ocean, but is rather rare.

II. The antennæ obscure, or entirely wanting.

GENUS LXX. *Bopyrus*. Body depressed, of an incurvate oval form. The under part on each side with four foliaceous marginal appendices. Feet minute, spurious, bent, and placed on the margin. The last segment of the tail small.

*Sp. 1. Squillarum*. Colour pale greenish.

*Monoculus crangorum* of Fabricius. *Bopyre des crustacés* of Bosc. *Oniscus squillarum* of Montagu. *Bopyrus squillarum* of Latreille.

Inhabits the European ocean, dwelling under the thoracic plate of the prawn (*Palæmon squilla*) or shrimp (*Crangon vulgaris*), and causing a tumour on the sides of the animal. It varies much in shape, taking the form of the shell. It is so common, that it is surprising it should have escaped the notice of all British naturalists until it was described in the ninth volume of the *Linnean Transactions*, by George Montagu, Esq. It was first described in the *Memoirs of the Academy of Sciences*, in the year 1772, page 29, pl. 1.

*Observation*. Mr Montagu has described an animal as inhabiting the thoracic plate of *Callinassa subterranea*; and as we have never seen the species, we

*Crustacea.*

68. *Næsea*.

*Bidentata*.

69. *Campeopea*.

*Hirsuta*.

70. *Bopyrus*.

*Squillarum*.

Crustacea.

must content ourselves by extracting the description given by that celebrated zoologist.

"*Oniscus thoracicus*. Body oval, inequilateral, with about fifteen indistinct joints, indented at the sides, the six posterior shooting into long, lateral, fasciculate, fleshy, ramose appendages, and the extremity furnished with six simple recurved ones, two of which are larger than the rest. Antennæ four, short; the outer pair longest, and only visible above. The two first joints of the body furnished with a long, flat, oar-like, fleshy fin, or cirrus, on each side; the other joints with similar short ones. Legs fourteen, very short, crooked, and concealed beneath. The abdominal valves are large, cover the whole under part of the body, and form a receptacle for the ova, which are, in specimens before me, vastly distended with many thousands of a pale orange colour.

"Length, including the posterior appendages, scarcely half an inch.

"Colour usually orange; lateral appendices whitish.

"The male is very inferior in size, of a more slender form, and is destitute of the cirri on the anterior part of the body, and those on the posterior joints are simple, not branched, as in the female; in other respects they agree."

Mr Montagu says likewise that he has extracted it from under the thoracic plate, and kept it alive in a glass of sea-water for several days. In the few which he has met with, the male was always found attaching itself to the ventral appendices of the female by its claws. That it forms a distinct genus from any here defined, and is referable to another division of the tribe, need scarcely be mentioned to the scientific reader.

## FAMILY XIX. ONISCIDES.

71. Ligia.

GENUS LXXI. LIGIA. The outermost segment of the external antennæ composed of a number of small articulations. A bifid style, placed on a peduncle on each side of the tail.

*Observation*. It has been supposed by Latreille, and other authors of eminence, that the number of joints in the last section of the external antennæ afforded specific distinctions in this genus; the observations, however, which we have made on *L. oceanica* and *scopulorum*, fully prove the evanescence of this character, as the joints not only vary in number in the same species, but even in the same individual.

Oceanica.

Sp. 1. *Oceanica*. Body brownish; back very rough; sides often beautifully speckled with minute black spots. See Plate CCXXI. Fig. 8.

PLATE  
CCXXI.  
Fig. 8.

*Oniscus oceanicus*, Linné. *Ligia oceanica* of Fabricius and Latreille.

Length half an inch.

Inhabits the shores of the European ocean.

This, and probably all the species, are very prolific: Mr Williams, an ardent student of zoology, found above seventy young ones in the abdominal pouch of a female, in the month of August.

Scopulo-  
rum.

Sp. 2. *Scopulorum*. Body cinereous, sides speckled with minute black spots; back somewhat rough.

*Ligia oceanica*, variety, Leach's MSS.

This species, which is probably a variety of the preceding, is very common on the rocky coasts of Devonshire. It is nearly three times the size of *L. oceanica*, from which it is readily distinguished by the comparative smoothness of its back, and superior size.

*Observation*. The above species are all that we have met with. Three others are enumerated by Latreille; these we shall mention in his words.

"3. *Italica*. Antennæ almost as long as the body; the last joint composed of seventeen minute articulations; styles of the tail equal, exerted; the footstalks narrow and elongated." Crustacea.  
Italica.

*Ligia Italica* of Fabricius.

4. "*Hypnorum*. Antennæ half the length of the body; the last joint composed of ten minute articulations; the caudal styles exerted, with the point of the peduncle internally produced into a setigerous tooth; the body above variegated with cinereous and yellow." Hypno-  
rum.

*Oniscus hypnorum* of Cuvier and Fabricius.

*Oniscus agilis* of Panzer.

Latreille observes, "It inhabits the shores of the British Ocean; I received it from the celebrated Brébisson."

"5. *Oniscoides*. Styles of the tail very short, not exerted; the laciniae ovate-lanceolate." Oniscoides.

*Oniscus assimilis* of Linné. *Cymothoa assimilis* of Fabricius.

"Inhabits the Mediterranean Sea."

GENUS LXXII. PHILOSCIA. External antennæ eight-jointed, the base naked. The first segments of the tail abruptly narrower than the preceding joints of the body. 72. Philo-  
loscia.

Sp. 1. *Muscorum*. Body variegated with cinereous and white. Muscorum.

*Oniscus muscorum* of Scopoli and Cuvier. *Oniscus sylvestris* of Fabricius. *Philoscia muscorum* of Latreille.

Is found under mosses and stones in England, France, and Germany.

GENUS LXXIII. ONISCUS. The external antennæ with eight joints, inserted under the margin of the anterior part of the head. 73. Onis-  
cus.

Sp. 1. *Asellus*. Body above obscurely cinereous and rough, with white longitudinal lines of spots; the sides yellowish. Asellus.

*Oniscus asellus* of Linné and Latreille. *Oniscus murarius* of Fabricius and Cuvier.

Inhabits rotten wood, old walls, &c. throughout Europe.

It was formerly used in medicine, being supposed to cure agues, consumptions, &c. but is now wisely rejected from the modern pharmacopœias. Its vulgar names are *common millepede* or *worms*.

GENUS LXXIV. PORCELLIO. External antennæ seven-jointed, inserted under the margin of the anterior part of the head. The lateral styles of the tail conic and prominent. 74. Porcel-  
lio.

Sp. 1. *Scaber*. Body above rough and granulated. Scaber.

*Oniscus asellus* of Cuvier, Fabricius, and Panzer  
*Porcellio scaber* of Latreille.

Inhabits Europe.

This species is found under stones, in rotten wood, and on old walls. It varies much in colour, being at one time bluish black, at another time yellow. In Scotland it is called *sclater*.

Sp. 2. *Lævis*. Body smooth. Lævis.

*Porcellio lævis* of Latreille.

Inhabits the same place as the former species. In this country it is rare, one specimen only having been taken by Mr W. E. Leach, in Devon.

*Obs*. To this genus, *Oniscus convexus* of De Geer (*Mem. sur les Insect*, tom. vii. pl. 35. fig. 11.) appears to belong.

GENUS LXXV. ARMADILLO. External antennæ seven-jointed, the lateral styles of the tail not prominent, the last joint triangular, and meeting the hinder margin of the posterior margin. Body capable of rolling into a ball. 75. ARMA-  
dillo.

Sp. 1. *Vulgaris*. Body above of a greyish-lead colour; the posterior margins of the segments white. Vulgaris.

Crustacea. *Oniscus armadillo* of Linné and Cuvier; *Armadillo vulgaris* of Latreille.  
Inhabits the roots of trees and rocks all over Europe.

*Oniscus cinereus* of Panzer is merely a variety of this species.

Its vulgar name is *Pill milleped.*

Variegatus. *Sp. 2. Variegatus.* Segments black, margined with white; back variegated.

*Oniscus variegatus* of Villers; *Armadillo variegatus* of Latreille.

*Oniscus pulchellus* of Panzer, (*Fn. Ins. Germ. fasc. 62. fig. 21.*) seems near akin to this species.

FAMILY XX. JULIDES.

76. GLOMERIS. GENUS LXXXVI. GLOMERIS. Antennæ inserted on the upper anterior margin of the head; the two basal joints small; the sixth, including the last, very large. Body oblong-oval, convex above, arched beneath, capable of contracting into a ball; the first segment very narrow, being merely a semicircular lamella; the second larger than any of the others; the last semicircular.

\* Feet on each side sixteen.

Marginatus. *Sp. 1. Marginata.* Body black above, the margins of the segments of a dirty orange yellow.

Inhabits Britain, France, and Germany, under stones.

*Oniscus marginatus* of Villers, *Oniscus zonatus* of Panzer, *Cloporie bordé* of Olivier, *Glomeris limbata* of Latreille, *Julus oniscoides* of Stewart.

Pustulata. *Sp. 2. Pustulata.* Body black above, spotted with red.

Inhabits the southern parts of France and Germany. *Oniscus pustulatus* of Fabricius; *Oniscus armadillo* of Scopoli.

\*\* Feet on each side twenty.

CRyxus, Leach's MSS.

Ovalis. *Sp. 3. Ovalis.* Body dirty yellow.

Inhabits the ocean. *Julus ovalis* of Linné, *Julus ovatus* of Fabricius, *Glomeris ovalis* of Latreille, *Cryxus ovatus*, Leach's MSS.

It is surprising that Latreille should have placed this species in the genus GLOMERIS: though we had never seen the animal, the description and figures would almost have justified us for entertaining this opinion; its economy, the number of legs, at once exclude it altogether from this genus; which, in Mr Leach's manuscripts, as above quoted, is considered as a distinct genus.

77. JULUS. GENUS LXXXVII. JULUS. Antennæ inserted in the anterior margin of the head; the second joint longer; the sixth, including the seventh, (which is very minute), shorter than that which precedes it. Body cylindrical, elongate, serpentiform, the segments rarely margined. Eyes distinct and granulated. (The second and third segments of the body often bearing but one pair of feet.) See Plate CCXXI. Fig. 9.

\* Body not margined or laterally depressed.

Terrestris. *Sp. 1. Terrestris.* Feet 64 to 74 pairs; back cinereous, with light brown annuli; the last segment pointed. *Latr. Gen. Crust. et Ins. tom. i. p. 75.*

Inhabits Europe.

*Julus terrestris* of Latreille, who describes it as having 64 or 74 pair of legs; Linné, Fabricius, and Le-

ger, mention 100 pair of legs as proper to this species. We have never seen this animal, therefore can give no opinion on this point; although it is probable, from the above remark, that two species have been confounded; future observation must however decide this point.

*Sp. 2. Niger.* Body black, legs pale, from 88 to 95 in number, (or perhaps more); the hinder part of the segment longitudinally streaked; anus pointed.

Inhabits Britain, under the bark of decaying trees, or under stones and moss.

*Julus niger*, Leach's MSS.

This species, when alive, is black, although it sometimes, though rarely, occurs of a brownish black colour. After death it generally changes to blue, having the margins of the segments brown or yellowish, with a row of black spots along the sides of the body. It is by far the most common species in the neighbourhood of Edinburgh.

*Sp. 3. Sabulosus.* Back greyish-black, with two longitudinal reddish lines; the last segment pointed. Feet 95 pair.

Inhabits Europe; is common in this country under stones, and on the bark of trees.

*Julus sabulosus* of Linné, Fabricius, and Latreille.

*Sp. 4. Maximus.* Feet on each side one hundred and thirty-four.

Inhabits America.

*Julus maximus* of Linné and Fabricius.

*Sp. 5. Fuscus.* Feet on each side one hundred and twenty-four; back brownish.

Inhabits India.

*Julus fuscus* of Linné and Fabricius.

*Sp. 6. Indus.* Feet on each side one hundred and fifteen; body rust coloured, the last segment pointed; feet yellowish.

Inhabits India.

*Julus Indus* of Linné and Fabricius.

Obs. There are several species, or varieties of Juli, belonging to this subdivision, which inhabit this country, but the marks by which they are distinguished are not sufficiently known to enable us to give an account of them. Much remains to be done in this department, and it would prove highly beneficial to science, were naturalists to breed, from the young state, the various species of these JULI, and mark the changes produced in the animal during its growth, as colour, formation of new feet, &c. Until this has been done, nothing can be added to this genus without great uncertainty.

\*\* Body more or less margined, or laterally compressed. Genus CRASPEDOSOMA of Leach.

*Sp. 7. Raulinsii.* Body blackish; back with two light red longitudinal lines; head black; feet and belly reddish-white; side somewhat margined, or rather compressed; back with one longitudinal sulcus.

Inhabits Scotland, under stones and in decaying trees.

*Craspedosoma Raulinsii.* Leach's MSS.

Discovered by a very assiduous entomologist, Richard Rawlins, Esq.\* under stones near Edinburgh, where it appears to be pretty common; it has since been observed under the bark of decaying willow trees and moss, near Roslin and in Ravelston wood.

*Sp. 8. Polydesmoides.* Body considerably depressed; Polydesmoides.

\* We have now most sincerely to lament the premature death of this gentleman, who, had he survived, would have proved one of the greatest ornaments in the department of Zoology including the animals without vertebra that has ever appeared in this country. His industry and acquirements were truly astonishing, and his zealous ardour remained to his last moments.

**Crustacea.** the segments laterally produced, bearing little spines; back with one longitudinal groove; each segment with two slight tubercles on the sides of the groove.

*Julus polydesmoides*, Montagu's MSS.

Inhabits Devonshire, often occurring under stones.

78. POLY-  
DESMUS.

GENUS LXXXVIII. POLYDESMUS. Antennæ inserted on the superior margin of the head, the last joint exerted: body linear; the segments laterally compressed and marginated; eyes obsolete. *The seventh segment from the head bearing but one pair of feet in the male.* The anterior joints of the body, in both sexes, generally having but one pair of feet.

Complanatus.

*Sp. 1. Complanatus.* Back tuberculated; body depressed; the last joint pointed; feet and belly light yellowish white; upper part light reddish-brown.

*Julus complanatus* of Linné and Fabricius; *Julé aplate* of De Geer, *Polydesmus complanatus* of Latreille.

Inhabits moist woods and hedges under moss and stones; is very frequent about Edinburgh and London.

79. POLY-  
LYXENUS.

GENUS LXXXIX. POLLYXENUS. Antennæ inserted under the margin of the head, very short and cylindrical. Body elongated and depressed, the last segment armed with a pencil.

Lagurus.

*Sp. 1. Lagurus.* Body brownish.

*Scolopendra lagura* of Linné and Fabricius, *Pollyxenus lagurus* of Latreille.

Inhabits Europe. Not yet observed in Britain.

#### FAMILY XXI. SCOLOPENDRIDES.

I. Every segment of the body bearing two pair of feet.

80. SCUTE-  
GERA.

GENUS LXXX. SCUTEGERA. Each joint bearing two pair of feet.

Coleop-  
trata.

*Sp. 1. Coleoprata.* Feet thirty; body reddish-yellow, with longitudinal lines, and bands on the feet of a blue-black colour.

Genus CERMATIA of Illiger.

*Julus araneoides* of Pallas, *Scutigera araneoides* of Latreille.

Inhabits houses in the southern parts of Europe; in Mr Leach's museum are specimens of a very large size from Madeira.

II. Every segment of the body bearing one pair of feet.

The insects composing this division, have been considered, by all authors who have illustrated this department with their writings, as forming one genus, which they named SCOLOPENDRA. The specific characters were taken from the number of feet: thus all the species having forty-two feet, were considered as one species, under the name SCOLOPENDRA *morsitans*; and other species (as we shall point out below) were confounded with one another in the same manner. In the following arrangements, we shall adopt genera divided from Scolopendra by Mr W. E. Leach, which we have copied from his manuscripts.

81. SCOLO-  
PENDRA.

GENUS LXXXI. SCOLOPENDRA. Antennæ conico-setaceous, composed of many articulations, which are nearly conical. The inferior lip somewhat narrower before than behind; the anterior margin denticulated, and divided by a deep fissure. Feet forty-two in number, the hinder pair spinous at their base. The segments of the body somewhat marginated. The anterior pair of feet minute. Eyes eight in number, four on each side placed in a rhomboidal form. See Plate CCXXI. Fig. 10.

PLATE  
CCXXI.  
Fig. 10.

*Obs.* All the species of this genus have been considered as one by all authors, their characters being "Pe-

dibus utrinque 20, oculis octo," *Linn. Syst. Nat.* 1068. *Fab. Ent. Syst.* 2—390. In this character the last feet are not enumerated. In the works of De Geer and Latreille, we find the last pair (which are much larger than the rest, but organised in the same manner) computed as feet, and the character "posterioribus spinosis," particularly noted in the specific character: this last, as we have mentioned in the generic character, is common to all the species, as is also the Linnean "eyes eight." We shall now point out such species as have come under our notice; and we have no doubt that many more remain to be discovered, which hitherto have been confounded under the title of *S. morsitans*.

\* The segments transversely quadrate.

*Sp. 1. Spinipes.* The segments rusty-brown; the angles rounded; the antennæ, palpi, galeæ, posterior margins of the segments, and feet, yellowish; all the feet (excepting the anterior pair) with small spines on their joints.

*Scolopendra Spinipes.* Leach's MSS.

Habitat unknown.

Described from a specimen preserved in the College Museum of Edinburgh. Length about 11 inches. The lip and base of the mandibulæ ferruginous. The whole body, when examined with a lens, punctulated. The nails, heels, and apex of mandibulæ, pitchy black.

*Sp. 2. Inermis.* Segments brown, with the posterior margins and feet pale; feet not spiny; hinder feet, as in the generic character, spiny at their base.

*Mus.* Dr Barclay.

*Scolopendra inermis.* Leach's MSS.

Habitat unknown.

\*\* Segments oblong-square.

*Sp. 3. Morsitans.* Joints rust-brown coloured; feet pale.

Habitat unknown.

*Mus.* Dr Barclay.

*Scolopendra morsitans.* Leach's MSS.

\*\*\* Segments alternately oblong and transversely quadrate.

*Sp. 4. Inæqualis.* Segments rusty-brown; feet pale.

Habitat unknown.

*Scolopendra inæqualis.* Leach's MSS.

GENUS LXXXII. CRYPTOPS. Antennæ conico-setaceous, with 17 globular sub-conical joints. Anterior margin of the lip not denticulated, and scarcely notched. The basilar joint of the posterior feet not spiny; legs forty-two; eyes not discernible.

*Sp. 1. Hortensis.* Body testaceous, inclining to rusty-brown; the back darker in colour; antennæ and feet hairy.

*Cryptops hortensis.* Leach's MSS. *Scolopendra hortensis*, Donovan's *British Insects*, vol. xv. where it was first figured and described, from specimens sent by Mr Leach, under that name, to Mr Donovan.

Inhabits gardens in and near Exeter in Devonshire, discovered by Mr Leach.

GENUS LXXXIII. LITHOBIUS. Antennæ with many joints, (about 45) the two basilar ones largest, of a conical-filiform shape each, joints nearly conical. Eyes granulated. Inferior lip anteriorly notched, the margin much denticulated. Feet thirty.

To this genus SCOLOPENDRA *coleoprata* of Panzer is referable. Leach's MSS. translated.

*Sp. 1. Forficatus.* The whole under lip deeply punctulated, the dots impressed; feet testaceous-yellow.

*Scolopendra forficatus* of Linné, Fabricius, and Latreille; *LITHOBIUS forficatus* of Leach's MSS.

**Crustacea.** Inhabits Europe; is not very uncommon in many parts of England and Ireland, but has not yet occurred in Scotland or Wales.

**Variiegatus.** *Sp. 2. Variiegatus.* The whole under lip slightly punctulated with impressed dots; feet pale-testaceous-yellow, spotted with blackish-brown, or fuscous.

*LITHOBIUS variiegatus.* Leach's MSS.

Discovered in Devonshire by Mr Leach, who was rather doubtful whether it is more than a variety of *LITHOBIUS forficatus*, but is now confident of its being distinct.

**Lævila-brum.** *Sp. 3. Lævila-brum.* Under lip very smooth, with lightly impressed obscure dots on the anterior part; feet testaceous yellow.

*LITHOBIUS lævila-brum,* Leach's MSS.

Common in Scotland in rocky places, living under stones, in fissures of rocks, and under moss.

**84. GEO-PHILUS.** GENUS LXXXIV. **GEOPHILUS.** Antennæ filiform, composed of fourteen nearly equal joints.

**Electricus.** *Sp. 1. Electricus.* Body linear and yellowish; feet about 140, (144 Latreille.)

*SCOLOPENDRA electrica,* Linné, Fabricius, Latreille; *GEOPHILUS electricus,* Leach's MSS.

Inhabits Europe.

This curious animal is found on decayed trees: it emits a dim phosphoric light as it moves along, often leaving behind it a shining track.

*Observation.* Besides the species of this family which have been here described, are many more inhabiting

this country, but their natural history is so imperfectly understood, that we cannot at this time venture a description, lest we fall into error; much remains to be done, but should any species be accurately defined, we shall insert it under its proper head, together with all new discoveries in this and other classes, in the article ZOOLOGY.

Crustacea

*Directions for preserving Crustacea for Cabinets.*

Those species which inhabit the sea, should be suffered to remain for some hours in cold fresh water to extract the salt, which would soon destroy them by attracting moisture; they are then to be placed in a crawling posture, and the parts of the mouth are to be displayed by means of pins, until dry: they will then remain in that position. The more minute species must be dried, and afterwards stuck on paper with gum water, in different positions. Those of the last order, *Miriapoda*, are to be killed by immersion in spirits, and afterwards stuck with a pin on the right side. CRUSTACEA are kept in a cabinet lined with cork, to which they are affixed by pins; or in boxes loose: the former method is best, as they can then be moved from one place to another without trouble or risk. For a more particular account, we must refer to the article ENTOMOLOGY, where cabinets, modes of preparation, &c. will be found accurately detailed at full length.

CLASS II. ARACHNIDES.

Arachnides.

FROM *αράχνη*, a spider, and *ειδος*, resemblance; a class of animals proposed as a distinct class by the celebrated Lamarck, Professor of Zoology in Paris, and established as such by Latreille and other eminent naturalists. As we mentioned in our introduction to this article, the animals composing this class were placed among Insects (INSECTA) by Linné, Fabricius, De Geer, and others; and in this light they were viewed by Latreille in his work on the genera of insects and crustacea; and he seems to have admitted them as a distinct class in his last work, rather through the persuasion of others than from his own judgment.\*

In considering the classes CRUSTACEA and ARACHNIDES, we have, at the suggestion of Mr Leach, adopted an arrangement proposed by him, which contains some essential alterations, which, however, seem sufficiently warranted, as they tend to the ease of the student, and so far may prove much to the advancement of the science. By his arrangements, (which we have fully stated in our general remarks in the introduction to this article,) all those animals formerly considered as insects, without wings and antennæ, are placed in the class ARACHNIDES; consequently, the orders, 1. *Tetracera*, 2. *Myriapoda*, 3. *Thysanoura*, and 4. *Parasita* of Latreille, are rejected from this class: The two first are placed with the CRUSTACEA, and are considered as one order, to which the name *Myriapoda* is applied; the two latter he arranges with Insects, and places them in an order called by Linné *Aptera*. Of this we shall have occasion to speak more fully when considering the class INSECTA, under the article ENTOMOLOGY, and again comparatively in the article ZOOLOGY; it will

therefore be unnecessary to take up the time of the reader, by saying any more on the subject at present; we shall therefore proceed to give the characters of the class ARACHNIDES, with those of its Tribes, Families, and Genera, after which the individual Species, with their structure and economy.

Arachnides.

*Anatomical Character.*

No vertebræ; heart single; tracheæ † for respiration; feet for moving the body.

*External Character.*

Feet jointed, eight (rarely six) in number. Stigmata, or external openings of the tracheæ, visible. Body without wings. No metamorphosis, or scarcely any. No antennæ.

ORDER I. PODO-SOMA.

BODY composed of segments, each segment being a continuation of the feet (at least apparently so.) HEAD distinct. THORAX not distinct from the body. FEET eight in number, each segment bearing one on each side.

TRIBE I. GNATHONIA.

Eyes four in number, placed on a tubercle on the anterior part of the body. *Ovifera* one on each side. *Mandibules*.

\* See the Introduction to his *Considerations générales sur l'Ordre naturel des Crustacés, des Arachnides, et des Insectes.*

† Visible from the external openings.

Arachni-  
des.

## FAMILY I. NYMPHONIDES.

Palpi two in number.

GENUS I. NYMPHON. Mandibles armed with a forceps.

## FAMILY II. PHOXICHILIDES.

No palpi.

GENUS II. PHOXICHILUS. Mandibles terminated by a simple bent nail.

## TRIBE II. AGNATHONIA.

Eyes two in number. Ovipara none? Mandibles none.

## FAMILY III. PYCNOGONUMIDES.

No mandibles. No ovifera?

GENUS III. PYCNOGONUM. Mouth furnished with a simple tube.

## ORDER II. ELEUTEROSOMA.

HEAD connected with the thorax, which is generally distinct from the abdomen. THORAX feet bearing. FEET six or eight in number.

## TRIBE I. HEXAPODA.\*

Feet six in number.

## FAMILY IV. ASTOMIDES.

Feet six in number.

A. Palpi and rostrum very conspicuous.

GENUS IV. CARIS. Body consisting of one coriaceous piece, which is much depressed, and nearly orbicular.

GENUS V. LEPTUS. Body soft and oval.

B. Palpi and rostrum obscure.

GENUS VI. ASTOMA. Feet very short.

## TRIBE II. OCTOPODA.

Feet eight in number.

A. Abdomen sessile, without any appearance of rings; Mouth generally produced into a rostrum or haustellum.

## FAMILY V. HYDRACHNIDES.

Feet formed for swimming.

GENUS VII. LIMNOCHARES. Rostrum scarcely projecting.

Palpi without appendages.

Body depressed.

Mandibles none.

GENUS VIII. HYDRACHNA. Mandibles none.

Rostrum conic, projecting, the points sharp.

Palpi projecting, the apex with a moveable appendage.

GENUS IX. ELAIS. Mandibles depressed, the points armed with a nail.

## FAMILY VI. RICINIDES.

Feet not formed for swimming; no mandibles; rostrum shaped like a bird's beak, or hunter's horn.

I. EYES distinct. BODY very soft and thick; the dorsal SKIN not coriaceous.

\* Palpi obscure, not projecting.

GENUS X. SARCOPTES.

\*\* Palpi more or less distinct.

GENUS XI. BDELLA. Palpi slender, filiform, long, and elbowed, the extremity armed with hairs.

Eyes four.

Posterior feet very long.

GENUS XII. SMARIS. Palpi slender, straight, and filiform, a little longer than the rostrum, without any setae at the extremity.

Eyes two.

Anterior feet very long.

GENUS XIII. CHEYLETUS. Palpi very thick, resembling arms.

II. EYES indistinct: BODY with a covering, partly membranaceous, partly coriaceous.

\* Palpi and rostrum obscure.

GENUS XIV. UROPODA. Feet very short; anus with a filament, by which it attaches itself to insects.

\*\* Palpi and rostrum distinct.

GENUS XV. ARGAS. Palpi short, conic, and free, not covering the rostrum.

GENUS XVI. IKODES. Palpi short and depressed, embracing the rostrum, and sheathing it.

## FAMILY VII. ACARIDES.

Feet not formed for swimming; with mandibles.

I. PALPI very short, and not projecting.

GENUS XVII. ACARUS. Body very soft. Mouth naked.

GENUS XVIII. ORIBITA. Body covered with one coriaceous plate. The rostrum covering the parts of the mouth.

II. PALPI projecting.

\* No hook or moveable appendage at the extremity of the palpi.

GENUS XIX. GAMASUS.

\*\* An hook or moveable appendage at the apex of the palpi.

GENUS XX. ERYTHREUS. Body not divided. Eyes sessile.

GENUS XXI. TROMBIDIUM. Body divided into two parts; the anterior division bearing the eyes, the mouth, and two first pairs of feet.

Eyes pedunculated.

B. ABDOMEN fixed or sessile, sometimes ringed. MOUTH not prolonged into an haustellum or rostrum.

## FAMILY VIII. PHALANGIDES.

Mandibles armed at their points with forceps; abdomen generally sessile; anus without tubercles of nipples.

I. EYES not placed on a peduncle or tubercle.

GENUS XXII. SIRO. Mouth naked: Mandibles very long.

GENUS XXIII. TROGULUS. Mouth situated in a cavity, under the anterior part of the thorax; mandibles short.

II. Eyes placed on a common tubercle.

GENUS XXIV. PHALANGIUM. Eyes two. Palpi terminated by a hook. Body orbicular.

GENUS XXV. GALEODES. Eyes four; palpi with no hook; body elongated.

Arachni-  
des.

\* In the Appendix we have added two other genera to this tribe, viz. Nycteridia, which Latreille places with the Insecta, and a new genus, named by Dr Leach Ocyptec.

Arachni-  
des.

## FAMILY IX. ARANEIDES.

Mandibles terminated by a simple hook or nail; abdomen connected closely with the thorax; anus with nipples.

## I. FEET not formed for leaping.

1. Hinder eyes not placed on the anterior and superior part of the thorax; not forming an irregular hexagon.

A. The two exterior nipples longer than the rest, cylindrical, and projecting. Lip not advanced between the maxillæ, nor prominent, but much longer than broad.

## a. Mandibles projecting.

GENUS XXVI. MYGALE. Palpi inserted on the extremities of the maxillæ.

GENUS XXVII. ATYPUS. Palpi inserted towards the base of the maxillæ. Lip quadrate, not prominent.

GENUS XXVIII. ERIODON. Palpi inserted towards the base of the maxillæ; lip prominent, long, and narrow.

## b. Mandibles perpendicular.

## \* Six eyes.

GENUS XXIX. SEGESTRIA. Eyes disposed in a transverse line, crooked behind, at each extremity.

GENUS XXX. DYSDERA. Eyes disposed in nearly an oval form, open in front.

## \*\* Eight eyes.

GENUS XXXI. FILISTATA. Maxillæ much inclined towards the lip; with no sinus or groove at the insertion of the palpi, they being inserted at the hinder side. Lip much longer than broad. The fourth, then the first pair of feet, longest. Eyes placed on an uneven elevation; the four anterior ones forming a semicircle open in front; the four hinder ones disposed in a nearly straight and transverse line.

GENUS XXXII. DRASSUS. Maxillæ much inclined towards the lip, with no groove at the insertion of the palpi. Lip longer than broad. The fourth pair of feet, and then the first, longest. Eyes not placed on an elevation, disposed in two slightly curved (nearly straight) lines; those of the hinder line not geminated.

GENUS XXXIII. CLOTHO. Maxillæ much inclined towards the lip, without a groove at the insertion of the palpi. Lip not much longer than broad. The fourth pair of feet, then the second, afterwards the third, longest. Eyes close, disposed in four and four, in two transverse lines, bent slightly backwards in an arched and somewhat concentric manner; those of the hinder line disposed in pairs, (geminated.)

GENUS XXXIV. CLUBIONA. Maxillæ nearly straight, with a groove at the insertion of the palpi, the apex rounded, and obliquely truncated on the inside; evidently longer than the lip. Eyes disposed four and four in two transverse lines; the anterior line straight, the posterior much longer, bent slightly backwards.

GENUS XXXV. ARANEA. Maxillæ nearly straight, with a groove at the insertion of the palpi. Apex rounded, the internal angle truncated, remarkably longer than the lip. Lip nearly equal. Eyes disposed in two lines, bent backwards.

GENUS XXXVI. ARGYRONETA. Maxillæ nearly straight, with a groove at the insertion of the palpi. Lip shorter than the maxillæ. The four middle eyes disposed in a quadrate form, the lateral ones geminated.

B. All the nipples short, and nearly equal, of a conic form. Lip projecting between the maxillæ, being much broader than long.

## a. Eyes not describing the segment of a circle.

## \* Maxillæ straightened towards their extremities, not dilated.

GENUS XXXVII. SCYTODES. The first and the fourth pair of feet longest. Eyes six.

GENUS XXXVIII. THERIDION. The first and the fourth pair of feet longest. Eyes eight; the four middle ones arranged in a quadrangle, the inferior ones being placed in a common elevation; the other two geminated, and placed on an eminence on each side.

GENUS XXXIX. LATRODECTUS. The first, and then the second pair of feet longest. Eyes eight, disposed four and four in two transverse and parallel straight lines.

GENUS XL. PHOLCUS. The first, and then the second pair of feet longest. Eyes eight; placed on a tubercle; three on each side in a triangle, and two in the middle; anteriorly.

## \* Maxillæ dilated at their points, and straight.

GENUS XLI. ULBORUS. The first, and then the fourth pair of feet longest. Eyes eight, equal, very minute, placed at nearly equal distances from one another, on two transverse lines. The two middle ones a little nearer than the others; the anterior line bent backwards, the posterior bent forwards.

GENUS XLII. TETRAGNATHA. The first, and then the second pair of feet longest. Eyes eight, and equal, disposed four and four in two straight transverse parallel lines.

GENUS XLIII. LINYPHIA. The first, and then the second pair of feet longest. Eyes eight, the four middle ones forming a square, which is narrow in front, the other four geminated, and placed two on each side.

GENUS XLIV. EPEIRA. The anterior, and then the second pair of feet longest. The four middle eyes forming an equal-sided square; the other four placed in pairs, two on each side.

## b. The eyes describing the segment of a circle.

GENUS XLV. EPISENUS. Maxillæ straight; lip much broader than long; the first, and then the fourth pair of feet longest.

GENUS XLVI. MICROMMATA. Maxillæ straight; lip much broader than long; the second feet, and then the first pair longest.

GENUS XLVII. THOMISUS. Maxillæ inclined; lip much longer than broad; the second and the first pair of feet longer than the rest.

2. Hinder eyes placed on the anterior and superior part of the thorax, forming an irregular hexagon.

## A. The anterior feet longest, next to these the second.

GENUS XLVIII. OXYOPES. Maxillæ straight, and remarkably longer than the lip; eyes in four transverse lines.

GENUS XLIX. STORENA. Maxillæ inclined, much longer than the lip; eyes in three transverse lines.

GENUS L. CTENUS. Maxillæ straight, and remarkably longer than the lip; eyes disposed in three transverse lines.

## B. The fourth pair of feet longest.

GENUS LI. LYCOSA. Lip much longer than broad; the fourth feet and then the first longest.

GENUS LII. DOLOMEDES. Lip not much longer than broad; the fourth pair, and then the second pair, of feet longest.

## II. FEET formed for leaping.

GENUS LIII. ERESUS. The four middle eyes forming a quadrangle; on the outside of which the others are placed, as if forming another quadrangle to inclose them.

Arachni-  
des.

Arachni-  
des.

GENUS LIV. SALTICUS. Eyes forming a horse-shoe or parabole open behind.

## FAMILY X. TARANTULIDES.

Palpi very spiny, resembling arms; mandibles terminated by a simple hook; the two anterior feet very long, and antennaeform; the tarsi with an immense number of joints.

GENUS LV. TARANTULA. Palpi long, simply terminated by a joint in the form of a hook; body short and depressed; thorax reniform or lunated; tail none.

GENUS LVI. THELYPHRONUS. Palpi short and thick, terminated by a finger and thumb; body oblong and cylindrical; thorax oval; tail long.

## FAMILY XI. SCORPIONIDES.

Palpi arm-shaped, terminated by a hand armed with a forceps; mandibles with a pair of forceps; all the feet alike in form.

GENUS LVII. SCORPIO. Eyes six or eight; tail jointed; two laminated pectens at the base of the belly.

GENUS LVIII. CHELIFER. Eyes two or four; tail none; pectens none.

## GENUS LIX. CELLULARIA.

*Observation.* Besides the genera above defined, we may add one more, viz. CELLULARIA, a most singular animal discovered by the celebrated zoologist Montagu, inhabiting the cellular membrane of the gannet, (*Pelicanus Bassanus*, Linn.) which is not referable (as far as we can judge from his description) to any of the families hitherto established by Latreille. It appears to be intermediate between *Acarides* and *Ricinides*; we shall, however, quote his description, as given in the first volume of the Wernerian Society's Memoirs, page 191.

"Ovate oblong, smooth, glossy white, with eight short legs, furnished with several joints, and terminated by bristles, two on each side approximating, and near to the anterior end; the others similarly disposed, about one-third of its length from the posterior end: of the posterior legs, the hindmost pair is furnished with a very long bristle, the other pair usually with two; the anterior legs possess several bristles each. No other appendages were discernible under the best constructed microscope, not even the mouth or eyes could be clearly ascertained; but beneath, at the anterior end, from whence the fore legs arise, there are four light depressions, surrounded by dark lines, in the two hindmost of which is a dark spot, but these had not the appearance of eyes; behind this part is usually a fold in the skin, at which place there is an independent motion: the feet are also observed to be in continual alternate motion, whilst under the microscope.

"Size of *ACARUS Siro*, or cheese mite.

"As far as I have hitherto observed, this insect is peculiar to the gannet, and does not appear to inhabit any other part than the cellular membrane: in some subjects it is found in prodigious abundance, together with the ova; and no instance has occurred in which it has not appeared more or less in every specimen dissected.

"To class this animal with any of the Linnæan genera is impossible; nor am I acquainted with any genus, in the arrangement of any of the more modern systematic writers, in which it could with propriety be pla-

ced. It appears to be more nearly allied to *Acarus* than any other; but the want of eyes, proboscis or sucker, and palpi, will admit of no connection; the situation, too, of the legs seems to be characteristic. Under these circumstances, I propose giving it a distinct place in the system of nature, under the title of *CELLULARIA Bassani*, with the following generic characters: Head, thorax, and abdomen united; no eyes, antennæ, palpi, nor proboscis; legs eight, the four posterior remote from the four anterior; feet unarmed, but furnished with bristles."

From the above ingenious account, which is accompanied with figures, it is evident that it should form a distinct family, which might with propriety be named *Cellularides*, and be placed, as we have before mentioned, between the *Mites* and *Tiques*.

## ORDER I. Podosoma \*

## FAMILY I. NYMPHONIDES.

GENUS I. NYMPHON. *Fabr. Lamar. Latr.* PYCNOGONUM. *Oth. Fabr. Mall.* PHALANGIUM. *Linn. Mont.*

*Mandibulæ* armed with a forceps.

*Sp. 1. Grossipes.* Body smooth; feet very long. Grossipes.

*Phalangium grossipes.* Linné.

*Nymphon grossipes.* Fabr. Latr.

*Pycnogonum grossipes.* Otho Fabricius, Müller.

Inhabits the Norwegian and British seas; is not uncommon on most of our rocky coasts, being often dredged up by the fishermen, who know it by the name of *sea spider*. Fabricius says it perforates the shells of mussels, (*mytilli*.) and sucks out the softer parts of the animal.

*Sp. 2. Aculeatum.* Body smooth; feet very long and hairy about the joints. Aculeatum.

*Phalangium aculeatum.* Montagu.

*Nymphon hirtum.* Fabr.?

*Phalangium hirtum.* Turton.?

Inhabits the British sea.

Colour, when alive, dusky black; length about four lines.

This species was first noticed by George Montagu, Esq. on the south coast of Devonshire. This is not the *Phalangium spinipes* of Otho Fabricius and Gmelin, as has been supposed by Montagu, that species being referable to the following genus.

## FAMILY II. PHOXICHILONIDES.

GENUS II. PHOXICHILUS. *Latr.* PYCNOGONUM. 2. PHOXICHILUS.

*Otho Fabr.* PHALANGIUM. *Montagu, Gmel.*

*Mandibulæ* simple, without a forceps.

*Sp. 1. Spinipes.* Feet very long and spinous. Spinipes.

*Phoxichilus spinipes.* Latreille.

*Pycnogonum spinipes.* Otho Fabricius.

*Phalangium spinipes.* Gmelin.

*Phalangium spinosum.* Montagu.

Inhabits the Norwegian and British seas.

This species, which is certainly *Phalangium spinosum* of Montagu, when alive is of a rufous-brown colour, and about a quarter of an inch in length. Two specimens, which were most obligingly communicated by R. Stevenson, Esq. from the Bell-rock light-house, on

\* All the animals of this order are marine, and for the most part inhabit deep water or rocky shores: they frequently occur also in pools left by the receding tide. The females of the first tribe are furnished with long jointed ovifera, which Latreille has improperly named spurious feet, the use of which are to carry about their eggs. The same parts are said to be found in the second tribe in *Pycnogonum Bualanorum*; but we have never been fortunate enough to detect them in any specimens we have hitherto examined. See *Linn. Trans.* vol. ix. p. 101. where this is noticed by our celebrated zoologist Montagu.

Arachni-  
des.

Arachnides. the Scottish coast, in a living state, were of a blood-red colour, and are possibly distinct.

FAMILY III. PYCNOGONIDES.

3. PYCNOGONUM. GENUS III. PYCNOGONUM. *Brunnich. Muller. Oth. Fabr. Joan Fabr. Oliv. Lam. Latr. PHALANGIUM. Pennant; Gmelin. mandibules none.*

Balanarium. *Sp. 1. Balanarium. Body rufous or dusky. Pycnogonim balanarium. Fabr. Latr. Phalangium balanarium. Pennant, Gmelin. Inhabits the rocky shores of the European Ocean, getting under stones, or running on the rocks at low water. It is sometimes also taken by the dredge, in deep water, on many parts of our coasts, but is not common. Mr Sowerby has observed them amongst the oysters in the London shops occasionally. See Plate CCXXI. Fig. 11.*

PLATE CCXXI. Fig. 11.

ORDER II. ELEUTEROSOMA.

FAMILY IV. ASTOMIDES.

Eleuterosoma. A. *Palpi and Rostrum very conspicuous.*

4. CARIS. GENUS IV. CARIS. *Latreille. ACARUS. Geoff. Rostrum conic and porrected from the maxillæ. Palpi somewhat conic, four-jointed, porrected, and as long as the rostrum.*

Vespertilionis. *Body coriaceous, somewhat orbicular and depressed. Sp. 1. Vespertilionis. Body brown. Caris Vespertilionis. Latreille. Inhabits bats.*

5. LEPTUS. GENUS V. LEPTUS. *Latr. PEDICULUS. Scopoli. ACARUS. Shaw, Fabricius. TROMBIDIUM. Hermann.*

Phalangii. *Mouth furnished with a porrected rostrum. Palpi short and somewhat conic. Body soft and generally oval.*

*Sp. 1. Phalangii. Body oval, bright red, with an elevation in front, and two black eyes; rostrum somewhat conic; base of the palpi much thickened; feet nearly equal in length.*

*Pediculus coccineus. Scopoli. Acarus Phalangii. Fabricius. Leptus Phalangii. Latreille.*

*Inhabits several insects, especially Phalangium Opilio. Obs. To this genus, according to Latreille, all the trombidia hexapoda (six-legged trombidia) of Hermann, and the acarus autumnalis of Shaw's Naturalist's Miscellany, are referable.*

*B. No rostrum; the parts of the mouth very obscure.*

6. ASTOMA. GENUS VI. ASTOMA. *Latreille. Mouth nearly obsolete. Body soft and oval.*

Parasiticum. *Feet very short. Sp. 1. Parasiticum. Body bright red, somewhat contracted in the middle.*

*Astoma parasiticum. Latreille. Inhabits mosses and insects.*

II. Eight Feet.

FAMILY V. HYDRACHNIDES.

7. LIMNOCHARES. A. *No mandibulæ. GENUS VII. LIMNOCHARES, Latreille. ACARUS, Linn. Geoff. De Geer. TROMBIDIUM. Fabr.*

*Palpi bent inward, without appendices. Rostrum scarcely prominent. Body depressed, and tomentose. Feet short, the four posterior ones distant.*

Arachnides. *Sp. 1. Holoserisea. Body ovate, rough and soft, with two black eyes.*

*Acarus aquaticus. Linné. Trombidium aquaticum. Fabricius. Limnochaeres holosericea. Latreille.*

*Inhabits the waters of Europe; is very common in our ponds during the summer months. It varies in colour, but is most frequently found bright red and greyish red, with all the intermediate varieties of shade. Fabricius says it deposits eggs of a red colour, or nepæ, (water scorpions.)*

8. HYDRACHNA. GENUS VIII. HYDRACHNA. *Müll. Oliv. Latr. ACARUS. Linn. Geoff. De Geer. TROMBIDIUM. Fabr.*

*Palpi somewhat cylindrical, porrected, consisting of four joints, the last sharp, and armed with a moveable appendage.*

*Mouth produced into a porrect, conic rostrum. Maxillæ two, lengthened, setaceous, and sharp, capable of being concealed by the lip.*

*Body globular. Feet placed at an equal distance from one another, fimbriated with hair.*

*Sp. 1. Geographica. Body black, with points and spots of red.*

*Hydrachna geographica. Müll. Latr. Trombidium geographicum. Fabr.*

*Inhabits slowly flowing waters and ponds. The largest species hitherto discovered.*

*Sp. 2. Cruenta. Body blood red; feet equal. Hydrachna cruenta of Müller and Latreille.*

*Trombidium globator. Fabricius. Inhabits the European waters.*

*B. With Mandibulæ. GENUS IX. ELYAIS. Latr. Lam. HYDRACHNA. 9. ELYAIS. Müll. Oliv. TROMBIDIUM. Fabr.*

*Mandibules depressed, armed with a nail at their points, and received within the lip.*

*Palpi oblong-conic, bent, sharp, and consisting of three or four joints.*

*Eyes four. Sp. 1. Extendens. Body round, shining, smooth, and red without spots; posterior feet very smooth.*

*Hydrachna extendens. Müll. Trombidium extendens. Fabricius.*

*Elyais Extendens. Lamarck, Latreille. Inhabits stagnant waters throughout Europe.*

*Obs. Latreille, in his Genera Crustaceorum et Insectorum, says, he suspects the following HYDRACHNÆ of Müller, viz. undulata, fuscata, maculata, umbrata, to belong to the genus ELYAIS. This future observers must decide.*

FAMILY VI. RICINIDES.

*I. Eyes distinct. Body very soft and thickish, the dorsal skin not coreaceous.*

*A. Palpi obscure. GENUS X. SARCOPTES. Latr. ACARUS of authors.*

*Sp. 1. Passerinus. Third feet very thick. Acarus passerinus. Linn. Fabr. Herm.*

*Pulex Sturni. Redi (Opuscul, tom. 1. tab. 2. fig. 4.) Sarcoptes passerinus. Latr.*

*Inhabits birds. Sp. 2. Scabiei. Body somewhat round; feet short, reddish; the four posterior ones bearing a very long seta; the anterior four terminated by a club.*

*Acarus scabiei. Fabricius. Sarcoptes scabiei. Latreille.*

*Inhabits ulcers in the itch. A good figure is given by Latreille, in his work entitled Hist. natural des Crus-*

10. SARCOPTES. Passerinus.

Scabiei.

- Arachni-  
des. } *taces et des Insectes*, tom. 7. pl. 66. fig. 8. under the name *sarcopte de la gale*.
- Obs. To this genus the following species seem to belong, *Acarus exulcerans*, Linné; *Acarus destructor* of Schrank, (*Enumeratio Insectorum Austriae*, No. 1057.) and *Acarus torosus* of Hermann.
- B. Palpi apparent.
11. BDELL-  
LA. GENUS XI. BDELLA. Latr. Lam. ACARUS. Linn. Fabr. SCIRUS. Her.
- Palpi elongate and generally geniculated, the last joint with two distinct long setæ or hairs.
- Mouth with an elongate, depressed, conic rostrum; defended by three valves, or nearly equal lanceolate setæ.
- Body ovate, transversely divided into two parts.
- Eyes four.
- Feet posterior, longer than the rest.
- Rubra. Sp. 1. *Rubra*. Antennæ geniculated, the second and third joints very short; the first and last elongate; rostrum longer than the thorax, subulated; body blood red; feet pale.
- Bdella rubra*, Lamarck.
- Acaris longicornis*, Linn. ?
- Inhabits Europe, under stones.
- Observe. *Scirus longirostris* of Hermann, appears to be not very distinct from the above species; p. 62. tab. 6. fig. 12. He mentions two other species, viz. *Latirostris*, and *Scitrostris*; the first is distinguished by its rostrum being shorter than the thorax; the antennæ three-jointed, the last joint shortest: the second, by its subulate rostrum, antennæ with two joints, the apex with one seta. They both inhabit mosses, and are of a red colour.
12. SMAR-  
RIS. GENUS XII. SMARIS. Latr. ACARUS Schrank. TROMBIDIUM, Hermann.
- Mouth with an elongate, somewhat cylindrical porrected rostrum, with the apex gradually becoming narrower.
- Palpi nearly parallel, straight, subcylindrical, and porrected, consisting of four joints, the last with no elongate setæ; they are a little longer than the rostrum.
- Body oval and scaly.
- Eyes two.
- Feet, anterior ones longer; the four hinder distant.
- Sambuci. Sp. 1. *Sambuci*. Body red.
- Acarus sambuci*, Schrank.
- Trombidium sambuci*, Hermann.
- Smaris sambuci*, Latr.
- Inhabits trees, especially the elder.
13. CHEY-  
LETUS. GENUS XIII. CHEYLETUS. Latr. ACARUS, Schrank.
- Palpi very thick, resembling arms.
- Eruditus. Sp. 1. *Eruditus*. Body brownish.
- Acarus eruditus*, Schrank.
- Cheyletus eruditus*, Latr.
- Inhabits books and musæa.
- II. EYES indistinct. Body with a covering, partly membranaceous, partly coriaceous. The haustellum with three horny laminae toothed on the side; (these animals suck the blood of mammalia, birds, and reptiles.)
- A. Rostrum and palpi obscure.
14. UROPO-  
DA. GENUS XIV. UROPODA, Latr. ACARUS, De Geer, Donovan, Schaw.
- Feet very short (when at rest pressed and contracted against the under part of the body), the fourth longest, then the third; the first very short, received into a cavity on the anterior part of the body beneath.
- Body oval, inclining to orbicular; back horny and shield-formed, the middle gradually convex; the under part smooth. The anus fixed to coleopterous insects by a long filiform peduncle.
- Sp. 1. *Vegetans*. Body brown, very smooth and shining.
- Acarus vegetans*, De Geer, Shaw.
- Acarus coleopratorum*, jun. Donovan.
- Uropoda vegetans*, Latreille.
- Inhabits sphaeridea, histeres, scarabæi, and aphodii.
- This curious animal is found on most of the dung-feeding coleopterous insects. Donovan has figured this species for the young of *Gamasus coleopratorum*.
- B. Rostrum and palpi distinct.
- GENUS XV. ARGAS, Latr. RHYNCHOPRION, Herman. 15. ARGAS ACARUS, Fabr.
- Palpi conic, short, incurved, consisting of four joints.
- Body oval, membranaceous, the skin not more coriaceous before than behind.
- Feet arising from nearly the middle of the vertex, with two nails at their extremities, inserted and elongated, the joints rounded at their base.
- Sp. 1. *Reflexus*. Pale yellowish, or flesh-coloured, inclined to violet; body marginated, the squamulæ very short, the sanguiferous vessels branched.
- Acarus marginatus*, Fabr. Coquebert.
- Argas reflexus*, Latr.
- Inhabits houses, sucking the blood of pigeons.
- Observe. Latreille thinks it highly probable that *Acarus niger* of De Geer, (tom. 7. pl. 37. fig. 9.), and *Rhynchoprion americanum* of Hermann, (p. 71.) form an intermediate genus between *Argas* and the following genus *Ixodes*. Should this be found correct, it might be named *Rhynchoprion*, which would prevent any useless confusion arising from synonyms.
- GENUS XVI. IXODES, Latr. ACARUS, Lin. Fab. Oliv. 16. IXODES CYNORHESTES, Herm.
- Palpi terminal, porrect, very short, coriaceous, plain, depressed, longer than broad, nearly of an equal breadth, the apex rounded or obtuse, inserted at the base of the haustellum on a common peduncle, sheathing the haustellum and rostrum.
- Rostrum oblong-quadrate, depressed, obtuse, three-jointed; the basilar joint very small; the others nearly equal; the internal edge hollow.
- Haustellum horny, with three lamellæ.
- Body ovate-orbicular, membranaceous before, and notched for the insertion of the rostrum; the anterior part of the back coriaceous, somewhat resembling a thorax.
- Feet inserted at the lateral margins, the joints thick; the last, with two nails, inserted on a vesicle; the vesicle pedunculated.
- Sp. 1. *Ricinus*. The rostrum, thoracic mark on the dorsum, and feet blackish red; the abdomen light red, with a few scattered villi, the sides marginatis; the palpi free, or scarcely sheathing the haustellum.
- Acarus ricinus*, Linn. Fabr.
- Ixodes ricinus*, Latr.
- Inhabits the woods and groves of Europe, attaching itself to oxen and dogs, and adhering firmly by their rostrum and feet. Is very common in Britain; is known by the names tick, or dog-tick, or tique.
- Sp. 2. *Sanguineus*. Blood red, and punctated or dotted, with three impressed lines behind; the dorsum without any distinct mark on the anterior part.
- Inhabits France, and is here given on the authority of that celebrated entomologist Latreille, who says it is rather smaller than the preceding species.
- Arachni-  
des. } Vegetans.  
Reflexus.  
Ricinus.  
Sanguineus.

Arachni-  
des.  
Reticula-  
tus.

Sp. 3. *Reticulatus*. Bright blood red beneath, above whitish, variegated, with brownish blood colour; the dorsal marks obscurely margined; the sides of the abdomen marginated, punctated, and striated; palpi somewhat oval.

*Acarus reticulatus*, Fabr.  
*Acarus reduvius*, Schrank.  
*Izodes reticulatus*, Latr.

Inhabits various plants; is very common in Genistæ; it fixes itself to oxen. When its abdomen is distended, it is nearly five lines in length, and is then of an ash or pale yellow colour.

FAMILY VII. ACARIDES.

I. Palpi very short, not exerted.

GENUS XVII. ACARUS, Linn. Geoff. De Geer. Fabr. Oliv. Hermann.

Body soft; parts of the mouth naked.  
Tarsi with a pedunculated vesical at the apex.

17. ACA-  
RUS.

Siro.

Sp. 1. *Siro*. Whitish, with two brown spots; body oval, contracted in the middle, with very long hairs; feet equal in length.

*Acarus siro*, Linn. Fabr.  
*Ciron du fromage*, Geoff.  
*Acarus domesticus*, Latr.

Inhabits cheese and flour too long kept. Is called cheese-mite, and much esteemed by most people, who say it heightens and improves the flavour of cheese. Latreille supposes *Acarus dimidiatus* of Hermann may be this species.

Farinæ.

Sp. 2. *Farinæ*. Oblong and white; head reddish; feet conical, thicker, and of an equal length.

*Acarus farinæ*, Schrank, Latreille.  
*Acarus fauorum*?

Observe. Are *Acarus lactus* and *Dysentericæ*, of Linné and Fabricius, distinct from *Acarus farinæ* of Latreille? They are probably merely the young of that species.

18. ORIBI-  
TA.

GENUS XVIII. ORIBITA, Latr. ACARUS, Linn. Fabr. Oliv. Geoff. NOTASPIS, Her.

Body with a coriaceous covering, (back generally shielded,) rostrated before; the rostrum including the parts of the mouth.

Tarsi, generally with three nails at their extremities.

\* *Abdomen somewhat globose, neither angulated in front, nor furnished with wing-like processes.*

Sp. 1. *Geniculata*. Brownish red, shining and hairy; feet pale-brown; thighs rather clubbed.

*Acarus geniculatus*, Linn.  
*Oribita geniculata*, Latreille.

Inhabits trees and stones in various parts of Europe.  
Sp. 2. *Theleproctus*. Black; back clypeated; the shield divided and striated by concentric circles.

*Notaspis theleproctus*, Hermann.  
*Oribita theleproctus*, Latreille.

Inhabits France and Scotland. Its form is that of a shield, its motion very slow.

Genicu-  
lata.

Theleproc-  
tus.

Cassidea.

Sp. 3. *Cassidea*. Brownish-red; scutum depressed and transparent; anterior feet antennæ-like.

*Notaspis cassidea*, Herm.  
*Oribita cassidea*, Latr.

Inhabits mosses. Is found in France and Britain; in the latter country it is very common.

\*\* *Abdomen somewhat globose; the anterior margin produced into an angle, or wing-like process.*

Alata.

Sp. 4. *Alata*. Abdomen very smooth; obscurely brownish red; the sides with wing-like processes.

*Acarus coleopratorum*, Linn.

*Oribita alata*, Latr.

*Notaspis alata*, Herm.

Inhabits mosses.

Sp. 5. *Humeralis*. Abdomen blackish-brown-red, and very smooth; the sides produced into a straight angular membranaceous process.

*Notaspis Humeralis*, Herm.

*Oribita Humeralis*, Latr.

\*\*\* *Abdomen somewhat quadrate, neither angulated nor winged.*

Sp. 6. *Tegeocrana*. Abdomen oblong; the anterior margin with four white setæ; the head covered by a triangular scutum; the lateral squamula pellucid.

*Notaspis tegeocrana*, Herm.

*Oribita tegeocrana*, Latr.

Inhabits mosses.

Sp. 7. *Horrida*. Body rough; abdomen with two teeth behind, and four hooked processes.

*Notaspis horrida*, Hermann.

*Oribita horrida*, Latreille.

Inhabits mosses. In this country it appears to be very rare, having been found but once in a wood in Norfolk, near Cossey, by Mr Leach.

I. *Palpi exerted and prominent.*

A. No moveable appendage at the extremity of the palpi.

GENUS XIX. GAMASUS, Latr. ACARUS, Linn. Fabr. Oliv. Herm. TROMBIDIUM, Herm.

*Pulvilli* vesicular at the apex of the tarsi.

\* *Body depressed; the whole, or part of the skin of the back, coriaceous.*

Sp. 1. *Coleopratorum*. The anterior part of the back, and a triangular spot behind, coriaceous and fuscous; the anterior and posterior pair of feet rather longer than the rest.

*Acarus coleopratorum*, Linn. Fabr. Donovan. Herm.

*Gamasus coleopratorum*, Latr.

Inhabits the dung of oxen and horses, attaching itself to such coleopterous insects as come there to feed or deposit their eggs. We have frequently seen *Geotrupes stercorarius*, (the common clock, or dor beetle,) and *Necrophorus vespillo* and *humator*, (grave-digging beetles,) nearly covered by hundreds of these animals.

Sp. 2. *Marginatus*. Oval, brown, and hairy; coriaceous above and below; the sides of the abdomen being alone membranaceous and white; the anterior feet nearly twice as long as the rest.

*Acarus marginatus*, Hermann.  
*Gamasus marginatus*, Latreille.

Inhabits dung and putrescent plants, where it frequently occurs. Latreille supposes *acarus cellaris* of Dr Hermann is the same insect; it differs, however, in having very unequal feet, and an immarginate body; if his figure therefore be correct, it is a distinct species.

Sp. 3. *Crassipes*. Second pair of feet very thick and toothed.

*Acarus crassipes*, Hermann.

*Gamasus crassipes*, Leach's MSS.

Obs. To this family, *acarus testudinarius* of Hermann, (tab. 9, fig. 1.) and *acarus longipes*, (tab. 1, fig. 8.) of the same author appear to belong; but as we have never seen the animals, we cannot be too cautious in giving our opinion.

\*\* *Body with a soft skin, back not coriaceous.*

Obs. We are unacquainted with all the members composing this family; and shall therefore give Latreille's ideas on the species which he supposes to belong to it. "Some few of the TROMBIDIA and ACARI of Hermann

Arachni-  
des.

Humeralis.

19. GAMA-  
SUS.

Coleoptra-  
torum.

Margina-  
tus.

Crassipes.

Arachni-  
des.

and Fabricius may be referred to this family. I have not examined the species with sufficient attention, the following list I therefore give with doubt, viz. *Trombidium*. 1. *Trimaculatum*. 2. *Miniatum*. 3. *Parietinum*, (*Acarus baccharum*, Linn.?) 4. *Congenericum*. 5. *Lapidum*. 6. *Telarium*. 7. *Sociale* of Hermann. *Trombidium trimaculatum* is figured by Rossi. *Acarus Hirundinis*, and *Vespertilionis* seem to form a distinct genus."

B. A moveable appendage at the extremity of the palpi.

20. ERYTH-  
RUS.

GENUS XX. ERYTHRÆUS, Latr. ACARUS, De Geer.

TROMBIDIUM, Herm.

Eyes two, sessile.

Palpi elongate and conic; the under part of the last joint armed with a chelate moveable appendage.

Body entire; the division between the two anterior pair, and posterior pair, not very remarkable.

Phalangi-  
oides.

Sp. 1. *Phalangioides*. Feet very long, the last joint broad and compressed; the hinder, and then the anterior, longest; body obscurely red, with a yellowish orange band.

*Trombidium phalangioides*. Hermann.

*Erythræus phalangioides*. Latreille.

Inhabits the ground, running with rapidity; is found throughout the greater part of Europe; found by Mr Leach at Swansea.

21. TROM-  
BIDIUM.

GENUS XXI. TROMBIDIUM, Fabr. Oliv. Lam. Latr. Herm. ACARUS, Linn.

Eyes four, two on each side, pedunculated.

Palpi elongate-conic, inserted at the base of the posterior sides of the lip; consisting of four joints, the first very short, the second larger than the third, the last conic; the point (at least) horny, nail-shaped, acute; the base with a moveable cylindrical appendage.

Body divided into two parts; the anterior part thoracic, stronger and narrower, bearing the mouth, eyes, and four anterior feet; the posterior part abdominal, broader, very soft, bearing the four posterior feet, which are at a notable distance from the others.

Observe. Besides the above character, which is essential, we may subjoin the following. Mandibulæ two, compressed and horny, incurved at their base. Lip (*labium*) membranaceous, somewhat conic, sheathing the mandibulæ. Feet six, jointed, with two very short nails, which are compressed and arched, being concealed in a fissure in the middle of the apex of the tarsus; the anterior ones generally longest.

Tincto-  
rium.

Sp. 1. *Tinctorium*. Body somewhat quadrate; blood red, immaculate, and covered by a velvety down; the hairs setaceous, elongate, and bearded.

*Acarus tinctorius*, Linné.

*Trombidium tinctorium*, Fabr. Herm. Latr.

Inhabits Guinea; is often preserved amongst collections of insects from that place, whence we infer it is not an uncommon species. Its colour is destroyed by alcohol.

Holoseri-  
ceum.

Sp. 2. *Holosericeum*. Body somewhat quadrate; blood red, without spots, and tomentose; the down short, composed of hairs, or cylindrical papillæ, rounded or obtuse at their points.

Inhabits Europe; common, in the spring, on walls and trees in gardens. It is the *Acarus holosericeus* of Linné; *Trombidium holosericeum* of Fabricius, Hermann, and Latreille.

Fulgino-  
sum.

Sp. 3. *Fulginosum*. Body elongate-quadrate, of an immaculate obscure red colour, and tomentose; the down short, with bearded hairs.

*Trombidium fuliginosum*, Hermann, Latreille.

## FAMILY VIII. PHALANGIDES.

Arachni-  
des.

I. EYES not placed on a common peduncle, but at some distance from each other.

GENUS XXII. SIRO, Latreille.

22. SIRO.

Mouth naked, with two mandibles, which are double-jointed, cylindrical, and compressed, with their points armed with forceps placed between two long narrow maxillæ, which are margined on their inner edge.

Palpi two, composed of five elongate joints, the second the longest.

Body oval.

Eyes two in number, situated on the sides of the thorax, on an erect tubercle, at a distance from one another.

Abdomen annulated above and below.

Feet elongate and filiform; the tibiæ and tarsi consisting of two joints; the last larger and clavate, being armed with a bent nail.

Sp. 1. *Rubens*. Pale red; feet lighter coloured.

Rubens.

*Siro rubens*, Latreille.

Inhabits France, harbouring under moss at the roots of trees. Length about a line.

GENUS XXIII. TROGULUS, Latr. PHALANGIUM, Linn. 23. TROGULUS.

Mouth situated in a cavity under the anterior part of the thorax, furnished with two mandibulæ, palpi, and maxillæ.

Mandibles cylindrical, elongate, compressed, double-jointed and kneed, the last joint armed with a forceps, and nearly equal chelæ.

Palpi filiform, a little longer than the mandibulæ, inserted at the internal lateral base of the maxillæ, and consisting of five joints; the first very short; the second very long and cylindrical; the third and fourth of a moderate and nearly equal length, of a cylindrico-conical form, the fourth a little longer; the last cylindrical, inclining to oval, armed at the apex with a very minute horny nail.

Maxillæ somewhat horny, oval, spoon-shaped, margined, and divaricating.

Lip-like body; at the angle of separation small, membranaceous, and nearly round; seemingly formed of two moon-shaped parts joining together, the intermediate space receiving the apex of the chelæ.

Body ovate-elliptical, depressed, margined in front, rounded at the apex.

Eyes two, placed at a short distance from one another on the back, the insertion scarcely prominent.

Feet eight, elongate, filiform, each arising from a common base separate from the pectus; the second and fourth pair longest, and of nearly an equal length; next the third, then the first: The tibiæ and conæ consisting of two, the tarsi of three joints; the first joint of the latter, and then the last, longest; last joint of tarsus armed with a nail.

Sp. 1. *Nepesiformis*. Obscure-cinereous, or brown-Nepesiformis; the dorsum and sides of the abdomen obscurely carinated; the external apex of the first joint of the tarsi lengthened.

*Phalangium tricarinatum*, Linné.

*Phalangium carinatum*, Fabricius.

*Acarus nepesiformis*, Scopoli.

*Trogulus nepesiformis*, Latreille.

Inhabits France and Germany, lurking under stones. It has not hitherto occurred in this country.

II. Eyes placed on a common peduncle, very close together.

Arachni-  
des.  
24. PHA-  
LANGIUM.

GENUS XXIV. PHALANGIUM, Linn. Fabr. Latr. Herm. Don.; OPILIO, Herbst.

Mouth consists of a labriform rostellum; two mandibulæ and palpi; six parts which appear to be maxillæ; a labium and sexual vagina.

Rostellum labriform, horny, short, conic, and inserted under the mandibules, above the maxillæ, in the middle of the origin of the palpi; the apex acuminate.

Mandibulæ porrect, horny, somewhat cylindrical, compressed, elongate, double-jointed, inflexed at the second joint, inserted under the middle of the interior margin, being longitudinally contiguous; the apex armed with a forceps; the chelæ conic and equal; the thumb or external chela moveable.

Palpi inserted at the base of the first maxillæ, under the origin of the mandibulæ; they are composed of five joints, which are nearly filiform, the third being excepted, which is cylindrical; the first very short, the second and last longer, the third shorter and nearly conic.

Maxillæ (organs resembling them in form) placed in a double order, closing the aperture of the mouth by meeting transversely; they are very short and membranaceous; the four upper ones vesicular and intumescent, with the base somewhat cylindrical and thickened; the apex rounded and hairy; a small, erect, conic, needle-like process at the base of the upper pair; the lowest pair narrow, elongate, lanceolate, and slightly connected together, arising from the origin of the second pair of feet, and resting on the apex of the sexual vagina.

Labium concealed by the maxillæ; on dissection it is quadrate and membranaceous, the apex being rounded, with the middle notched.

Vagina sexual, including the sexual organ of the male and oviduct of the female, is placed under the maxillæ, causing a prominence on the middle of the pectus, resembling a sternum.

Body somewhat orbicular or oval, covered by a soft semicoriaceous skin, the breadth rather exceeding the height.

Thorax semicircular, with a tubercle on the middle towards the hinder margin, on which the eyes are placed, one on each side.

Abdomen folded or wrinkled beneath.

Feet eight, very long and narrow; the second pair longest, then the fourth, next the third and first. The coxæ composed of three, the tibiæ of two joints; the tarsi of several, the basilar or first one longest; nail small, horny, and bent, placed at the extreme apex.

\* The second pair of feet about six times longer than the body; all the tarsi hair-like; the inferior joints elongate, four times as broad as long.

Opilio.

Sp. 1. *Opilio*. The eye-bearing tubercle with a double crown of little spines; body oval; thighs distinctly bearing spines disposed in many longitudinal series; back cinereous or testaceous, the middle of the abdomen blackish; the spines of the eye-bearing tubercle very conspicuous; eyes rather distant; the space of the thorax passing them not abruptly elevated; anterior tibiæ angulated (of the female with a groove); second joint of the palpi generally with a blackish or obscure spot.

Male, *Phalangium cornutum*, Lin. Fab. Hermann.

Female, *Phalangium opilio*, Linn. Fab. Hermann.

Inhabits Europe, is frequent on walls or amongst grass. The male has the second joint before the apex

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des.

of the mandibles transversely and longitudinally fixed to the preceding; and palpi as long as the body. These sexual distinctions (which most probably apply to the whole genus) were observed by that celebrated observer of nature Geoffroy.

Observation 1. Latreille says, that he has observed a species much allied to *Phalangium opilio*, differing, however, by having the anterior feet nearly cylindrical, and not distinctly angulated, and the third and fourth joints of the palpi, especially the former, produced at the apex internally into a horn or branch, as in *Phalangium uncatum* of Hermann, (*Mém. Aptér.* page 106, plate 8, fig. 5.); the second joint of the same colour with the rest; the upper part of the body somewhat nut-coloured, with paler spots; the back not black in the middle; the thighs less spiny. It appears to be nearly allied to Hermann's species above alluded to; the individual mentioned by Latreille was a female.

Observation 2. *Opilio longipes*, Herbst. (*Naturg. opil.* tab. 2. fig. 2.) is distinguished from *Phalangium opilio* by its pale nut-colour without the black dorsal mark; by the shorter spines of the eye-bearing tubercle; the eyes more approximated, reddish, with a black spot interposed; the space before them abruptly elevated; the second joint of the palpi of the same colour with the rest; the anterior tibiæ cylindrical and somewhat spinous. This is supposed to be a mere variety of *Phalangium opilio* by Hermann.

Observation 3. *Phalangium cornigerum* of Hermann, is readily distinguished from the male of *Phalangium opilio*, by its spiny palpi, the internal apex of the third and fourth joints prominent; the second joint of the mandibles before the apex near the chelæ elevated into a horn above. Latreille thinks this may be the male of *Phalangium uncatum*.

Sp. 2. *Rotundum*. The eye-bearing tubercle smooth and black; body orbicular-oval, above testaceous, the dorsum testaceous, that of the female with a black spot of a quadrate form, spotted with pale colour; base of mandibles with two teeth on the upper part; feet very slender and black, the extremities of the joints of the thighs and tibiæ generally whitish.

*Phalangium rotundum*, Hermann, Latreille.

Inhabits France, is common in a wood called St Germain, and at Petit-Gentilly. It has once occurred in Scotland, in Ravelston wood, near Edinburgh; it is probably rare in Britain.

\*\* Second pair of feet three, four, or more times as long as the body; tarsi with the fourth, fifth, and following joints a little elongated, twice as broad as long.

Sp. 3. *Histrix*. The eye-bearing tubercle a little elevated, obscurely crowned with granulations; body quadrate-oval, the back cinereous or yellowish-grey; the coxæ and sides of the thorax spiny; the middle of the anterior margin itself, with three porrect close-set spines; feet pale yellowish, with obscure spots; the tibiæ angular; tarsi with thirty joints or more.

*Phalangium histrix* of Hermann and Latreille.

Inhabits France and Britain; it is a common species, frequently occurring under stones, on walls, &c. The female has a quadrate black spot on its back. *Phalangium cristatum* of Olivier (*Encyclop. Méthodique*), and *Opilio hispidus* of Herbst. (tab. 3. fig. 1, 2.), belong to this division.

Sp. 4. *Quadridentatum*. The eye-bearing tubercle and base of the palpi and feet spiny; body oval, de-

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des.

pressed, obscurely cinereous; the anterior middle of the anterior margin of the thorax with a strong elevated spine; the abdomen with a quadruple row or series of tubercles; the apex armed with four teeth; the tarsi of the second pair of feet with about seventeen joints.

*Phalangium quadridentatum*, Cuvier, Fabricius, Latreille.

Inhabits the south of France; is found under stones, and, according to Latreille, is rare in the environs of Paris.

Bimacula-  
tum.

*Sp. 5. Bimaculatum*. Body bluish-black, with two white spots; the tarsi somewhat clubbed at their extremities.

*Phalangium bimaculatum*, Fabricius, Donovan, Hermann.

Inhabits Europe. In this country it very frequently occurs under stones during the whole year; is more abundant in Scotland than in England.

25. GALEO-  
DES.

GENUS XXV. GALEODES, Oliv. Lam. Latr.; PHALANGIUM, Pallas; SOLPUGA, Fab. Herbst.

Mouth provided with two mandibles and maxillæ, with palpi, and an under lip.

Palpi very large, feet-like and porrect, nearly as long as the hinder feet; filiform composed of five joints, inserted on the apex of the maxillæ; the first joint very short; the three following cylindrical, elongated; the third and second longer, especially the latter; the last very short, cylindrico-conical; the apex rounded, without a nail, and somewhat fleshy.

Mandibulæ horny and oval, externally convex, internally plain, bearing two chelæ, which are very bare and porrect; the chelæ more horny, very strong, and tooth-shaped, of the length of the mandibles, compressed; the apex very acute, arcuated, the internal side strongly toothed.

Maxillæ resembling coxæ, short, thick, and cylindrical, contiguous at their base, at which point they diverge; the internal angle at the apex lengthened into a little conic villose tooth.

Labium small, horny, compressed, and exerted between the maxillæ at the point at which they diverge; the apex bearing one tooth; the tooth evident, bent downwards; the anterior aspect of the lip bearing two small lacinia, with two needle-like, moveable, villose processes at their point.

Body elongate, soft, with the skin folded in rings.

Thorax having its anterior segment large, resembling a head, covered with a hard scutum of a triangular shape, broad before, truncated behind, on which the eyes are placed, the lower part bearing the mouth and anterior pair of feet.

Abdomen oblong-oval, with eight or nine folds.

Eyes four, placed on a transverse tubercle in the anterior part of the thorax; two larger, opposite, contiguous, and circle, with the pupil elevated and somewhat granular, the iris radiated; the other two very small, intermediate, below resembling stemmata.

Feet elongate and filiform (the anterior pair excepted), double or twins being transversely connected at their base; the tibiæ consisting of two elongate joints; the tarsi short, formed of two or three joints, the last with two filiform arched fingers, armed at their points with horny nails; the four anterior feet nearly equal and small; the third pair somewhat longer than the second; the fourth longest.

*Observation.* The upper part of the mandibles at the base of the chelæ bearing cirrhi; body villose; the

palpi and feet bearing elongated hairs resembling spines, taking their origin from a glandular elevation. Latreille says this genus is called *Phax* by Hermann.

*Sp. 1. Araneoides*. Body pale yellow, mixed with ash-grey.

*Phalangium araneoides*, Pallas.

*Solpuga araneoides*, Fabr.

*Solpuga arachnoides*, Herbst.

*Galeodes araneoides*, Latreille.

Inhabits the Cape of Good Hope; a variety, or more probably a distinct species, nearly allied to this, occurs in Russia.

Arachni-  
des.Araneoi-  
des.

## FAMILY IX. ARANEIDES.

The animals of this family are familiarly known under the general denomination of *Spiders*, and, as we have before mentioned, were included by Linné, Fabricius, and other authors, in one genus, which they called *Aranea*. As the species are very numerous, they were obliged to divide them into families, which were distinguished by the situation of their eyes, which in this family are generally eight (sometimes only six) in number, and are immoveable; they consist of but one lens, which deprives them of the faculty of multiplying objects, as their immobility does that of seeing them if placed otherwise than exactly before them; so that a number of eyes placed on different aspects, is essential to enable them to look on every side, to avoid danger and to see their prey.

As these animals are more interesting than any others in this class, we shall give our readers an account of their economy and habits, as given in the works of Dr Lister, Geoffroy, Reaumur, Dr Hulse, Lyoneret, Dr Mead, and others.

Spiders change their skin annually, and their skins are often found in their webs, being dry and transparent, having their mandibles attached to them. When about to cast their covering, they suspend themselves in some corner, and creep out at a crack which takes place on their back, gradually withdrawing their legs from the skin, as if it were a glove.

The webs of spiders are too well known to need much description: the mode of weaving these nets is however very interesting. For this purpose, they are provided with five teats or nipples at the extremity of their body, the apertures of which they can dilate or contract at pleasure. Through these holes they emit a gluey matter, which is contained in a bag communicating with the teats. They attach the end of their threads by applying their nipples to any substance, and the threads are lengthened as the animal recedes from it, and are immediately hardened from exposure to the air. They can stop the spinning by contracting the nipples, and can ascend the cord they have spun with wonderful facility. The mode of spinning peculiar to the different species, will be particularly noticed when treating of the animals themselves. Some species have the power of darting long threads to an immense distance, by means of which they can convey themselves across rivers or chasms, which has given rise to the vulgar notion of the flight of spiders. Dr Lister relates, that, attending minutely to a spider at work weaving its net, he observed it suddenly desist; and, turning its nipples to the wind, dart out a thread with the violence of a water jet: This thread, taken up by the wind, was carried to some fathoms length, still issuing from the body of the animal. Some time after

Arachni-  
des.

the spider leapt into the air, and the thread mounted her up swiftly. He afterwards made the same observation on about thirty other species of spiders, and found the air filled with young and old sailing on their threads, and probably seizing insects in their passage, as he found legs and wings, and other manifest signs of slaughter, on those threads, as well as in the webs below. These observations were corroborated by Dr Hulse, who made the like discovery about the same time. It is Dr Lister's opinion, that this darting of threads was known to Aristotle and Pliny, (vide Aristotle, *Historia Animalium*, lib. ix. cap. 89. and Plinius, lib. x. cap. 74.); but believes their sailing was first observed by himself. On these sailing spiders he farther observes, that they will often dart not a single thread alone, but a whole sheaf at once, consisting of many filaments, all of one length, but divided from each other and distinct; and the longer they become, the more they spread, and appear like the numerous rays of a blazing star. He observed, too, that some species seemed to use their legs as oars, sometimes closing, and again spreading them out, as occasion might require. When the air is still, it is highly probable they can direct their course, and perhaps mount or descend at pleasure. In rowing, he observed they always take their flight backwards. These threads mount to an almost incredible height, and may always be observed in a fine clear day in autumn, when there is little or no wind. In a letter to Mr Ray, he farther observes, "that I one day observing the air full of webs, forthwith mounted to the top of the highest steeple on the minster (at York), and could there discern them exceedingly high above me." Thus have we briefly stated the observations of this celebrated naturalist, to which we may add his conclusions: They mount their threads upwards, and mount them in a line almost perpendicularly. This is not all; they also project them in a line parallel with the horizon, as may be seen by their threads running from one wall to another in a house, or from one tree to another in a field or garden. By what power this is done he does not attempt to show: It only, as he observes, "magnifies our ideas of that Being, who has given to so apparently contemptible an animal such vast powers for its maintenance and pleasure."

The apertures from which the web is produced are, according to Reaumur, very numerous. He says there are, in the compass of a pin's head, enough to yield an amazing number of distinct threads. These holes are perceived by their effects: Take a garden spider ready to deposit its eggs, and apply the finger to one of the papillæ or teats, and as you withdraw your finger, a vast many distinct threads will appear. Reaumur has often counted seventy or eighty by the assistance of a microscope; and perceived a vast many which he could not distinctly count. He says, that were he to say each teat has a thousand apertures, he should say too little. Each nipple is covered with minute prominences, and each of these probably has a vast number of openings; or between its several protuberances are holes, which give vent to threads: The use of these prominences may be to keep the threads asunder, at their first exit, before they are hardened by the air; and this is rendered very probable, as some spiders are provided with tufts of hair instead, which may serve the purpose of keeping the threads at a proper distance from one another. Leeuwenhoek has computed, that one hundred threads of a tolerably sized spider are not

equal to the diameter of the hair of a man's beard, and, consequently, if the threads and hair be both round, ten thousand such threads are not larger than such a hair. And as young spiders (which are not, when first hatched, altogether as large as a single papillæ of the mother which produced them,) spin as soon as they quit the egg, he farther calculates, that as four hundred young ones are not larger than one full grown, four millions of their threads are not so thick as a hair of a man's beard. Some experiments have been made to manufacture the threads of spiders into silk; these we shall detail when their natural history is concluded.

The use of the webs above described, seems to be principally for the purpose of taking their prey, and defending them from the attacks of birds, some kinds constructing strong webs for that purpose. Their food, in every stage of their existence, consists of insects; nor do they spare their own species, preying on one another with the most savage ferocity. These inherent qualities create a disgust which even the expansion of philosophy will not always suppress. Thomson probably felt this sympathy of the mind, in his description of the spider:

"—— To heedless flies the window proves  
A constant death; where gloomily retired,  
The villain spider lives, cunning and fierce,  
Mixture abhorred! amid a mangled heap  
Of carcases, in eager watch he sits,  
O'er-looking all his waving snares around.  
Near the dire cell, the dreadless wanderer oft  
Passes, as oft the ruffian shews his front;  
The prey at length ensnared, he dreadful darts  
With rapid glide along the leaning line;  
And fixing in the wretch his cruel fangs,  
Strikes backwards grimly pleased; the flutt'ring wing,  
And shriller sound, declare extreme distress,  
And ask the helping hospitable hand."

The weapons with which they seize their prey, is a pair or sharp crooked claws or forceps placed in the front of the body. These they can open as occasion may require; when at rest, they lie one over the other. Leeuwenhoek says, that each of these claws has a small slit or aperture, through which a poisonous juice is injected into the wound they inflict. Dr Mead, in his *Essay on Poisons*, dissents from this altogether, having never been able, on repeated examinations, to discover any such opening, not even in the claws of the largest species. We have likewise investigated this point, and find that in many species there is a groove; but we are very confident it is nothing more, never having been able to discover any opening in the groove, after repeated examinations. Dr Mead says, that a small proboscis is thrust out of the mouth at the time the spider inflicts the wound, and infuses poison into it. Whether this be correct or not we shall not pretend to say, never having examined any of the large exotic species in a recent state; in our own species, nothing of the sort has hitherto occurred.

The part of generation of the male spider resides at the extremities of the palpi, which open, as it were, with a spring during the act of copulation; those of the female are situated under the abdomen. As these animals prey on each other except during the time of their amours, they dare not come within reach of one another but with the utmost caution. Some species may be observed, stretching out their legs, shaking the web, and tampering with one another by a slight touch with the extremity of their feet; then in

Arachni-  
des.

Arachni-  
des.

a fright dropping down their thread and returning in a few minutes to make a fresh trial by feeling. When both parties are well assured of the sex they have to deal with, the approaches of their feet in order to feel are more frequent; confidence takes place, and amorous dalliance ensues. "We cannot," says Lyonnet, "but admire how careful they are not to give themselves up blindly to, or venture on, an imprudent step which might become fatal to them."

As to the employment of spiders threads in place of silk, Bon of Languedoc, about eighty years ago, made a pair of stockings and gloves from the threads of some species of spider; they were of a fine grey colour, and nearly as strong as those of common silk: on this discovery, he published a dissertation. Reaumur, who was appointed by the Royal Academy to examine into the merits and probable advantages which might arise from such a manufacture, urged the following objections and difficulties against it, which are published in the Memoirs of the Academy for the year 1710:—The natural fierceness of the spiders renders them unfit to be bred and kept together. Four or five thousand being distributed in cells, fifty in some, one or two hundred in others, the big ones soon killed and eat the smaller ones, so that in a short time there were scarcely above one or two left in each cell; and to this inclination of devouring their own species, he attributes the scarcity of spiders when compared with the vast number of eggs they lay. He affirms also, that the web of the spider is inferior in strength and lustre to that of the silk worm, and produces less of the material fit for use. The thread of the spider's web, he says, can only bear a weight of two grains without breaking; and the bag sustains the weight of thirty-six grains: the thread of a silk worm will bear two drams and an half, so that five threads of the spider are necessary to form a cord equal to that of a silk worm; as it would be impossible to apply these so closely together as to avoid leaving any empty space between from which the light would not be reflected, and consequently would throw out much less lustre: this was noticed at the time the stockings were presented to the society by M. de la Hire. He further remarks, that spiders afford less silk than silk worms: the largest bags of the latter weigh four grains, the smaller three grains; so that two thousand three hundred and four worms produce a pound of silk. The bags of a spider weigh about one grain; when cleared of the dust and filth they lose two thirds of that weight. The work of twelve spiders, therefore, only equals that of one silk-worm; and a pound of silk will require at least twenty-seven thousand six hundred and forty-eight spiders. But as the bags are solely the work of the females, who spin them to deposit their eggs in, there must be kept 55,296 spiders to yield one pound of silk; yet this will apply to the good ones only; those spiders in gardens most commonly scarcely yielding a twelfth part of the silk of the domestic kinds. Two hundred and eighty, it seems, would not produce more than one silk-worm; six hundred and sixty-three thousand, five hundred and fifty-five of them, would scarcely yield a pound.

From the above memoir it seems that the manufacture of silk from the European spiders would be attended with more trouble than profit; yet the webs of the large species inhabiting the tropics might probably be turned to good account, as we learn from Sir George

Staunton's embassy to China, who, when speaking of the Java forests, says, "in some open spots were found webs of spiders even with threads of so strong a texture as not easily to be divided without a cutting instrument; they seemed to render feasible the idea of him who, in the southern provinces of Europe, proposed a manufactory of spider's threads, which was so very ridiculous to the eyes of those who have only viewed the flimsy webs such insects spin in England."

Having given an account of the animals which compose this family, as far as relates to their general history and economical uses, we shall proceed to define the genera, as given in the works of Walckenaer, Lamarck, and Latreille, the characters being deduced from the positions of the eyes, length of the different feet, figure and structure of the maxillæ, &c.; and when describing the species, we shall notice any peculiarities in their form, structure, or economy.

Their use in the economy of nature appears to be principally that of preventing the two great increase of other insects.

I. Feet not formed for leaping.

GENUS XXVI. MYGALE, Latr. Walck. ARANEA, 26. MY-  
Lin. Fab. Lam. Oliv. GALE.

*Labium* very small and quadrate, inserted under the base of the maxillæ.

*Palpi* attached to the apex of the jaws.

A. The nails of the tarsi with few very obscure or no teeth on the under side.

\* *Mandibulæ* without any apical rostellum; the under part of the last joint of the palpi and tarsi with a hairy scopula.

*Sp. 1. Avicularia.* Body covered with long and thick black hair; apex of the tarsi and feet rust coloured; tarsi broad; nails not exserted. Avicularia.

*Araña avicularia* of Linné and Fabricius.

*Araña hirtipes*, Fabricius, *Ent. Syst.* tom. ii. p. 420.

*Mygale avicularia*, Latreille, Walckenaer.

Inhabits South America, where it is well known under the names *Araignée aviculaire*, or *bird-catching spider*. Of its natural history we know nothing; it is the largest species discovered, being often found with a body as large, or even larger, than a goose's egg. It is said to spread a strong web between the trees in woods, in which it takes small birds as well as insects. The male's parts of generation are globose.

*Sp. 2. Cancerides.* Brown and hairy, the under part of the abdomen, with the breast, blackish. Cancerides.

*Mygale cancerides*, Latreille.

Inhabits the island of St Domingo, where it is called *araignée-crabe*. The genitalia of the male are produced into a horny-arched nail, the apex compressed, the foot-stalk a little longer than in the foregoing species.

*Sp. 3. Blondii.* Covered with rust-coloured hair; the basilar joint of the tarsi (especially of the posterior feet) with visible black spines. Blondii.

Inhabits Cayenne.

*Mygale Blondii*, Latreille.

*Mygale de la Blond*, Walckenaer.

Described and figured in the genera *Crustaceorum et Insectorum* of Latreille, (vol. i. tab. 5. fig. 1.) and in Walckenaer's work, p. 4. The genitalia of the male are somewhat conic and thick, the apex laterally excavated.

*Sp. 4. Fasciata.* Abdomen with a broad greyish longitudinal band, with the margins notched or sinuated. Fasciata.

Arachni-  
des.

- Arachni-  
des. *Mygale faciatà*, Latreille.  
*Mygale faciée*, Walckenaer, p. 4.  
Said by Seba, who has given a figure of this species, (tom. i. tab. 69. fig. 1.), to be a native of Ceylon.  
\*\* Apex of the mandibulæ furnished with a rostellum; palpi and tarsi without any scopa.
- Cæmentaria. *Sp. 5. Cæmentaria*. Rusty brown coloured; mandibules blackish, the border and carina of the thorax paler; each rostellum with five elongate nearly equal teeth.  
*Mygale cæmentaria*, Latreille.  
*Mygale macorne*, Walckenaer, p. 5.  
Inhabits the South of France. See *Linnean Transactions*, vol. ii. pl. 17. fig. 4.
- Sauvegesii. *Sp. 6. Sauvegesii*. Obscure brown; each rostellum with four short unequal teeth.  
*Aranea Sawagesii*, Rossi (*Fauna Etruscana*, tom. ii. tab. 9. fig. 11.)  
*Mygale pionnière*, Walckenaer, p. 5.  
*Mygale Sauvegesii*, Latreille.  
Inhabits Corsica and Italy.  
B. Nails of the tarsi armed with toothed combs below.
- Calpeiana. *Sp. 7. Calpeiana*. Brownish colour.  
*Mygale calpeïene*, Walckenaer, p. 5.  
*Mygale calpeiana*, Latreille.  
Inhabits France.  
To this division of the genus belong also *Mygale notasiana* of Walckenaer.
27. ATYPUS. GENUS XXVII. ATYPUS, Latr. OLETERA, Walck. ARANEA, Ræm.  
*Lip* very small and quadrate, inserted under the base of the maxillæ.  
*Palpi* inserted at the external base of the maxillæ.
- Sulzeri. *Sp. 1. Sulzeri*. Black and shining; mandibulæ very strong; thorax nearly quadrate; plain behind, abruptly elevated before; the two middle eyes placed on an eminence; back of the abdomen leathery or coriaceous, and more shining; the juncture of the joints of the feet white.  
*Oletère difforme*, Walckenaer, p. 7.  
*Atypus sulzeri*, Latreille. (*Gener. Crust. et Ins.* vol. i. tab. 5. fig. 2.)  
Inhabits France; has been once found in England by Mr Leach, who still has the specimen in his possession, although in a very mutilated state.\* It was first described by Latreille in the *Nouveau Dictionnaire d'Hist. Nat.* tom. xxiv. table page 133. under the name *Atype*, which having the right of priority over that given by Walckenaer, we have retained.
28. ERIODON. GENUS XXVIII. ERIODON, Latr. MISSULENA, Walck.  
*Lip* linear exserted between the maxillæ.  
*Palpi* inserted as in the genus *Atypus*.
- Occatorius. *Sp. 1. Occatorius*. Colour unknown.  
*Eriodon occatorius*, Latreille.  
*Missulène herseuse*, Walckenaer.
29. SEGESTRIA. GENUS XXIX. SEGESTRIA, Latr. Walck. ARANEA, Linn. Fab. Rossi.  
*Maxillæ* straight, longitudinal, with the base thickened, dilated externally, somewhat wedge-shaped, the middle longitudinally convex.  
*Lip* elongate-quadrate, longer than broad, the middle longitudinally convex, and somewhat carinated.  
*Feet*, the first pair longest, next in order the second, then the fourth; the third pair being shortest.
- Sp. 1. Cellaria*. Brownish-black, obscurely cinereous-silky; mandibules green; the breast and base of the feet brown.  
*Aranea florentina*, Rossi. (*Fn. Etrus.* tom. ii. p. 133. tab. 9. fig. 3.)  
*Segestria perfida*, Walckenaer, p. 48.  
*Segestria cellaria*, Latreille.  
Inhabits fissures in old buildings and rocks, spinning a silky tube. The genitalia of the male resemble those of *Mygale avicularia*.  
It is not uncommon in France and Italy; but in this country it seems to be rare, only one specimen, we believe, having been met with, which was taken by a dealer in natural curiosities in a cellar at Plymouth, and is now preserved in the collection of Mr Leach.
- Sp. 2. Senoculata*. Thorax blackish brown; abdomen oblong, grey, with a longitudinal band of black spots; feet light brown, with obscure fasciæ.  
*Aranea senoculata*, Linn. Fabr.  
*Segestrie senoculee*, Walckenaer, p. 48; Fourcroy.  
*Segestria senoculata*, Latreille.  
Is found in the same situations as the last species. A good figure is given in Lister's work on British spiders, p. 74. titul. 24. fig. 24. It has been bred from the egg by Mr Leach, who observed a very curious fact in the colour of this animal, viz. the bands on the feet are much more distinct in the young than in the full grown animal, so much so, indeed, that had he not known the eggs to have been deposited by this species, would probably have considered it as a very distinct species; but having an opportunity of rearing them to the full size, all doubts on the subject vanished.
- GENUS XXX. DYSDERA, Latreille, Walckenaer. ARANEA, Fourcroy.  
*Maxillæ* straight, longitudinal, with the base thickened; externally dilated at the insertion of the palpi; the apex internally obliquely truncated, and thence externally acutely terminated.  
*Palpi* with the first joint very short and nearly obsolete.  
*Lip*, elongate, quadrate, gradually narrowing towards the point.  
*Feet*, first pair, then the fourth, afterwards the second, longest; the third pair shortest: a little scopula under the tarsal nails.
- Sp. 1. Erythrina*. Mandibules and thorax blood-red; the feet lighter coloured; abdomen very soft, greyish yellow, and silky.  
*Aranea erythrina*, Fourcroy, *Fauna Parisiensis*, tom. ii. p. 224.  
*Drysdere éythrine*, Walckenaer, p. 47.  
*Drysdere erythrina*, Latreille, *Genera Crust. et Ins.* tom. i. tab. 5.  
Inhabits France and England under stones. It is not common in this country; it has been observed by Mr Leach near Exeter and London, four or five times. *Aranea hombergii* of Scopoli (*Entomologia Carniolica*, No. 1119.) is merely a variety of this species.
- Observation*. To this genus, *Aranea rufipes* of Fabricius, (*Entomologia Systematica*, tom. ii. p. 426.), seem to belong, as appears from his description: "Head and thorax obscurely ferrugineous, and immaculate, eyes six, placed near together; abdomen ovate, cinereous immaculate. Feet bright red."—"Inhabits Morocco." Latreille supposes this may be even the same species with *erythrina*, as we are unacquainted with the Fa-

\* Two other specimens have been since taken, one by Mr Standitch of Walworth, the other by Mr Tütcher, optician, London.

- Arachni-  
des.
31. FILIS-  
TATA.
- brician *aranea rufipes*, we cannot but hesitate on giving any thing like a decided opinion.
- GENUS XXXI. FILISTATA, Latreille.
- Eyes placed on an uneven elevation; the four anterior ones forming a semicircle opened in front; the four hinder ones disposed in pairs in nearly the same transverse straight line.
- Maxillæ much inclined towards the lip, with no sinus or groove at the insertion of the palpi.
- Palpi apparently inserted on the hinder side.
- Lip much longer than broad.
- Feet, the fourth pair longest, and then the first pair.
- Observation. This genus contains one species, *Filistata testacea* of Walckenaer's MSS. of which we have no description; it has lately been discovered in the environs of Marseilles.
- GENUS XXXII. DRASSUS, Walck. Latr. ARANEA, Linn. GNAPHOSA, Latr.
- Palpi inserted under the lateral and external margin of the maxillæ towards the middle.
- Maxillæ longitudinal, arcuated, gradually becoming broader from the base towards the middle, somewhat concave internally, smooth exteriorly, the middle impressed, the points bent inwards above the lip, and obliquely truncated within.
- Lip elongate, ovate-quadrate, or rather oval, the base transversely truncated, enclosing the maxillæ.
- Feet, the fourth, then the first, and afterwards the second pair longest.
- \* Lip somewhat oval; the external side of the maxillæ much bent or arched.
- Sp. 1. *Melanogaster*. Mandibles blackish; thorax and feet obscure brown, thighs light reddish brown; abdomen cinereous-brown and silky.
- Drassus melanogaster*, Latreille.
- Drasse lucifuge*, Walckenaer, p. 45.
- Inhabits the South of France, under stones.
- \*\* Lip ovate quadrate.
- Sp. 2. *Fuscus*. Obscure reddish-brown, silky, the abdomen blackish mouse coloured.
- Drassus fuscus*, Latreille.
- Inhabits the South of France, of the same size with the other species.
- Sp. 3. *Ater*. Entirely black.
- Drassus ater*, Latreille.
- A small species, frequently occurring in the vicinity of Paris, under stones, to which it adheres pretty firmly; when first hatched they are of a reddish colour.
- Sp. 4. *Relucens*. Red, very smooth, like purple velvet; abdomen black, with two transverse golden yellow lines.
- Drasse brilliant*, Walckenaer, p. 46.
- Drassus relucens*, Latreille.
- Common in the south of France; it sometimes occurs in the neighbourhood of Paris.
- GENUS XXXIII. CLOTHO, Walckenaer's MSS.; Latreille.
- Maxillæ much inclined towards the lip, with no groove at the insertion of the palpi.
- Lip not much longer than broad.
- Feet, fourth pair, the second, the third longest.
- Eyes close together, disposed four and four in two lines bent backward in an arched and somewhat concentric manner; those in the hinder line disposed in pairs.
- Observation. This genus contains but one species described in the manuscripts of Walckenaer, who communicated the generic character to Latreille, who has published it in his last work, entitled, "Considérations générales sur l'ordre naturel des Crustacés, des Arachnides et des Insectes."
- Sp. 1. *Durandii*. Thorax rusty brown, margined with pale yellow; abdomen black, with five red spots, arranged 2, 2, 1; feet livid brown.
- Inhabits Montpellier, building its web amongst the stones.
- Clotho durandii*, Latreille.
- GENUS XXXIV. CLUBIONA, Latreille, Walckenaer. ARANEA, Linné, De Geer.
- Maxillæ straight and longitudinal; the basis a little dilated externally; the apex rounded and obliquely truncated on the inside.
- Lip elongate, quadrate, gradually narrowing towards the point.
- Feet, the first, and then the fourth pair, (or the contrary), longest; then the second pair.
- \* The two outermost eyes on either side neither placed very close together, nor inserted on a distinct prominence. The maxilla in all with an incrassated base; the fourth pair of feet (rarely the first) longest.
- Sp. 1. *Lapidicola*. Thorax and mandibles pale reddish; feet very light red; abdomen ash-grey coloured.
- Clubione lapidicole*, Walckenaer, p. 44.
- Clubiona lapidicola*, Latreille.
- Inhabits France and Britain under stones, constructing a somewhat globular nest of the size of a common hazel nut, in the centre of which are deposited a vast number of pale yellowish eggs, agglutinated into a spherical mass.
- The mandibles of the male porrect, and rather more than half the length of the thorax; those of the female somewhat vertical.
- Sp. 2. *Tholocericea*. Mandibles blackish; thorax pale livid green; abdomen reddish-black, covered with mouse-coloured down; feet lighter than the thorax, the fourth pair longest.
- Clubione soyeuse*, Walckenaer, p. 42.
- Clubiona tholocericea*, Latreille.
- Aranea holosericea*, Linné.
- Araignée satinée*, De Geer.
- Inhabits Europe, getting under the bark of trees. The four anterior feet nearly of the same size.
- Observation. From the position of the eyes it is probable that *Clubiona accentuata* of Walckenaer belongs to this family. From his figure, the anterior, and then the fourth pair of feet, are longest.
- \*\* The two external eyes on each side somewhat placed close together. (Maxillæ not thickened at their base; the first and then the second pair of feet longest.)
- A. Maxillæ somewhat thickened at their base, and transversely impressed before the middle.
- Sp. 3. *Nutrix*. Ungulæ black; thorax and mandibles light red; feet very light red; abdomen yellowish green, with an obscure longitudinal band.
- Clubione nourrice*, Walckenaer, p. 43.
- Clubiona nutrix*, Latreille.
- Inhabits the environs of Paris; common in a place called *Sèvres*, building a nest amongst the leaves of the *Eryngium campestre*. The mandibulæ of the male stronger than those of the female.
- B. Maxillæ not at all thickened at their base; front not transversely impressed.
- Sp. 4. *Atrax*. Brown; feet pale; the tibiæ with more obscure or dark spots; the middle of the back of the abdomen with a somewhat quadrate black spot margined with yellow.
- Arachni-  
des.
- Durandii.
34. CLUBI-  
ONA.
- Lapidicol
- Tholocer  
cea.
- Nutrix.
- ATROX.

Arachni-  
des.*Clubione atroce*, Walckenaer.*Araignée atroce*, De Geer.*Clubiona atron*, Latreille.

Inhabits old walls and fissures of rocks. Is very common in Britain and France. A tolerable figure is given in the work of Dr Lister, in the British spiders, p. 68. fig. 21.

GENUS XXXV. ARANEA. Linn. Geoff. De Geer. Fabr. Oliv. Lam.

*Maxillæ* straight and longitudinal; diameters equal; anterior part convex; apex rounded, the internal angle truncated.

*Lip* nearly quadrate; diameters nearly equal, towards the superior angles a little narrower.

*Feet*, the anterior longest and nearly equal, the third shortest.

\* Internal angle of the apex of the *maxillæ* truncated; breadth and length of the lip nearly the same; the feet of a moderate length.

*Obs.* The series of eyes, especially the lower, more arched in this than in the second division of the genus.

Genus AGELENA of Walckenaer.

*Sp. 1. Labyrinthica.* Pale grey, inclining to red; the thorax on each side with a longitudinal black line; abdomen black, above and on each side with oblique white lines, meeting together by pairs at obtuse angles in front; the spinning papillæ conic and lengthened.

*Araena labyrinthica.* Linné, Fabricius, Latreille.

*Agelena labyrinthica.* Walckenaer.

*Agelène labyrinthe.* Walckenaer, page 51.

Inhabits Europe; is very abundant in summer, more so in autumn: it spins a horizontal web in the ground, in which it watches for its prey, which consist principally of flies and other dipterous insects; the spider itself living in a funnel-shaped cavity, often extending below the surface of the ground. There are good figures in the works of Lister (page 60. fig. 18.) and in Schæffer's *Icones Insectorum*, (tab. 221. fig. 12.; tab. 19. fig. 8.)

\*\* Internal angle of the *maxillæ* at the apex evidently truncated. Lip longer than broad. Feet elongated.

Genus TEGENERIA of Walckenaer.

*Sp. 2. Domestica.* Livid grey; the thorax of the male immaculate; of the female with a longitudinal blackish line on each side; abdomen blackish, the dorsum in the middle with a longitudinal fascia or band, spotted, toothed with two lateral livid lines.

*Araena domestica.* Linné, Fabricius, Latreille.

*Araignée domestique.* De Geer, Latreille.

*Tegeneria domestica.* Walckenaer.

*Tégénaire domestique.* Walckenaer, page 49.

Inhabits the houses of Europe; spinning its web in a place where there is a cavity, such as the corner of a room, that she may have a free passage, on each side, to make her escape in case of danger. Her mode of constructing her web is curious: having chosen a convenient spot, she fixes one end of her thread to the wall, and passes on to the other side, dragging the thread along with her, (or rather the thread follows her as she proceeds,) till she arrives at the other side, and there fixes the other end of it. Thus she passes and repasses, till she has made as many parallel threads as she thinks necessary for the purpose. After this she begins again, and crosses these by other parallel threads. These are the toils or snares which she prepares for entangling flies and other small insects. Besides this large web, she weaves a cell for herself, where she lies

concealed, watching her prey. Between this cell and the net she has a bridge of threads, which, by communicating with the threads of the large one, both gives her intelligence when any thing touches the web, and enables her to pass quickly in order to lay hold of it.

GENUS XXXVI. ARGYRONETA, Latreille, Walck. ARANEA, Linn. Geoff. Fabr.

*Maxillæ* short, straight, and elongate-quadrate, the side of nearly equal diameters; face convex before, apex rounded.

*Lip* short; shorter than the *maxillæ*, of a narrow elongate-triangular or (somewhat conic) form; the anterior aspect convex, the apex either obtuse or truncated.

*Feet*, the first, the fourth, and lastly the second pair longest.

*Obs.* The sexual distinctions are the same in this genus as in the *Clubionæ*.

*Sp. 1. Aquatica.* Blackish-brown; the abdomen black and velvety, impressed with dorsal punctures.

*Araena aquatica.* Linné, Fabricius.

*Argyronète aquatique.* Walckenaer.

*Argyroneta aquatica.* Latreille.

*Araignée aquatique.* De Geer.

Inhabits fresh waters, that flow slowly, throughout Europe. It resides in a web most beautifully constructed under the water, in which it lives, being surrounded by air, which shines through the water with a silvery lustre. The eggs are deposited in a globose silky bag. In Britain it appears to be of very rare occurrence, only having been taken once, if we recollect rightly, near Hornsey. This specimen is preserved in the collection of our great and illustrious zoologist, Edward Donovan, Esq.

GENUS XXXVII. SCYTODES, Latreille, Walckenaer.

*Maxillæ* oblique and longitudinal, covering the sides of the lip; the base thickened, the apex internally obliquely truncated.

*Lip* somewhat quadrate, the base a little contracted.

*Feet*, the fourth, then the first, lastly the second pair longest.

*Sp. 1. Thoracica.* Pale reddish white, spotted with black; thorax large and somewhat orbicular, elevated roundly behind; abdomen lighter coloured, and somewhat globose.

*Scytode thoracique.* Walckenaer, page 79.

*Scytodes thoracica.* Latreille.

Inhabits houses in Paris. Is figured in the *Genera Crustaceorum et Insectorum* of Latreille, (tab. 5. fig. 4.)

GENUS XXXVIII. THERIDION, Latreille. ARANEA, Linn. Geoff. Fabr.

*Maxillæ* with an oblique direction, covering the sides of the lip, converging towards the apex, from the insertion of the palpi to the apex of an equal breadth and plain, the internal apex either obliquely truncated or obtuse.

*Lip* small, triangular or semicircular, the apex truncated, or somewhat rounded, or somewhat square.

*Feet* elongate, very slender; the first, then the fourth, then the hinder ones longer.

\* Two of the eyes close together on each side.

Genus THERIDION of Walckenaer.

*Sp. 1. Rufum.* Abdomen globose, the upper part radiated with white lines.

*Thérédion Sisiphe.* Walckenaer.

Arachni-  
des.

35. ARANEA.

Labyrinthica.

Domestica.

36. ARGYRONETA.

37. SCYTODES.

38. THERIDION.

- Arachni-**  
**des.**
- Redimi-**  
**tum.**
- Theridion Sisiphum.* Latreille.  
Inhabits Europe, nidificating under the prominences of pillars, or projections of walls.  
*Sp. 2. Redimitum.* Yellowish white; abdomen oval, with a rose-coloured dorsal ring.  
*Aranea redimita.* Linné.  
*Theridion couronné.* Walckenaer.  
*Theridion redimitum.* Latreille.  
Inhabits plants. Abdomen often spotted. Latreille supposes *Theridion ovatum* of Walckenaer to be no more than a variety of this species; and that the *l'araignée à bande rouge* of Geoffroy, (*Hist. des Insect.* tom. ii. page 648) is referable to the same variety.  
\*\* The two lateral eyes at a distance from each other.  
**Genus LATRODECTUS** of Walckenaer.  
*Obs.* Walckenaer has examined the eyes, maxilla, and lip of the *THERIDIONA*, with the most minute attention. In his last work, Latreille has admitted the genus *LATRODECTUS* as distinct from *THERIDION*, and given the following characters; but as we are not acquainted with the genus *LATRODECTUS*, the reader must judge for himself.  
**LATRODECTUS.** The first and then the second pair of feet longest; eyes disposed, four and four, in two transverse straight parallel lines.  
**THERIDION.** The first and then the fourth pair of feet longest; the four middle eyes disposed in a square, the lower ones situated on a common prominence; two others close together, and placed in an eminence on each side.  
From the above characters it would seem they are very distinct genera, but a letter on the subject we have received from a friend, informs us that he is well acquainted with the animal's economy, and that it ought to remain where Latreille placed it, in the first instance, at least for the present, as our knowledge of the subject is at present too limited for us to make two minute divisions; on this ground, therefore, we continue it under the generic title of *THERIDION*.
- Tredium-**  
**guttatum.**
- Sp. 3. Tredium-guttatum.* Black; abdomen globose, with thirteen blood-red spots.  
*Aranea 13-guttata* of Rossi and Fabricius.  
*Latrodecte malmignatte.* Walckenaer, page 81.  
*Theridion 13-guttatum.* Latreille (*Gen. Crust. et Ins.* l. p. 98.  
*Latrodectus 13-guttatus.* Latreille. (*Consid. Ord. Nat. &c.*)  
Inhabits Italy, and is common in the plains of that country.
- 39. Phol-**  
**cus.**
- GENUS XXXIX. PHOLCUS,** *Walck. Latr.* ARANEA, *Geoff. Scopoli.*  
*Maxillæ* oblique, covering the sides of the lip, converging from the base to the apex; apex internally truncated.  
*Lip* transversely quadrate, the lateral angles at the apex rounded and somewhat marginated.  
*Feet* very long and slender, the first longest, then the second, and then the fourth nearly equal.  
*Sp. 1. Phalangioides.* Pale livid; abdomen elongate; very soft, of a cylindrical oval form, and obscure grey colour; the apex of the tibiæ and thighs with a whitish, pale anulus or ring.  
*Pholcus phalangiste.* Walckenaer, page 80.  
*Aranea pluchii.* Scopoli.  
*Aranea phalangioides.* Fourcroy. (*Entomologia Paris, ii. 213.*)
- Pholcus phalangioides.* Latreille.  
Inhabits the European houses; its body vibrates after the manner of *TIPULARIÆ*, or *gnats*. Is very common in the west of England.  
**GENUS XL. ULOBORUS.** Latreille.  
*Eyes* eight, equal and very minute, placed in two transverse lines, the first nearly straight, and scarcely bent backwards; the two middle ones a little nearer than the others; the posterior line bent forwards.  
*Maxillæ* straight, broad, inversely triangular, the side broader than the apex.  
*Lip* very small and semicircular.  
*Feet*, first pair much the largest, then the fourth, and afterwards the second.  
*Sp. 1. Walckenaerius.* Pale reddish yellow; thorax and abdomen silky; the back white; abdomen oblong, banded with fasciculi of hairs; feet also banded with darker rings.  
Inhabits the pines in Germany and France, where it constructs a web like that of *Lyniphya triangularis*.  
**GENUS XLI. TETRAGNATHA,** *Latr. Walck.* ARANEA, *Linn. Fab. Oliv.*  
*Maxillæ* straight, elongate and narrow; almost as broad as long; the apex externally dilated and rounded.  
*Lip* semicircular and somewhat notched.  
*Feet* very long and very slender; the first pair, then the second, and then the fourth longest.  
*Sp. 1. Extensa.* Reddish; abdomen oblong, golden green, with the sides and two lines below yellowish; the middle below longitudinally black.  
*Aranea extensa.* Linné, Fabricius.  
*Tetragnathe etendue,* Walckenaer, p. 68.  
*Tétragnatha extensa.* Latreille.  
Inhabits moist places in Europe; it spins a vertical web, and remains with its feet extended, the anterior ones prorected.  
**GENUS XLII. ZINYPHIA,** *Latr. Walck.* ARANEA, *Linn. De Geer.*  
*Maxillæ* nearly straight, inversely—somewhat oval.  
*Lip* semicircular.  
*Feet* elongate and slender; the first, then the second, afterwards the fourth pair longest.  
*Sp. 1. Triangularis.* Pale reddish, inclining to yellow; thorax with a black dorsal line, bifid in front; abdomen oval, inclining to globose, with spots and angularly lated bands of brown and white; feet immaculate.  
*Lyniphie triangulaire.* Walck. page 70.  
*Lyniphia triangularis.* Latreille.  
Inhabits the European hedges; is common in Autumn, building its nest on pines, ferns, and genistæ.  
**GENUS XLIII. EPEIRA,** *Walck. Latr.* ARANEA, *Linn. Fab. Lam. Donovan.*  
*Maxillæ* nearly straight, their base narrow, their apex widened; the base internally concave; the apex above the lip incurved, and obliquely truncated.  
*Lip* semicircular, and somewhat margined.  
*Feet* elongate and slender; the first pair longest, then the second, afterwards the fourth; the third very short.  
\* *Thorax* an oblong oval, inclining to quadrate; the lateral eyes placed on a tubercle; abdomen coriaceous, and spinous above; or soft, much lengthened and cylindrical, and rounded at the base and apex.  
A. Abdomen coriaceous or spiny above; the anus below prominent and tubular.  
a. Abdomen nearly triangular, extended in length.
- Arachni-**  
**des.**
- 40. ULOBORUS.**
- 41. TETRAGNATHA.**
- 42. ZINYPHIA.**
- 43. EPEIRA.**
- Walckenaerius.**
- Extensa.**
- Triangularis.**

- Arachni-**  
**des.**  
**Armata.** *Sp. 1. Armata.* Abdomen depressed and punctate, with four spines; the two lateral ones very short; the others very long and crooked.  
*Aranea taurus*, Fabricius. *Epeira armata*, Latr. Inhabits the island St Domingo.
- Aculeata.** *Sp. 2. Aculeata.* Black; abdomen with eight spines; six on the back; two very small, and horizontal at the base; three on each side, marginal and erect; the hinder two large and red, with blackish points, with two inferior ones at their base; thighs rough with spines.  
*Epeira armée*, Walck. p. 65. *Aranea aculeata*, Fabr. Inhabits Cayenne.  
*b. Abdomen extended in breadth.*
- Cancriformis.** *Sp. 3. Cancriformis.* Abdomen transversely oval and depressed; the superior margin (or ambitus) with six teeth; the teeth equal, two on each side, and two behind.  
*Aranea cancriformis*, Linné, Fabricius. *Epeira cancriformis*, Latreille.  
Inhabits the American islands. A good figure may be found in Brown's *Hist. of Jamaica*, p. 419, pl. 44, fig. 5.  
*B. Abdomen soft, without spines; generally elongated, and somewhat cylindrical, rounded at the base and apex; thorax with two dorsal tubercles. The tibia, the third excepted, generally covered with tufts of hair.*
- Clavipes.** *Sp. 4. Clavipes.* Thorax black, covered with silver-coloured silky down, on which are black spots; abdomen obscurely yellowish, with white spots; the mouth, the greater part of the breast, and feet, pale-reddish. All the tibiae, except the third pair, with tufts of hair.  
*Aranea clavipes*, Linné, Fabr. *Epeira clavipes*, Latr. Inhabits South America.  
\*\* *Thorax* somewhat heart-shaped, not half as long again as broad; the anterior margin much narrower than the greatest breadth.  
*A. Anterior part of the thorax depressed and flat; the sides abruptly sloping at nearly right angles.*  
*a. The lateral eyes somewhat geminated; the anterior margin of the thorax at least half the breadth of the broadest part.*
- Sexcuspidata.** *Sp. 5. Sexcuspidata.* Brown; thorax with six tubercles placed in a double transverse series; the three anterior ones bearing eyes; palpi, tibiae, and tarsi, compressed.  
*Aranea sexcuspidata*, Fabr. *Epeire impériale*, Walck. p. 67. *Epeira sexcuspidata*, Latreille.  
Inhabits the Cape of Good Hope.
- Umbratica.** *Sp. 6. Umbratica.* The mandibles, hinder part of the thorax, under part of the body, and greater part of the thighs, black; anterior part of the thorax, with the tibiae and tarsi, greyish-red; the tibiae annulated with black; abdomen depressed, triangular oval, obscurely reddish-grey, with six or eight cicatrized black dorsal spots, placed in a double longitudinal series, with two undulating lines marginated with pale, one on each side, conjoining behind.  
*Aranea umbratica*, Villers. *Epeire umbraticole*, Walck. p. 61. *Epeira umbraticola*, Latreille.  
Inhabits Europe, being most frequently found in shady groves. The base of the mandibles elevated; the interior margin of the thorax broader than in the other species of this subdivision.
- Diadema.** *Sp. 7. Diadema.* Reddish; abdomen globosely, oval, the base on each side with an elevated angle; the back with a broad, dentated, triangular, obscure mark, and a triple cross formed of yellowish white spots; the four middle ones impressed and disposed in a quadrangle.  
*Aranea diadema*, Linné, Fabricius, Donovan, Shaw. *Epeire diadème*, Walck. p. 58. *Epeira diadema*, Latr. Inhabits Europe; is very common in gardens.  
*b. The lateral eyes somewhat geminated. The anterior margin of the thorax about a third part of the breadth of the broadest part.*
- Arachni-**  
**des.**  
**Fasciata.** *Sp. 8. Fasciata.* Thorax and base of the abdomen above silvery; abdomen ovate, with yellow bands and black transverse lines.  
*Aranea fasciata*, Fabr. *Aranea formosa*, Villers. *Aranea phragmitis*, Rossi. *Epeire fascièe*, Walck. p. 55. *Epeira fasciata*, Latr.  
Inhabits the south of Europe; is found in France, Italy, Sweden, and has been received from Madeira, where it was first observed by a lady of eminent abilities.  
*2. Sides of the abdomen notched.*
- Arachni-**  
**des.**  
**Sericea.** *Sp. 9. Sericea.* Body silvery; feet reddish, annulated with black and red.  
*Epeire soyeuse*, Walck. p. 56. *Epeira sericea*, Latr. Inhabits the south of France and Africa.  
*B. Anterior part of the thorax convex; the sides gradually sloping away.*  
*a. The distance between the lateral and four middle eyes, much greater than the breadth of the quadrangle, formed by these four eyes.*
- Arachni-**  
**des.**  
**Cucurbitina.** *Sp. 10. Cucurbitina.* Abdomen globose, of a yellow green colour, somewhat spotted with black; a red spot behind.  
*Aranea cucurbitina*, Linné. *Epeire cucurbitine*, Walck. *Epeira cucurbitina*, Latr.  
Inhabits plants in Europe.  
*b. The distance from the lateral to the four middle eyes about the same as the breadth of the quadrangle formed by the four middle eyes.*
- Arachni-**  
**des.**  
**Calophylla.** *Sp. 11. Calophylla.* Thorax and feet pale livid yellow; the mandibles a triangular spot on the anterior lateral part of the thorax, and spots on the feet blackish; abdomen globose-oval cinereous-grey; back with four impressed spots; and a large silvery-grey oval spot, truncated behind, situated laterally, with the margins and a spot on each side in front of the abdomen, with a double line on the breast, and a longitudinal band in the middle of the belly black; sides of the breast with a yellow line.  
*Epeire calophylle*, Walck. p. 62. *Epeira calophylla*, Latr. Inhabits the eaves of houses; is common in Paris.
- Arachni-**  
**des.**  
**Menardi.** *Sp. 12. Menardi.* Livid reddish; hinder part of the thorax deeply impressed with a dorsal line, bifid before, of a brown colour; abdomen globosely oval, of a darker colour; the back, the middle of the belly, and two lines on each side, light yellow; the dorsal space intersected behind by transverse bands anteriorly, with two oblong blackish spots; feet with dark rings.  
*Epeire brun*, Walckenaer. *Epeira menardi*, Latr.
- Arachni-**  
**des.**  
**Conica.** *Sp. 13. Conica.* The lateral and inferior middle eyes resting on a common tubercle; thorax black; abdomen ovate, of a reddish grey colour, with spots and reticulated black lines, the hinder part above and below protruded into a conic process; feet pale yellow, knees reddish.  
*Epeire conique*, Walck. *Epeira conica*, Latr. *Araignée à ventre conique*, De Geer.  
Inhabits the European woods; is common in Britain.
- GENUS XLV. EPISINUS, Walckenaer's MSS. Latr. 45. EPISINUS.**  
*Maxillae* straight and longitudinal, the base a little dilated, the apex rounded.  
*Lip* much broader than long, and semicircular.  
*Feet* much lengthened; the anterior and then the fourth pair longest; the third shorter.  
*Eyes* forming the segment of a circle, of nearly an equal size, placed on an eminence.  
*Observation.* We have introduced this genus on the authority of Latreille, who copied his character from the

Arachni-  
des.

Truncatus.

manuscripts of his friend Walckenaer; it contains but one species, *Episenus truncatus*.

*Sp. 1. Truncatus.* Thorax cordiform, a little longer than broad, anteriorly acute, little, above of an obscure reddish brown; the breast reddish brown; the abdomen brown, pyramidal, marginated in front; the dorsal area three-sided, with the hinder angles produced; the third pair of feet white, the others brown; the apex of the first and fourth, and base of the latter, white.

46. Mi-  
CROMMATA.

GENUS XLVI. MICROMMATA, Latreille. ARANEA, De Geer, Fabr. SPARASSUS, Walckenaer.

*Maxillæ* straight, oval inclining to square, with a longitudinal angle on their inside; the internal edge at the base somewhat concave; the apex obliquely truncated.

*Lip* short and semicircular.

*Feet* elongate; the fourth longest, the second rather shorter; then the first, afterwards the third. Lower part of the apex of the tarsi furnished with a little double brush.

Smarag-  
dina.

*Sp. 1. Smaragdina.* Bright green; dorsum of the abdomen with a longitudinal band of a darker colour.

*Araña smaragdula*, Fabr. *Araignée toute-verte*, De Geer. *Sparasse émeraldine*, Walck. p. 39. *Micrommata smaragdina*, Latr.

Inhabits the European woods and groves. The male has three longitudinal red lines on its back.

*Observation.* The genus was first established by Latreille under the name *Micrommate*, in the *Novv. Diction. d'Hist. Natur.* tom. 24. p. 135. in which work also a figure is given; on this account we have retained it, and have consequently rejected the term *Sparassus* of Walckenaer, Latreille's name having the right of priority.

47. THOMI-  
SUS.

GENUS XLVII. THOMISUS, Walck. Latr. ARANEA, Lin. Fab. De Geer.

*Maxillæ* oblique, covering the sides of the lip, and in some degree converging; the internal apex truncated.

*Lip* somewhat oval, or nearly quadrate, generally longer than broad.

*Feet*, the first and second pair longest; the latter rather longer than former or scarcely shorter; the third and fourth generally much less; sometimes one longer, sometimes the other.

*Observation.* The mandibulæ are either perpendicular or somewhat inflexed, in many conical, with very short nails. Latreille formerly included this genus under the titles *Heteropoda* and *Misumena*.

\*\* Thorax convex and heart-shaped; the sides, especially behind, abruptly sloping, anteriorly broadly truncated; the largest feet not double the length of the body; the first and second pair of the same magnitude as the rest, but far exceeding them in thickness (sometimes one sometimes the other longer.) The first joint of the tarsi with several moveable little spines, in a single or double series; the nails of all the tarsi naked. Lip somewhat oval, the apex either truncated or obtuse: The apex of the maxillæ somewhat wedge-shaped.

Citrus.

*Sp. 1. Citreus.* Thorax, at the insertion of the eyes, transversely elevated, the sides anteriorly produced and prominent; eyes equal; abdomen roundish-triangular, broader behind, with a red line on each side; body yellowish-citron coloured.

*Thomise citron*, Walck. p. 21. *Thomisus citrinus*, Latr. Inhabits flowers in Europe. Is common in Britain.

The male is much smaller than the female, of a brown colour, banded with yellowish-green.

Cristatus.

*Sp. 2. Cristatus.* Lateral eyes placed in a tubercle, the lower ones largest; body pale grey, inclining to reddish; the back of the thorax on each side with a spot, and margins whitish; abdomen somewhat orbi-

culate, the circumference obscurely brown, with a pale, broad, dorsal band with its side notched.

Arachni-  
des.

*Thomisus cristatus*, Walck. p. 32. *Thomisus crist.* Latr. Inhabits gardens and fields; is very common about Paris. Thoracic spot pale, often bifid in front. Abdomen with five impressed dorsal marks; the anterior one largest, the other four disposed in a quadrangle.

Latreille thinks *Araña liturata* of Fabricius is near akin to this species.

\*\* Thorax convex heart-shaped, the sides, especially behind, abruptly sloping, the anterior part broadly truncated; the larger feet not twice the length of the body; all of nearly an equal degree of thickness; the hinder four not much shorter; the anterior with four little spines; the nails of all the tarsi scarcely visible. The maxillæ and labium as in the preceding division.

*Sp. 3. Lynceus.* Lateral eyes largest, placed on a tubercle; the tubercles of the hinder ones thickest; body pale yellowish-grey, variegated with punctures and spots of a blackish colour; abdomen very large, of a triangular-oval form, broader behind.

Inhabits France and Scotland.

*Thomisus lynceus* of Latreille, who considers it much akin to *Thomisus onustus* of Walckenaer, p. 32.

\*\*\* Thorax depressed, and somewhat oval, and very obtuse before; the larger feet not twice the length of the body; all of an equal thickness; the tarsi below hairy; the first joint with a few little spines; the apex with two brushes under the nails; abdomen oblong; the maxillæ, beyond the insertion of the palpi, nearly of an equal breadth, distinctly and abruptly truncated; lip somewhat quadrate; hinder lateral eyes distant.

*Observation.* This division is near the genus *micrommata* of Latreille's former works.

*Sp. 4. Oblongus.* Pale yellowish, above with white hairs, the abdomen somewhat cylindrical, with the longitudinal obscure lines.

*Thomise oblonge*, Walck. p. 38. *Thomisus oblongus*, Latr. Inhabits France and Denmark on plants.

\*\*\*\* Thorax depressed and heart-shaped, truncated before; the four anterior feet more than double the length of the body; the under part of the tarsi in most of the species hairy, in all furnished with two brushes under the nails; the maxillæ short, much inflexed above the lip, nearly of an equal breadth beyond the insertion of the palpi; apex abruptly truncated; lip nearly quadrate, broad; the second pair of feet longest.

A. Eyes arranged in two nearly parallel lines; tarsi hairy beneath; the 3d pair of feet shorter than the 4th.

*Sp. 5. Leucosia.* The four lateral eyes largest; body of a pale dirty yellow, inclining to red; thorax with the anterior margin and a posterior band yellowish-grey; the hinder band margined with black above.

*Araña regia*, Fabr. *Thomise leucosie*, Walck. p. 36. *Thomisus leucosia*, Latr.

Inhabits Tranquebar and the Isle of France.

Large; the mandibles obscure red with black ungules; an obsolete blackish spot at the base of the tibiæ; the hairs of the feet spiniform, the hairiness of the tarsi black; the eyes of the anterior line approaching one another in pairs.

*Sp. 6. Lamarckii.* The eyes of the front line largest, and nearly of equal size; body ash-grey; mandibles blackish; breast, middle of the venter, base of the abdomen above, with bands on the feet black.

*Araña nobilis?* Fabr. *Thomisus Lamarck*, Latr. Inhabits the Isle of France. Was named by La-

- Arachni-  
des. treille, in honour of the celebrated zoologist, Lamarck, who first instituted the ARACHNIDES as a distinct class.
- B. Eyes disposed in a semicircle; the under part of the tarsi scarcely hairy; the third pair of feet longer than the fourth.
- Venato-  
rius. Sp. 7. *Venatorius*. Yellowish-red; abdomen yellow-grey, clouded with ash-grey; feet spotted with black. *Aranea venatoria*, Linné. *Aranea pallens?* Fabr. *Thomisus venatorius*, Latr. Inhabits the American islands. C. Eyes disposed in a circle; tarsi scarcely hairy beneath; third pair of feet longer than the fourth.
- Levipes. Sp. 8. *Levipes*. Body grey, spotted with black; abdomen plain, rhomboidal. *Aranea levipes*, Linné, Fabr. *Thomisus tigré*, Walck. p. 34. *Thomisus tigrinus*, Latr. *T. levipes*, Leach's MSS. Inhabits the European trees, running swiftly.
48. Oxyo-  
pus. GENUS XLVIII. OXYOPES, Latr. SPHASUS, Walck. Maxillæ straight, longitudinal, and elongate, of an equal breadth nearly from base to apex; apex externally gradually arcuated or bent, internally obliquely truncated. Lip oblong-quadrate. Feet long and slender, the first pair longest, then the fourth and second, which are nearly equal; tarsi short; nails exerted, no brush beneath.
- Variiegatus. Sp. 1. *Variiegatus*. Body hairy and grey, variegated with red and black; feet pale reddish, spotted with brown; the little spines on the tibiæ lengthened. *Sphase hétérophthalme*, Walck. p. 19. *Oxyopes variegatus*, Latr. Inhabits France. The bag containing the eggs round, depressed, and white.
- Lineatus. Sp. 2. *Lineatus*. Mandibules, thorax, and feet, pale reddish-yellow; mandibules with a line; thorax with three longitudinal fasciæ of a brown colour; abdomen obscurely brown, with longitudinal pale reddish-yellowish lines; the dorsal line branched or forked before. *Oxyopes lineatus*, Latreille, (*Genera Crust. et Insect.* vol. i. plate 5, fig. 5.) Inhabits France.
49. STORE-  
NA. GENUS XLIX. STORENA, Walckenaer's MSS. Latr. Eyes forming a nearly equal hexagon, disposed in three transverse lines thus, 2, 4, 2. Maxillæ much longer than the lip, which they cover. Lip oval and lengthened. *Observation.* Of the species in this and the following genus we can say nothing, as the genera are unknown to us, and Latreille has not even hinted at the name of a species; notwithstanding this, we conceived the genera ought to be introduced, as it is not improbable that some British species will be found referable to one or other of them.
50. CTEN-  
NUS. GENUS L. CTENUS, Walckenaer's MSS. Latreille. Eyes forming an elongate curved angulated line, very open behind, disposed in three transverse lines thus, 2, 4, 2. Maxillæ longer than the lip. Lip quadrate.
51. LYCO-  
SA. GENUS LI. LYCOSA, Latreille, Walckenaer; ARANEA, Linné, Fabricius, Lamarck, Olivier. Maxillæ straight, anteriorly convex, externally towards the side somewhat arcuated, internally slightly marginated, gradually narrowing towards the base; apex obliquely truncated, almost an inverted triangle. Lip elongate, quadrate. Feet strong; the fourth, then the first, after these the second, longest, the third short.
- Tarentula. Sp. 1. *Tarentula*. Upper part of the body greyish-brown; mandibules and middle of the palpi ferruginous, the apex of the latter black; thorax with a grey margin, and radiated dorsal-line of the same colour; anterior part of the dorsum of the abdomen with triangular spots, hinder part with bent, transverse, black strigæ, margined with white; belly of a fine crocus yellow, with a transverse black band; thighs and tibiæ below reddish-white, with two black spots. *Aranea tarentula*, Linné, Fabr. *Lycose tarentule*, Walck. p. 11. *Lycosa tarentula*, Latr. Inhabits the South of Europe. *Observations.* *Lycosa tarentula Narbonensis* of Walckenaer, is much smaller than the preceding species; and the belly is black, with a crocus-coloured anus. Sp. 2. *Ruricola*, greenish-livid-brown, with the margins and abbreviated dorsal line at the base of the abdomen, with the ridge of the thorax and feet pale brown, inclining to livid; the back of the abdomen on each side with a double parallel longitudinal series of fine, small, livid-brown spots. *Lycose agrétique*, Walck. *Lycosa ruricola*, Latr. Inhabits France and Britain, is common early in spring, occurring in marshes and thick woods. Sp. 3. *Saccata*. Body above, smoke-coloured, inclining to black, clouded with ash-coloured hairs; the ridge of the thorax obscure reddish, with an ash-grey line; the base of the back of the abdomen with a little tuft of hairs; feet livid red, intersected with blackish marks. *Aranea Lyonetti*, Scopoli. *Lycose à sac*, Walck. *L'araignée Loup*, Geoffroy. *Lycosa Saccata*, Latr. Inhabits European gardens and cultivated grounds; is very common. The female carries her bag of eggs about with her, the external covering of which is generally a bluish-green, or greenish-blue. The palpi, mandibulæ, and front of the thorax, livid red in the female, black in the male. Sp. 4. *Velox*. Feet grey-reddish, annulated with black; belly and anus ash-grey; a large red spot at the base of the abdomen, mixed with grey, of a spear shape; middle of the back with a black transverse band, with two spots, and an intermediate splotch of grey. *Lycosa velox*, Walck. *Aranea perita* (*Bullet. de la Soc. Philom.* No. 22.) GEN. LII. DOLOMEDES, Latreille, Walck.—ARANEA, 52. L. MEBES Linn. De Geer. Fabr. Maxillæ straight, oval-quadrate, the apex externally rounded, internally obliquely truncated. Lip somewhat square, the diameters nearly equal, the points of the angles rounded. Feet elongate, the fourth longest, then the second, and afterwards the first. The nails of the tarsi exerted, with no brushes below. Sp. 1. *Mirabilis*. Pale-reddish, covered with greyish sloping; with the anterior angles and dorsal line whitish; abdomen conical, inclining to oval, back darker. *Aranea saccata?* Linné? *Aranea obscura*, Fabr. *Aranea sisteri*, Scopoli. *Dolomède admirable*, Walck. p. 16. *Dolomedes mirabilis*, Latr. Inhabits Europe, residing in woods. The female is often to be seen carrying about her bag of eggs, the covering or bag being of a greyish dirty yellow colour. Sp. 2. *Marginatus*. Thorax and upper part of the abdomen obscure brown, the sides marginated with white; thorax oval, truncated before; abdomen oval; feet green. *Dolomède bordé*, Walck. *Dolomedes marginatus*, Latr. Inhabits most woods and marshes in France, Germany, Sweden, and England. II. Feet formed for leaping. Thorax not carinated. GEN. LIII. ERESUS, Walck. Latr.—ARANEA, Villers. 53. SUSA Rossi. Olivier. Maxillæ straight, longitudinal, and somewhat wedge-shaped; the apex broader, rounded externally, internally obliquely truncated.

- Arachni-**  
**des.**  
Lip nearly an equal sided triangle, the margins somewhat bent back on the point.
- Cinneber-**  
**ius.**  
Feet strong and short; the fourth, the first, then the second, longest; the third rather shorter than the second pair.
- Sp. 1. Cinneberinus.** Black; abdomen cinnabar-red above, with four or six black spots, disposed in a double longitudinal line; joints of the feet white; the hinder sides of the thorax, the thighs, with the first joint of the tibiae of the four posterior feet, pale red.
- Aranea moniligera*, Villers. *Aranea 4-guttata*, Rossi. *Eresus cinneberinus*, Latreille, Walckenaer, p. 21. Inhabits France, Italy, and Germany.
- 54. SALTICUS.** GEN. LIV. SALTICUS, Latr.—ARANEA, Linn. Fab. Oliv.—ATTUS, Walck.
- Maxillae straight, longitudinal, and of a somewhat rhomboidal or inverse wedge-shaped oval.
- Lip elongate, somewhat oval, apex obtuse.
- Feet generally strong, especially the anterior pair, which are short, and formed for leaping; the fourth and first longest, and nearly equal; then the second and third, which are nearly equal in size also.
- \* Feet thick and short; palpi clubbed; thorax truncate-oval, or parallelogrammic.
- Sp. 1. Scenicus.** Black; circumference of the thorax with a white hairy margin; abdomen short, oval, upper part with a greyish-red down, and three transverse undulating bands, and the anus white; the first, or that band nearest the base, unbroken, the others interrupted in the middle.
- Aranea scenica*, Linné, Fabr. *Salticus Scenicus*, Latr. *Atte Paré*, Walckenaer.
- Inhabits walls and palings; is found in most parts of Europe; the female has her palpi white; feet covered with reddish-grey down, and obscure spots. Mandibles of the male very large.
- Sp. 2. Sanguinolentus.** Black; the margins of the thorax with a white villose line; abdomen small, somewhat oval, blood-red, with a lanceolate black mark on the middle of the back; the four anterior tibiae bright yellow.
- Aranea sloanii*, Scopoli, Rossi. *Aranea sanguinolenta*, Linné, Fabr. *Atte sanguinolente*, Walck. p. 24. *Salticus sloanii*, Latr. *Salticus sanguinolentus*, Leach's MSS.
- Inhabits the S. of Europe, seen only once in Britain.
- Sp. 3. Rumphii.** Black; variegated with grey and brown; the anterior margin of the thorax with pale reddish down; abdomen elliptical, with an uneven, broad, longitudinal grey band, margined with black.
- Aranea rumphii*, Scopoli. *Atte tardigrade*, Walck. p. 25. *Salticus rumphii*, Latreille.
- Inhabits France, is often taken in the environs of Paris on the trunks of willows.
- \*\* Feet long and slender; palpi filiform; thorax long, narrow, and somewhat conic.
- Sp. 4. Formicarius.** Thorax black before, red behind; abdomen brown, with a white spot on each side; feet red.
- Atte fourmi*, Walck. *Salticus formicarius*, Latr.
- Inhabits plants and walls throughout Europe, is very rare in Scotland.
- FAMILY X. TARANTULIDES.
- 55. TARANTULA.** GENUS LV. TARANTULA, Brown, Fabricius.—PHALANGIUM, Linné, Pallas.—PHRYNUS, Olivier, Lamarck, Hermann, Latreille, Herbst.
- Palpi long, terminated by a horny, crooked, moveable nail.
- Maxillae obverse-conic, diverging internal angle at the apex lengthened, compressed and rounded.
- Body short and depressed; thorax either kidney-shaped or lunulated; no tail.
- Eyes eight; two on the middle of the anterior margin, in a transverse line; three on each side, disposed in a triangle.
- Sp. 1. Lunata.** Palpi nearly three times as long as the body; the apex of the third joint alone spiny; spines four in number, the two upper ones strongest.
- Phalangium reniforme*, Linné. *Phalangium lunatum*, Pallas. *Tarantula lunata*, Fabr. *Phrynus lunatus*, Latr.
- Inhabits the East Indies.
- Sp. 2. Media.** Palpi nearly six times as long as the body; the inside spiny from one end to the other; the spines at the point very numerous.
- Phrynus medius*, Herbst. Inhabits South America?
- Sp. 3. Reniformis.** Palpi length of the body, the second and third joints compressed, and spiny on the inside; the last joint internally dilated, and armed with five or six strong spines.
- Phalangium reniformis*, Pallas. *Cancellus aranoides*, Petiver. *Tarantula reniformis*, Fabr. *Phrynus reniformis*, Latreille.
- Inhabits South America; is common in Jamaica, St Domingo, and other islands.
- GENUS LVI. THELYPHRONUS, Latreille. PHALANGIUM, Linn. Pall. TARANTULA, Fabricius.
- Palpi short and thick, terminated by a forceps, or finger and thumb.
- Maxillae nearly triangular, and large, meeting within.
- Body elongate, and cylindrical; thorax oval; abdomen terminated by a tail.
- Eyes as in the preceding genus.
- Sp. 1. Proscorpio.** Palpi spinous or branched.
- Phalangium caudatum*, Linné, Pallas? *Tarantula caudata*, Fabricius? *Thelyphronus proscorpio*, Latr.
- FAMILY II. SCORPIONIDES.
- GENUS LVII. SCORPIO, Linn. Fabr. Oliv. Latr. Lam. Herbst, Shaw, Donovan.
- Maxillae short, rounded, internally somewhat arched and hairy.
- Lip with four triangular porrect pieces or valves, the two external ones joined to the anterior, the two internal ones to the base of the second pair of feet.
- Eyes six or eight.
- Body elongate; with two pectinated laminae (which are denominated pecten) at the under base of the abdomen.
- Tail composed of six joints, the last sharp or aculeated; the sting bent, instilling poison into the wound it makes.
- \* Eyes eight in number.
- Sp. 1. Occitanus.** Pectens with twenty-eight teeth; body yellowish; tail longer than the body, with elevated granulated lines, with no prominence under the sting.
- Scorpio occitanus*, Amoreux, (*Jour. de Phys.* 1789.) Latr. *Scorpio tanetanus*, Redi.
- Inhabits the southern parts of Europe.
- Sp. 2. Afer.** Pectens with thirteen teeth; hands somewhat heart-shaped, hairy, and slightly granulated.
- Scorpio afer*, Linn. Fabricius.
- Inhabits India.
- Sp. 3. Americanus.** Pectens with fourteen teeth; hands somewhat ciliated; fingers filiform.
- Scorpio Americanus*, Linné, Fabricius.
- Inhabits America.
- Sp. 4. Australis.** Pectens with thirty-two teeth; hands smooth, elongated and red; the fingers filiform; under the sting a pointed process.
- Scorpio Australis*, Linné, Fabricius.
- Inhabits Africa.
- Sp. 5. Carpathicus.** Pectens with eighteen teeth; hands angular; tail mucronated beneath the sting.
- Scorpio Europaeus*, Linné, Fabr. *Scorpio Carpathicus*, Latr. *Scorpio Germanicus*, Herbst.

Arachni- des. The habitat is not known to us; but Latreille says it is an extra-European species.

Europæus. Sp. 6. Europæus. Pectens with nine teeth; hands somewhat heart-shaped, angular; the wrists with one tooth; body obscure brown; last joint of the tail, with the feet brownish-yellow.

Scorpio Europæus, Villers, Latreille. Inhabits the south of Europe.

Linné was not acquainted with this species; he has described some other for it, and has led the celebrated Fabricius into a similar error respecting it: See the note following Scorpio carpathicus, Sp. 5. where we have corrected this mistake. De Geer has described a Cayenne species for Europæus, 7. 344. tab. 41. Fig. 5.

Maurus. Sp. 7. Maurus. Pectens with eight or ten teeth; hands cordate, nearly smooth; body fuscous, and granulated.

Scorpio maurus. Linné, Fabricius, and Latreille. Inhabits Barbary.

58. CHELIFER. GENUS LVIII. CHELIFER. Geoff. De Geer, Oliv. Lam. Herm. Latreille.

PHALANGIUM, Linn. SCORPIO, Fabricius. OBISIUM, Illiger, Walckenaer.

Maxillæ longitudinal, large and convex, on the inner side inflexed, and meeting together; the apex produced into a point. Lip none.

Eyes two or four inserted into the sides of the thorax. Body somewhat depressed. Tail none.

\* Eyes two. Thorax divided into two parts by a transverse line.

Cancroides. Sp. 1. Cancroides. Arms twice the length of the body, the second and third joints elongate and conic; body red-brown; abdomen oval.

Chelifer cancroides, Latreille.

Inhabits close places, and books, living on Acariidæ;

when touched, it walks backwards, holding forwards its hands in a menacing attitude.

Sp. 2. Cimicoides. Arms of a moderate length, the joints somewhat oval and hairy; abdomen globose-oval.

Scorpio cimicoides, Fabr. Pince parasite, Hermann. Obise cimicoide, Walck. Chelifer cimicoides, Latr.

Inhabits Europe, under the bark of trees.

\*\* Eyes four; thorax entire.

Sp. 3. Trombidioïdes; mandibulæ very large and extended; the second joint of the arms elongate; fingers long and straight.

Pince trombidioïdes, Latr. Pince ischnochéle, Hermann. Chelifer trombidioïdes, Latr. Obisium trombidioïdes, Leach's MSS.

Inhabits France; is common near Paris, under stones, and in other parts of France among mosses. In this country it has been discovered by Montagu and Leach, in Devonshire, under stones, in tolerable plenty; and by the latter gentleman in Surrey, near Godstone.

Obs. These two divisions of the genus certainly have distinct characters enough to form two genera; we therefore, perhaps, should follow Mr Leach, who proposes to call the first division CHELIFER, a name first given by Geoffroy; the second OBISIUM, a name proposed by Illiger for the genus as it now stands.

GENUS LIX. CELLULARIA. Vide synopsis of genera. 59. CELLULARIA.

Method of Preserving the Animals of this Class.

Those of the first order may be simply dried, having a pin passed through the right side of their body; the legs being spread as if the animal were walking. The smaller species of the Second Order are to be glued to paper, by means of gum arabic; and the larger ones must either be kept in spirit, or dried very rapidly in a strong blast, in a dark place if possible.

APPENDIX.

Appendix. IN this part of the article, we shall add those species which have been discovered since the former part was written, and some alterations in the classification, lately made by Dr Leach.

He has divided the tribe MILLEPEDA from the Crustacea, and considered them as a distinct class, under the title of MYRIAPODA, and has placed the ONISCIDES and ASELLIDES with the GASTERURI.

The characters of CRUSTACEA, MYRIAPODA, ARACHNIDES, and INSECTA, are given in the following Table.

Animals without a Vertebral Column, with distinct Nerves and Feet.

Table with 2 columns: Characteristics (With gills or branchiæ, With air tubes or tracheæ, With antennæ and distinct head, Without antennæ, head united to the thorax, Without a heart) and Class (CRUSTACEA, MYRIAPODA, ARACHNIDES, INSECTA).

The genus BOPYRUS is to be altogether rejected from this article, as it belongs to the class Vermes.

CLASS CRUSTACEA.

The two orders, I. ENTOMOSTRACA, and, II. MALACOSTRACA, he considers as sub-classes, but suffers them to retain the same names. In the ENTOMOSTRACA, nothing new has occurred; but to the MALACOSTRACA, we can add much valuable matter.

SUBCLASS II. MALACOSTRACA.

This subclass is subdivided into three orders: 1. Brachyuri, Macrouri, and Gasteruri, which are synonymous with the tribes of those names before given.

ORDER I. BRACHYURI.

The first division containing those genera with the hinder tarsus and unguis formed for swimming, is now (as we have before hinted) divided into more genera, the characters of which may be given in a table.

\* The peduncle of the eyes as long as the external angles of the shell.

GENUS I. PODOPTHALMUS.

\*\* Peduncle of the eyes much shorter than the external angles of the shell.

A. Shell with more than five teeth on each side.

GENUS II. LIMA. Shell remarkably transverse; at the termination of the semicircle on each side armed with a long spine.

B. Shell with five teeth on each side.

GENUS III. PORTUNUS. Transverse diameter of the shell much greater than the longitudinal; orbit of the eye behind, with two fissures. Eyes thicker than their peduncles.

GENUS IV. CARCINUS. Transverse diameter of the shell much greater than the longitudinal; orbit of the eye behind with one fissure; eyes not thicker than their peduncles.

GENUS V. PORTUMNUS. Longitudinal diameter of the shell equal, or nearly equal, to the transverse; or-

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bit of the eye without any fissure behind; eyes not thicker than their peduncles.

The species of these genera have already been given in the early part of this article, under the generic title of *PORTUNUS*.

The genus *CANCER*, too, admits of several very important divisions, but three genera only have hitherto been formed, viz. *CANCER*, *XANTHO*, and *ATELECYCLUS*.

**GENUS I. *CANCER*.** Shell broad, the anterior margin gradually bent into a semi-elliptic form, the ends gradually converging into an angle behind, the apex truncate and marginate: the external antennæ setaceous and short, the two first joints largest; inserted betwixt the front and internal canthus of the eye: Peduncle of the internal antennæ somewhat lunate. Second joint of external double palpi, with the internal apex emarginate or notched for the insertion of the palpi: Feet simple, compressed, the hinder ones shortest. Nails somewhat compressed and hairy, the sides with an excavated line, joints naked and somewhat acute.

*Sp. 1. Pagurus.* See p. 391 of this article.

**GENUS II. *XANTHO*.** Shell as in *Cancer*, but the hinder edge is only submarginate. External antennæ very short, setaceous, the two first joints largest, inserted at the internal corner of the eye; peduncle of the internal antennæ somewhat linear. Palpi as in *Cancer*. Feet simple, compressed, hinder ones shortest. Nails compressed, hairy, the sides with an obscure impressed line, points naked, and scarcely acute.

*Sp. 1. Incisa.* Wrists with two tubercles above; shell on each side with four obtuse teeth, the interstices notched; fingers generally black, in some individuals same colour with the shell, which is most frequently reddish, or brownish-red.

*Cancer incisus* of this article. See p. 391.

*Obs. 1. Cancer dodone* of Herbst seems to be referable to this genus, as far as we can judge from his plate: it differs in having only three obtuse teeth on each side of the shell.

*Obs. 2. Cancer denticulatus, Hirtellus* and *Spinifrons*, seem also to form distinct genera, but the characters have not yet been developed.

**GENUS III. *ATELECYCLUS*.** The characters have not yet been completely developed; it is readily distinguished from any other genus by the form of its shell, which is almost continued from the front to the hinder edge into a circle, which is however interrupted in that part, forming altogether an imperfect or interrupted circle. The antennæ, too, are as long as the shell.

*Sp. 1. Septemdentatus.* With seven distinct teeth on the sides of the shell, and some intermediate small ones.

*Cancer hippa septemdentatus*, Montagu.

First discovered by Montagu on the S. coast of Devon, and described by him in the 11th vol. of the *Lin. Trans.* It has since been found by Mr Cranch of Kingsbridge to be very common in the Plymouth Sound. Dr Leach received the young of the female from the Bell Rock, sent him by Mr Stevenson. The full grown female has never yet occurred.

*Cancer undecemdentatus* of Herbst, tab. 10. fig. 60. seems to belong to this genus. It inhabits America.

The genus *OCYPODE* Dr Leach has also found it necessary to divide into the following genera.

\* Shell rhomboidal, inclining to square; peduncle of the eyes reaching the anterior external angles of the shell.

**GENUS I. *OCYPODE*.** Peduncle extending beyond the eyes; anterior feet very unequal.

**GENUS II. *UCA*.** Peduncle not extending beyond the eyes; the anterior feet very unequal.

**GENUS III. *GONEPLAX*.** Peduncle not extending beyond the eyes; anterior feet equal.

\*\* Shell truncate-heart-shaped; peduncle of the eyes much shorter than the anterior external angles of the shell.

**GENUS IV. *GECARCINUS*.**

To the genus *OCYPODE*, *O. ceratophthalmus* of this article are referable. To *UCA*, *Cancer uca* of Shaw's *Nat. Miscellany*, plate 588, belongs; the species to be named *Una*. To *GONEPLAX*, *O. Angulata* of this article, which should be named *G. bispinosa*, is the prototype. To *GECARCINUS*, *O. ruricola* and *cordata* of this article are the only species we know to belong to it.

**GEN. *GRAPSUS*.** To this genus *Cancer minutus* of Linné is referable.

**GEN. *PINNOTHERES*.**

*Sp. 1. Pisum.* (Female.) Shell orbicular, soft, very smooth, with the front somewhat arcuate and entire; hands oblong, the under part a line of ciliæ, as are the upper parts of the thighs of the other legs; thumb somewhat arcuate; abdomen very broad, the sides of the segments arcuate, the fifth segment broader; the last segment narrower than the preceding; the apex broadly notched.

*Cancer pisum*, Pennant, Fabricius, Linné.

*Pinnotheres pisum*, Latreille, Leach, *Mem. Wern. Soc. vol. ii. Mal. Brit.* *PINNOTHERES*, tab. A.

Inhabits the shells of mussels and oysters; male unknown.

*Sp. 2. Mytili.* (Female.) Shell orbicular, inclining to quadrate, soft, very smooth, the sides behind dilated; front strait, obscurely, somewhat notched; hands oblong; under parts, with the upper part of the thighs of the other legs, having a ciliated line; thumb somewhat arcuate; abdomen very broad, the segments at their sides somewhat arcuate; hinder edge of the third and following joints notched in the middle; fifth segment broader, the last narrower than the preceding.

*P. Mytili.* Leach, *Mem. Wern. Soc. vol. ii. Malacos-traca Britannica.* *PINNOTHERES*, tab. A. Male unknown.

This interesting species was discovered by a most zealous and enlightened collector, Mr Cranch, in *Mytilus modiolus*, from the Kingsbridge estuary, dredged from the oyster bed near Gerston Point.

*Sp. 3. Mytilorum.* (Female.) Shell ovate-orbicular, anteriorly somewhat narrower, convex very smooth, somewhat solid; front produced entire, scarcely somewhat arcuate; sides in each side behind, with two oblique impressed lines running together behind; hands somewhat oval, beneath, with the upper part of the thighs with a ciliated line; fingers arcuate; abdomen somewhat narrow, the segments with their sides somewhat arcuate, the last narrower than the preceding, the apex somewhat acuminate, rounded at the extreme point, and entire.

*Cancer mytilorum albus* of Herbst.

*Pinnotheres mytilorum* of Latreille. Leach, *Mem. Wern. Soc. vol. ii. Mal. Brit.* *PINNOTHERES*, tab. A.

A single specimen of this species was taken by Dr Leach from *Mytilus modiolus*, dredged at Newhaven in the Frith of Forth, who, for a long time, considered it as the young of *P. Pisum*. Male unknown.

*Sp. 4. Varians.* (Male.) Shell ovate-orbicular, anteriorly somewhat narrower, convex very smooth, and solid; front produced, arcuate, and entire; hands ovate, beneath with two lines of ciliæ; fingers much arcuated; thighs above and below with a line of ciliæ; and sides of the abdomen broadly notched, the last joint abruptly narrower than the preceding, the apex narrower, rounded, and entire.

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*Cancer varians*, Oliv. Enc. Meth. H. Nat. tab. vi. p. 155.  
*Cancer mytilorum fuscus*, Herbst.  
 Inhabits *Mytilus modiolus*. Is common in the Frith of Forth, and was considered as the male of *Pisum* by Dr Leach, until the distinctions of the ciliated lines were pointed out to him by that acute and learned zoologist Montagu.

Sp. 5. *Pinnæ*. Front somewhat emarginate; hands beneath, with an arcuate emargination.

Male, with the shell transversely, somewhat quadrate, somewhat solid and punctate; hands ovate, fingers arcuate; sides of the abdomen entire, the last joint abruptly broader than the preceding, the apex acutely somewhat rounded.

Female, shell somewhat transversely, somewhat quadrate, soft, and very minutely punctate; hands elongate-ovate, with the fingers somewhat arcuate; abdomen very broad, with a kind of carina of knots, the fifth, sixth, and seventh segments emarginate behind, the last joint narrower than the preceding.

*Cancer Pinnotheres*, Linné?

*Pinnotheres pinnæ*, Leach, Mem. Wern. Soc. vol. ii. Malacos. Britan. PINNOTHERES, tab. B.

Mus. Montagu, male and female. Mus. Leach, female. Discovered by Montagu in *Pinna ingens*, from the Salcombe estuary; since which, Mr Cranch has taken two females out of the same shell from the same situation.

Sp. 6. *Modioli*. (Male.) Shell transversely, somewhat quadrate, somewhat solid, and punctate; front emarginate; hands ovate, fingers arcuate; sides of the abdomen widely notched, the last joint somewhat abruptly broader than the preceding, the apex obtusely rounded and entire.

*Pinnotheres modioli*, Leach, Mem. Wern. Soc. vol. ii. Malacost. Brit. PINNOTHERES, tab. B.

Discovered by Montagu in *Mytilus modiolus*, from the Kingsbridge estuary. Female unknown.

Mus. Montagu.

GENUS MEGALOPA. This genus includes *Cancer rhomboidalis*, mentioned in a note, p. 394, but the characters have not yet been fully examined. *Cancer granarius* of Herbst and Fabricius belong to this genus, if it be distinct from Montagu's *rhomboidalis*.

GENUS LEUCOSIA. See page 394. To this genus, *Cancer tuberosa* of Pennant, and *Cancer tumefactus* of Montagu, Lin. Trans. vol. 9, belong. These two species at first sight seem distinct; but Dr Leach possesses such a number of intermediate and connecting specimens, as to render the point extremely doubtful; until more specimens can be obtained, he thinks it better to be silent on the subject, lest the subject become more perplexed.

GENUS MAIA. See page 394. This genus, too, in the paper to which we have alluded, has been divided.

\* Abdomen with seven joints.

The genera in this division have been examined but not defined; we shall, however, give the name of the genera, with one species of each genus.

GENUS I. PARTHENOPE, Fabricius.

Sp. 1. *Maia Horrida* of this article, see page 394.

GENUS II. MAIA.

Sp. 1. *Squinado* of this article, see p. 394. This species is improperly mentioned as the *Dodecos* of Linné by Montagu, in the seventh volume of the *Linnean Transactions*, when he describes his *Cancer maxillaris*.

GENUS III. HYAS.

Sp. 1. *Araneus*. *Maia Araneus* of this article, see p. 394.

GENUS IV. EURYNOME.

Sp. 1. *Aspera*. *Cancer asper* of Pennant. As full grown specimens have not yet occurred, we cannot give the specific characters.

GENUS V. BLASTUS.

Sp. 1. *Tetraodon*. *Cancer tetraodon* of Pennant; and also probably *Maia armata* of Latreille.

GENUS VI. PISA.

Sp. 1. *Biaculeata*. *Cancer biaculeatus*, Montagu, Lin. Trans. vol. ix.

\*\* Abdomen with six joints.

GENUS I. INACHUS. Exterior antennæ, with the three first joints largest; eyes distant; feet very long and slender, the anterior pair excluding the arms, thicker than the three hinder pair; shell somewhat triangular, scantily spined, and rostrated in front, with a projecting spine on each side over the eyes, which protects them as it were in a spurious orbit.

Sp. 1. *Dorsettensis*. Rostrum short and tricuspid, with equal teeth, middle one acute placed beneath; shell behind the rostrum, with four small equal tubercles disposed in a strait transverse line; behind these three spines, the middle one placed rather more anteriorly; behind these again, three others stronger and more acute, placed in a recurved line; the hinder margin, with two distant obsolete tubercles.

*Cancer dorsettensis* of Pennant. *Cancer Scorpio*. Fabr. Ent. Syst. *Inachus Scorpio*. Fabr. Sup. Ent. Syst.

Inhabits the western coasts of England. Is common at the mouths of rivers, and in deep water far from land.

Sp. 2. *Dorynchus*. Rostrum somewhat lanceolated, with a fissure running down the middle; shell behind the rostrum, with three spines placed in a triangle, the hinder one largest; behind these are two tubercles, one on each side, then four other tubercles, one on each side, and two in the middle near to one another, placed somewhat behind the lateral ones; posterior margin with two distant obsolete tubercles.

This was discovered by Dr Leach, whilst he was washing some specimens of *I. Dorsettensis*, sent him by Mr Prideaux and Mr Cranch from the Kingsbridge estuary.

*Inachus dorynchus*. Leach, Malacos. Brit. *Inachus*, tab. A.

GENUS II. LEPTOPODIA. Exterior antennæ, with the two first joints largest; eyes distant; first pair of legs not thicker than the following legs; shell somewhat triangular, thinly spined, anteriorly rostrated; no spine to protect the eyes.

Sp. 1. *Phalangium*. *Maia phalangium*, see p. 395, which seems to be the same with *Cancer rostratus* of Herbst.

Sp. 2. *Tenuirostris*. This differs from *Phalangium*, in having the rostrum longer and narrower, and the arms of the male spiny.

Inhabits the Plymouth Sound. First noticed as distinct by Dr Leach.

## ORDER II. MACROURI.

GENUS PENÆUS. See page 401. To the generic character add *pediform palpi*, with five exerted joints, last joint obtuse and simple.

GENUS ALPHÆUS. See page 400. To this genus, *Cancer spinus* of Sowerby, described in the *British Miscellany*, is referable. The *pediform palpi* with three exerted joints, the last joint furnished with spines.

Sp. 2. *Trisulcatus*. Back of the thorax with three grooves; rostrum turning downwards, with two teeth beneath and many above.

*Penæus trisulcatus*, Leach, Malacos. Brit. PENÆUS, tab. A.

Mus. Sowerby.

Discovered in Anglesea by the Rev. H. Davies, who sent it to Mr Sowerby.

GEN. HIPPOLYTE. Superior antennæ with two setæ the lower seta largest, the upper compressed; *pediform*

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Appendix. palpi, with three exserted joints, the last spiniferous; four anterior feet, didactyle, the anterior pair shortest and thickest; nails of other feet spinous; third joint of abdomen gibbous above.

*Observe.* To this genus *Cancer astacus gibbosus* of Montagu, already referred to in the note after *Penæus*, page 401, belongs.

*Sp. 1. Varians.* Rostrum straight, with two teeth above and beneath; shell above and beneath the eyes with a spine.

Inhabits the rocky shores of Devon in great plenty. *Hippolyte varians*; Leach, *Mem. Wern. Soc.* vol. ii.

There are other species which are not well understood.

GEN. PANDALUS. Superior antennæ with two setæ, the inferior ones with a squama at their base. First pair of feet simple, the second pair didactyle; nails of the other feet spinulose; third segment of the abdomen gibbous above; pediform palpi, with three exserted joints, the last acuminate and spinigerous.

*Sp. 1. Montagui.* Rostrum turning upwards, with many teeth above, and the apex emarginate, with six teeth beneath; antennæ ringed with white and red alternately.

*Pandalus Montagui*, Leach, *Malacos. Brit.* *Pandalus*, Tab. A. named in honour of the first discoverer, Montagu, by whom it was called *Astacus maculatus*. The Rev. J. Fleming took this species in Zetland, whose successful labours in that country speak more than we can do in words.

GEN. PALÆMON. Page 401. A. Anterior pair of feet smaller than the second; pediform palpi, with the last simple and acuminate, shorter than the preceding joint; superior antennæ with three setæ.

*Observe.* We can correct an error in nomenclature, which we have lately discovered.

*Sp. 1. Serratus.* Rostrum ascending, above with from six to eight teeth, and the apex notched; beneath with from four to six teeth.

*Astacus serratus* of Pennant. *Palæmon squilla* of Latreille; and this article, page 401. *Palæmon serratus* of Fabricius, seems referable to a distinct genus, from his description, if it be correct.

*Sp. 2. Squilla.* Rostrum straight, with from seven to eight teeth above, and two to three beneath.

*Cancer squilla*, of Linné.

Is very common on the Devonshire coast; has the same colour as *P. serratus*, but spawns at a different season. A little shorter than the preceding species.

*Sp. 3. Varians.* The rostrum straight, with from four to six teeth above and three beneath.

Is common at Yarmouth, and is frequently also taken on the Devon and Glamorgan coasts.

GEN. ATHANAS. *Palæmon*. Page 401. B. Anterior larger than the second pair of feet; pediform palpi, with joint simple and acuminate longer than the preceding; superior antennæ with three setæ.

*Sp. 1. Nitescens.* *Palæmon nitescens*. Page 401.

### ORDER III. GASTERURI.

#### TRIBE I. GNATHIDES.

This includes our former family, *Gnathonii*.

#### TRIBE II. GAMMERIDES.

This tribe includes our family *Gammarini*, which is now divided into several families. The last character, viz. "tail not distinct from the body," should be cancelled.

#### FAMILY I. ORCHESTIDÆ.

Antennæ four jointed, the last joint composed several minute joints; the upper ones very short, shorter than the peduncle of the under ones.

GENUS I. TALITRUS. Page 402.

*Sp. 1. Locusta.* Dr Leach has discovered *T. littoralis* to be merely the other sex of this species.

GENUS II. ORCHESTIA. Page 402. Four anterior feet of the male monodactyle, the second pair largest; of the female equal in size, the first pair monodactyle, the second didactyle.

#### FAMILY II. DEXAMERIDÆ.

Antennæ three-jointed, the last joint composed of several other minute articulations; upper ones longest.

\* Two anterior pair of feet monodactyle.

GENUS III. DEXAMINE. Four anterior feet nearly equal; hands subovate, compressed, and filiform.

*Sp. 1. Spinosa.* *Cancer gammarus spinosus* of Montagu. \*\* Anterior pair of feet didactyle; second pair monodactyle.

GENUS IV. LEUCOTHÖE. Thumb of anterior feet with two joints; second pair with a compressed hand, furnished with a curved thumb.

*Sp. 1. Articulosa.* Page 403.

#### FAMILY III. GAMMARIDÆ.

Last joint of the antennæ composed of several minute articulations; upper pair longest, four jointed; under ones five-jointed.

\* Second pair of feet larger than the first, with a compressed hand.

GENUS V. MELITA. Second pair of feet (in the male at least) with the thumb bending upon the palm; last joint of the antennæ entire.

*Sp. 1. Melita palmata.* Page 403.

GENUS VI. MÆRA. Second pair of feet with a large compressed hand and single thumb; last joint of the antennæ bifid.

*Sp. 1. Grossimana.* Page 403.

\*\* Four anterior feet nearly equal in size and form, with ovate hands.

GENUS VII. GAMMARUS. Last joint but one of the superior antennæ with a little seta at the apex at the base of the articulated last joint; back of the tail with ciliæ of spines.

Contains *Gammarus pulex*, *locusta*, and *camylops* of this article, page 402 and 403.

GENUS VIII. AMPITHÖE. Superior antennæ, without a seta at the base of the last joint; back of the tail without fasciculi of spinules.

*Sp. 1. Rubricata.* *Gammarus rubricatus*. Page 403.

\*\*\* Four anterior feet with a filiform hand.

GENUS IX. PHERUSA.

*Sp. 1. Fucicola.* Colour whitish, nuttled with reddish. Found on the rocky shores of Devon, under stones at low tide, on fuci.

#### FAMILY IV. PODOCERIDÆ.

Superior antennæ shortest four-jointed, the last joint solid or obscurely articulated; inferior antennæ five-jointed, with the last joint solid, or very obscurely articulated.

\* Superior antennæ very short, the last joint composed of many minute articulations.

GENUS X. COROPHRUM. Body elongate, ten-jointed; tail three-jointed, the first joint and the second with a bifid style; the last with two moveable papillæ; anterior pair of feet small, with the apex somewhat truncate, and furnished with a little thumb; second pair larger, armed with a thin curved thumb.

Dr Leach formerly considered this genus as constituting a peculiar family, which, with the addition of two other genera, he has now completely established as such. For the species, see page 403.

Appendix.

\*\* Superior antennæ shorter than the under ones ; the last joint scarcely articulated.

GENUS XI. *PODOCERUS*. Eyes hemispherical and somewhat prominent ; four anterior feet didactyle, anterior pair smallest with an elongate-subovate hand ; second pair with an ovate hand, and the internal side nearly straight.

*Sp. 1. Variegatus*. Body, legs, and antennæ beautifully variegated with red.

*Podocerus variegatus*. Leach's MSS.

Inhabits the rocky shores of Devon, walking about on fuci and corallines with its antennæ as well as legs.

GENUS XII. *JASSA*. Eyes not prominent ; four anterior feet didactyle with ovate hands ; the anterior pair smallest ; the hand of the second pair with the internal edge furnished with teeth.

*Sp. 1. Pulchella*. Thumb of the second pair with the internal edge emarginate at the base.

*Var. α.* Internal edge of the hand of the second pair of feet with an elongated tooth at the base.

*Var. β.* Internal edge of the second hand with three teeth.

*Jassa pulchella*. Leach, *Mem. Wern. Soc.* vol. ii.

Inhabits fibrous fuci on the Devonshire coast everywhere. White painted with red.

*Sp. 2. Pelagica*. Hand of the second pair with the internal edge having a lunar notch.

*Jassa pelagica*. Leach, *Mem. Wern. Soc.* vol. ii. Received through Mr Stevenson's kindness from the Bell Rock, in the German Sea.

*Cancer gammarus falcatus* of Montagu. *Lin. Trans.* vol. ix. tab. 5. fig. 2. seems referable to this genus.

### TRIBE III. PHRONIMARIDES.

Extremity of the tail furnished with several styles ; feet ten.

This tribe contains the genus *PHRONIMA*, mentioned in p. 403, which might constitute a distinct family.

### TRIBE IV. CAPRELLIDES.

This includes our family *CAPRELLINI*, to which we can add another genus, differing from *Caprella* in having true legs instead of the gelatinous fine-like legs, which is naved.

GEN. *PROTO*.

*Sp. 1. Pedata*.

*Cancer gammarus pedatus*. Montagu, *Linn. Trans.* vol. xi. p. 6. tab. ii. fig. 6.

### TRIBE V. APSEUDIDES.

Comprehending our family *APSEUDII*, p. 404.

### TRIBE VI. ASELLIDES.

Antennæ four, distinct ; last segment of the tail long.

#### FAMILY I. ANTHURIDÆ.

Last segment of the tail very short, the last narrow, elongate, with two elongate lamellæ on each side ; antennæ nearly equal, inserted one behind the other in nearly an horizontal line.

GENUS II. *ANTHURA*. See Genus LXV.

#### FAMILY II. CYMOTHOIDÆ.

Last segment of the tail with one or two appendages on each side ; antennæ placed in pairs, one above the other.

*Stirps 1.* Last segment of the tail on each side with a single appendage.

GENUS III. *CAMPECOPEA*. See Genus LXIX.

GENUS IV. *NESÆA*. See Genus LXVIII.

*Stirps 2.* Last segment of the tail with two appendages on each side.

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Appendix.

\* Upper antennæ with a very large peduncle ; head behind bilobate, the eyes placed on the lobes.

GENUS V. *CYMODOCE*. Eyes touching the anterior margin of the first segment ; base of the tail on each side with two equal slightly compressed (but not foliaceous) appendages, exterior ones largest ; last segment emarginate, with a lamella in the middle ; nails bifid.

*Sp. 1. Truncata*. Apex of tail truncate.

Inhabits the coast of Devon amongst fuci, but is very rare. Leach's MSS.

*Oniscus truncatus*, Montagu's MSS.

GENUS VI. *DYNAMENE*. Eyes not reaching the anterior margin of the first segment ; base of the tail on each side with two equal foliaceous appendages, apex of the tail emarginate ; nails bifid.

There are several indigenous species of this genus, but the characters are not yet determined.

GENUS VII. *SPHEROMA*. Eyes not reaching the anterior margin of the first segment ; last joint of the tail entire, the base on each side furnished with two equal foliaceous appendages ; nails bifid.

*Sp. 1. Serrata*. Add to the character given in p. 405. "External foliaceous appendage of the tail externally serrated."

*Sp. 2. Rugicauda*. Add, "foliaceous lamellæ not serrate externally."

*Sp. 3. Hookeri*. Last joint of the tail with two obsolete tubercles.

*Spheroma Hookeri*. Leach, *Mem. Wern. Soc.* vol. ii.

Discovered by Mr W. J. Hooker on the Norfolk coast.

\*\* Peduncle of upper antennæ not very large.

GENUS VIII. *CYMOTHOA*. Head narrower than the first segment of the body, and received into a notch in that part ; eyes obscure ; tail narrower than the body, the last segment of the tail transversely quadrate, with two styles on each side at the base.

*Sp. 1. Cestrum*, page 405.

GENUS IX. *LIMNORIA*. Head as broad as the first segment of the body ; eyes granulated and distinct ; tail scarcely narrower than the body ; last segment of the tail rounded at the apex ; the base in each side with two styles.

*Sp. 1. Terebrans*. Body cinereous ; eyes somewhat pitchy-black.

*Limnoria terebrans*. Leach, *Mem. Wern. Soc.* vol. ii.

Length from one line to two.

This new and highly interesting species was sent to Dr Leach by Mr Stevenson, from the Bell Rock, in logs of wood, which it perforated in the most alarming manner. He has since received it from the coast of Suffolk. It generally produces seven young ones.

#### FAMILY III. ASELLIDÆ.

Last segment of the tail very large ; middle antennæ very short ; external antennæ half the length of the body, or more.

*Stirps 1.* Tail with two styles at the apex ; antennæ filiform.

GENUS X. *IDOTEA*. External antennæ half the length of the body, or scarcely longer, the third and fourth joints equal ; body ovate.

*Sp. 1. Entomon*, see p. 404.

*Sp. 2. Cestrum*, see p. 404.

GENUS XI. *STENOSOMA*. External antennæ longer than the body, the third longer than the fourth joint ; body linear.

*Sp. 1. Hectica*. Apex of the tail truncate.

*Idotea hectica* of this article. See page 404.

*Sp. 2. Acuminata*. Apex of the tail acuminate.

*Stenosoma acuminata*. Leach, *Mem. Wern. Soc.* vol. ii.

Appendix.

Taken on the Devonshire coast by Dr Leach.  
*Stirps* 2. Apex of the tail with two bifid styles ;  
 antennæ setaceous.

\* *Styles very minute, scarcely exerted ; anterior feet like the others ; without a head.*

GENUS XII. JÆRA. Eyes of the middle size insert-  
 ed betwixt the sides of the head and the vertex.

*Sp.* 1. *Albifrons*. Head anteriorly whitish.

*Oniscus albifrons*, Montagu's MSS.

*Jæra albifrons*, Leach, *Mem. Wern. Soc.* vol. ii.

Inhabits the British sea every where, under stones  
 and amongst fuci.

\*\* *Styles of the tail exerted ; anterior feet larger than the others, with a moveable thumb.*

GENUS XIII. JANIRA. Nails bifid ; eyes of a mode-  
 rate size, inserted on the sides of the head towards the  
 vertex.

*Sp.* 1. *Maculosa*. Light cinereous, mottled with  
 brownish speckles.

*Oniscus maculosa*, Montagu's MSS.

*Janira maculosa*, Leach, *Mem. Wern. Soc.* vol. ii.

Inhabits the Devonshire coasts, under stones, but is rare.

GENUS XIV. ASELLUS. Nails simple ; eyes minute  
 and lateral.

*Sp.* 1. *Aquaticus*, see p. 404.

#### TRIBE VIII. ONISCIDES.

Internal antennæ very minute, scarcely discernible.

##### FAMILY I. LIGIDÆ.

Caudal styles two on each side, sitting on a common  
 peduncle in hairs.

GENUS XV. LIGIA, see Genus LXXI.

*Sp.* 1. *Oceanicus*. *Ligia scopulorum* is merely a va-  
 riety of this species, see p. 406, as we have found every  
 intermediate variety in size and sculpture.

##### FAMILY II. ONISCIDÆ.

Caudal styles two on each side, the lateral one two-  
 jointed.

*Stirps* 1. Body not contractile into a globe.

\* External antennæ with eight joints.

GENUS XVI. PHILOSCIA, see Genus LXXII.

GENUS XVII. ONISCUS, see Genus LXXIII.

\*\* External antennæ with seven joints.

GENUS XVIII. PORCELLIO, see Genus LXXIV.

*Stirps* 2. Body contractile into a globe.

GENUS XIX. ARMADILLO, see Genus LXXXV.

This genus intimately connects the Orders TETRA-  
 CERA with the DUOCERA.

#### CLASS MYRIAPODA.

##### ORDER I. CHILOGNATHA.

Includes Fam. 20. JULIDES of this article. p. 387  
 and 407.

##### FAMILY I. GLOMERIDÆ.

Body contractable into a ball.

GENUS XX. GLOMERIS. Feet on each side sixteen.  
 See p. 407.

GENUS XXI. CRYXUS. Feet on each side twenty.  
 See p. 407.

##### FAMILY II. JULIDÆ.

Body not contractable into a ball.

*Stirps* 1. Antennæ inserted on the superior margin  
 of the head.

\* *Eyes distinct and granulated.*

GENUS XXII. JULUS. See Gen. p. 407.

GENUS XXIII. CRASPELOSOMA. See Gen. JULUS \*\*  
 p. 407.

\*\* *Eyes obsolete.*

GENUS XXIV. POLYDESMUS. See Gen. LXXXVIII. Appendi-  
*Stirps* 2. Antennæ inserted under the anterior mar-  
 gin of the head.

GENUS XXV. POLYXENUS. See Gen. LXXXIX.

#### ORDER II. SYNGNATHA.

##### FAMILY I. SCUTIGERIDÆ.

Segments of the body bearing four feet.

GENUS XXVI. SCUTIGERA. See Gen. LXXX.

##### FAMILY II. SCOLOPENDRIDÆ.

Segments of the body with a single pair of feet.

*Stirps* 1. Last pair of feet remarkably larger than the  
 rest.

\* Feet thirty.

GENUS XXVII. LITHOBIUS. See Gen. LXXXIII.

\*\* Feet forty.

GENUS XXVIII. SCOLOPENDRA. See Gen. LXXXI.

GENUS XXIX. CRYPTOPS. See Gen. LXXXII.

*Stirps* 2. Last pair of feet not very much larger than  
 the rest.

GENUS XXX. GEOPHILUS. See Gen. LXXXIV.

#### CLASS ARACHNIDES.

Those of this class having but six feet, may be ar-  
 ranged in a more perfect manner : we can add one new  
 genus, and the genus *Nycteribia* of Latreille is also re-  
 ferable to this division, although he has placed it with  
 the insects.

#### HEXAPODA.\*

##### TRIBE I. CEPHALOSTOMA.

Mouth situated in the head.

##### FAMILY I. PHÆNORHYNCHI.

Mouth porrected and easily to be seen.

GENUS I. CARIS. See Gen. IV.

GENUS II. LEPTUS. See Gen. V.

GENUS III. OCYPETE. Mouth rostriform, porrected  
 betwixt the palpi.

Palpi elongate-conic, incurved, the last joint acute,  
 corneous, and nail-like, abruptly narrower than the  
 preceding, underneath at the base with a conic (soft?)  
 elongate moveable appendage. Body soft, oval, smooth,  
 the upper part anteriorly, as if divided into two parts  
 by a transverse line ; the anterior division a little nar-  
 rower, and bearing the mouth, eyes, and four anterior  
 feet. Two eyes on each side close to one another, pro-  
 minent, (or placed on a peduncle?), inserted above  
 the base of the anterior feet. Feet six-jointed, the last  
 joint of the anterior pair thickest.

Between the eyes, which are inserted longitudinally,  
 there is a black spot above the base of the rostrum.

This genus seems akin to the *Trombidia* in the parts  
 of the mouth at least.

*Sp.* 1. *Rubra*. Body red, back with a few long, and  
 the feet with many short rufous hairs, inclining to ash-  
 colour. Eyes blackish brown.

Dr Leach took no less than sixteen specimens of  
 this interesting little parasite, from one tipularous in-  
 sect in Devon.

##### FAMILY II. APHÆNORHYNCHI.

Mouth hidden.

GENUS IV. ASTOMA. See Gen. VI. of this article.

##### TRIBE II. NOTOSTOMA.

Mouth placed on the back.

GENUS V. NYCTERIBIA. Latreille, Montagu, *Lin.*  
*Trans.* vol. xi.

PTHIRIDIUM. Hermann.

CELERIPES. Montagu, *Lin. Trans.* vol. ix.

*Sp.* 1. *Vespertilionis*.

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<i>Alpheus</i> . . . . .	45	<i>Araneiformis</i> . . . . .	36 2	<i>Ruricola</i> . . . . .	19 2	<i>Pennata</i> . . . . .	6 1
Avarus . . . . .	45 1	<i>Araneus</i> . . . . .	24 4	<i>Salinus</i> . . . . .	12 1	* <i>Dexamine</i> . . . . .	
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<i>Argulus</i> . . . . .	3 1	<i>Minutus</i> . . . . .	22 1	<i>Mulleri</i> . . . . .	9	<i>Cruentatus</i> . . . . .	20 3
<i>Piscinus</i> . . . . .	2 1	<i>Multipes</i> . . . . .	49 1	<i>Quadricornis</i> . . . . .	9 1	<i>Varius</i> . . . . .	20 2
<i>Bopyrus</i> . . . . .	70	<i>Muricatus</i> . . . . .	24 2	<i>Rubens</i> . . . . .	9	<i>Pictus</i> . . . . .	20 1
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* <i>Boscia</i> . . . . .	57	<i>Nucleus</i> . . . . .	23 1	<i>Truncata</i> . App. 433.		<i>Gronovia</i> . . . . .	76
<i>Nigricans</i> . . . . .	57 1	<i>Pagurus</i> . . . . .	18 1	* <i>Cymothoa</i> . . . . .	66	<i>Hepatoha</i> . . . . .	17
<i>Calappa</i> . . . . .	16	<i>Paludosus</i> . . . . .	12 1	<i>Asilus</i> . . . . .	66 1	<i>Fasciatus</i> . . . . .	17 1
<i>Angustata</i> . . . . .	17 1	<i>Pedatus</i> . . . . .	51 1	<i>Assimilis</i> . . . . .	71 4	* <i>Herbstium</i> . . . . .	43
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<i>Granulata</i> . . . . .	16 3	<i>Phasma</i> . . . . .	60 1	<i>Œstrum</i> . . . . .	66 2	<i>Hippa</i> . . . . .	35
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<i>Caligus</i> . . . . .	2	<i>Phalangium</i> . . . . .	21 8	<i>Cypris</i> . . . . .	7	<i>Emeritus</i> . . . . .	35 1
<i>Curtus</i> . . . . .	2 1	<i>Platycheles</i> . . . . .	39 3	<i>Conchacea</i> . . . . .	7 1	* <i>Hippolyte</i> . . . . .	
<i>Piscinus</i> . . . . .	2 1	<i>Puber</i> . . . . .	14 3	<i>Detecta</i> . . . . .	7 2	<i>Varians</i> , App. 432.	
<i>Productus</i> . . . . .	2 2	<i>Pulex</i> . . . . .	55 1	<i>Pubera</i> . . . . .	7 1	* <i>Ilyas</i> . . . . .	
* <i>Callanassa</i> . . . . .		<i>Rarinus</i> . . . . .	32 1	<i>Reniformis</i> . . . . .	7 3	<i>Araneus</i> , App. 431.	
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## CLASS II. ARACHNIDES.

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	Phalangioides, Fourcroy 40 1	Extendens, Müller 9 1	Uncatum 24	<i>Trombidium</i> , Fabr. 21 1		
	Phragmitis, Rossi 44 8	Fuscata, Müller 9	<i>Phœcus</i> , Latr. Walck. 40	Aquaticum, Fabr. 7		
	Pluchii, Scopoli 40 1	Geographica, Müller 8 1	Phalangioides, Latr. 40	Congenericum, Her. 19		
	Quadriguttata, Ros. 53 1	Maculata, Müller 9	<i>Phoxichilus</i> Splipipes, Lat. 2 1	Extendens 9 1		
	Redimita, Linn. 38 2	Umbrata, Müller 9	<i>Phrynus</i> Lunatus, Latr. 55 1	Fuliginosum, Her. 21 3		
	Regia, Fabr. 47 5	Undulata, Müller 9	Medius, Herbst 55 2	Geographicum, Fab. 8 1		
	Rumphii, Scopoli 54 3	<i>Ixodes</i> Reticulatus, Lat. 16 3	Reniformis, Latr. 55 3	Globator, Fabr. 8 2		
	Rufipes, Fabr. 30	Sanguineus, Latr. 16 1	<i>Pince</i> Parasite, Herm. 58 2	Holosericeum, Fab. 21 2		
	Saccata? Linn. 52 1	Latrodectus, Latr. 39	Ischnochèle, Herm. 58 3	Phalangioides, Her. 20 1		
	Sanguinolenta, Lin. 29 2	Tredecimguttatus, 39	<i>Pulex</i> Sturni, Redi 10 1	Sambuci, Herm. 12 1		
	Sauvegi, Rossi 26 6	<i>Leptus</i> Phalangii, Latr. 5 1	<i>Pthiridium</i> , App. 434.	Sociale, Herm. 19		
	Scenica, Linn. 54 1	<i>Limnochares</i> , Latr. 7	<i>Pycnogonum</i> , Fabr. 3	Telarium, Herm. 19		
	Senoculata, Linn. 29 2	Holosericea, Latr. 7 1	Balænarum, Fabr. 3 1	Tinctorius, Fabr. 21 1		
	Sex-cuspidata, Fab. 44 5	<i>Linyphia</i> , Latr. 43	Grossipes, Müller 1 1	<i>Uloborus</i> , Latr. 1		
	Sloanii, Scopoli 54 2		Spinipes, Otho, Fabr. 2 1	Walchenarius, Lat. 41 1		
	Smaragdina, Fabr. 46 1			<i>Uropoda</i> Vegetans, Latr. 14 1		