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M.DCCC.XXX.
CRUSADES.

CRUSTACEOLOGY.

This name, by which the class is distinguished, derives its origin from crusta, a crust or shell, because the animals have all a covering over the kind of their own; they are known under the familiar appellations of crabs, lobsters, shrimps, prawns, centipedes, millepedes, etc. These were considered by the ancients as a subclass of fishes, connecting truefish with the testaceous vermes (mollusca); and this opinion prevailed, with very little variation, as recently as the time of Linne, 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 Linne, 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 possessed. Many collectors, either from accustomed habit, or vanity, would have preferred to be capricious, 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 imm mortal predecessor Linne,) and on these grounds we shall not further 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 magnanimus 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 resemblance in their external characters, whilst their internal structure is totally different. This has been considered the case with the class Arachnida, 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 Linne, and even at this time (although the continental writers unanimously agree in considering them distinct) many collectors, either from accustomed habit, or veneration for Linne, still consider the crustacea as a branch of Entomology, and as they both agree in having articulated limbs and antennae, 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 antennae, 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 mandibles 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 trachea or windpipes, have never more than two antennæ, no mandibles, 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 Linne 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
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, Arachnida, 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 Arachnida, 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 antennae and six legs; the Arachnida, by the same improvement, will take in all that have no antennae; as already mentioned, we are inclined to place it with 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 it appears to deserve attention.

The following are the characters of the class Crustacea:

**Anatomical Character.**

Heart single; branchiae for respiration; no vertebrae; 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. Branchiae placed under the shell.

This class is divided into three orders. 1. Entomostraca. 2. Malacostraca; and 3. Myriapoda. The latter was placed in the class Arachnida, 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 cariousceous 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 antennae 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. Maxillae or jaws, four or six. Feet, generally ten in number, forrined for swimming. Tail, furnished with lamellae or setae, 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; antennae 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. Binaulir.** No mandibules; tail with two lobes; the anterior pair of feet terminated by a nail, the second pair concic, the rest formed for swimming.

**Family III. Phyllopoda.**

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

**Genus IV. Apus.** Mouth with mandibules; tail with two sets; the feet leaf-shaped.

**TRIBE II. OSTRACODA.**

Shell bivalve; Eyes most frequently confluent.

**Family IV. Monophthalmic.**

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

**Genus V. Lyncus.** Head exserted; antennae capillary.

**Genus VI. Daphnia.** Head exserted; antennae branched.

**Genus VII. Cypris.** Head concealed; antennae terminated by a brush.

**Genus VIII. Cythera.** Antennae hair; 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.

**Genus X. Polypus.** One eye; two branched feet extending horizontally.

**Genus XI. Zoea.** Two eyes; rostrum longer than the thorax, and perpendicularly placed.

**Genus XII. Branchiopoda.** Body filiform.

**ORDER II. MALACOSTRA.**

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 they are fixed.) Antennæ in all the genera four, four double. Palpi attached to the mandibules.
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In this order the covering is always calcareous, and is generally shield-shaped. Antennae 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. Maxill armed with jaws. The mandibles two in number, bearing palpi. The first palpi six in number, placed in a longitudinal line, one above the other. Four double palpi situated under the maxillae. Feet ten, in some fourteen, formed for swimming or walking; the tarsus terminated by a horny nail. Tail simple, or armed either with lamellae 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. CANCERIDAE.

Shell transverse, or heart-shaped in some; round or square in others. The longitudinal very rarely exceeding the transverse diameter. Antennae 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.
   ** Hinder feet, as well as all the rest, formed for swimming, the last joint being conic.
   Genus XVII. Calappa. 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 antenna concealed by the inflected clypeus.
   Genus XXI. Plagula. Eyes with a short peduncle inserted at the anterior angles of the shell. Interior antenna inserted into two little foveolae on the upper part of the clypeus.
   Genus XXII. Finnochthyes. Shell roundish-square. The internal footstalk of the external double palpi one-jointed.

FAMILY VIII. OXYRHYNCHI.

Shell somewhat oval or triangular. The longitudinal exceeding the transverse diameter. The anterior antenna generally exerted.

I. All the tarsi conic.
   Genus XXIII. Leucosia. Eyes and antennæ minute. The footstalks of the external double palpi equal.
   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. Macropodia. Eyes distant from one another. External double palpi preformed. 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 protruded 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. Dorypype. 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. Ramina. 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. PAGURIDAE.

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.
   ** The four posterior feet placed over the others.
   Genus XXXIV. Remipes. 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. PALINURIDAE.

The lateral lamellæ meeting the middle process, and forming with it a fan-shaped fin. Peduncle of the antenna very long, armed at the apex with a jointed seta.
1. All the feet (arms included) terminated by a co- nite.
   Genus XXXVIII. Palinurus. Exterior antenna 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.

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Genus XL. Galathea. Shell oblong-oval.

Family XI. Astacini.

The lateral caudal lamellae meeting the middle process, and forming with it a fan-shaped fin. The interior antenna with a short peduncle, armed with jointed setae.

I. Feet ten. Hands didactyle.

A. Antennae in the same horizontal line.


Genus XLIII. Upogebia. Two anterior feet compound.

Genus XLIV. Callianassa. The four anterior feet compound; third pair monodactyle.

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

Genus XLV. Alpheus. The four anterior feet compound.

Genus XLVI. Penaeus. The six anterior feet compound.

** Interior antennae with three setae.

Genus XLVII. Palenemon. 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. Paeonius.

Family XII. Squillarii.

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

Genus L. Squilla. Interior antennae with three articulated setae.

Genus LI. Mysis. Interior antennae with two articulated setae.

Tribe III. Gasteruri.

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

Family XIII. Gnathoni.

Mandibles two, prominent. Antennae 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 antennae shorter than the peduncle of the inferior.

Genus LIII. Talitrus. Anterior pair of feet largest. Genus LIV. Orchestra. Anterior pair of feet smallest.

** Inferior antennae shortest.

Genus LV. Gammarus. The four anterior feet equal, furnished with a moveable nail. Superior antenna with a seta on the third joint of the peduncle.

Genus LV. 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. Leucotbea. Anterior pair of feet with a finger and thumb, the second pair with a moveable thumb.

Family XV. Corophoni.

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

Genus LX. Corphium.

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. Apsuuldi.

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 antennae bifurcated.

Genus LXII. Apsuuldi.

ORDER III. MYRIAPODA.

Antennae, filiform, two or four in number. Palpi, single. Eyes, immovable.

The animals which compose this order were placed in the class Arachnides, by Lamark 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 Scopendrids 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.

Antennae, four or two in number. Feet, fourteen. The anal segment of the body without feet, being sometimes armed either with lamellae or styles.

Family XVIII. Aseulides.

Antenna 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 antennae 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. Aseulus. Tail formed of one segment, with two bifid styles; the four antennae 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 antennae filiform, having four great divisions, the outermost composed of a great many smaller joints.

** Foliate appendages of the tail formed of one or two processes, placed on a common peduncle situated on each side of the tail.
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ORDER I. ENTOMOSTRACA.

Family I. Xiphosura.

Genus I. Limulus. Shell carunculate, 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 carina 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 antennae. 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 movable. Feet ten, all (excepting the anterior pair, which are most frequently simple,) furnished with a finger and thumb. The branchial, or gill-like lungs, situated under a horny lamella on the sides of the body.

Sp. 1. Polyphemus. All the feet digitated; tail threepointed, 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.

Moluccanus polyphemus of Linné. See Plate CCXXI. CCXXII.

Limulus polyphemus of Fabricius. See Plate CXXXI.

Genus II. Caligus. Shell heart-shaped. Two eyes placed at a distance from one another, on the anterior margin of the shell. Antennae minute, setaceous. Mouth with a conical 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 setae, (sometimes with a double nail,) the rest bearing leaf-like lamelle. Abdomen exerted, and mark...
ARGULUS FOLIACEUS, as has been shewn by young Jurine. He accurately describes its anatomical structure and ecology. Edward Moncke, ed. see. p. 498. "Cauda setis duabus validissima, interjecta lamellosa."

**Family IV. Monophthalamis.**


**Family IX. Cyclope.** Müller, Latreille. Eye one. Cyclope. Body elongate, ovate-conical form. Antennea two or four. Feet six or ten. Sp. 1. Quadriconis. Antennea four; tail straight Quadriconis and bid. Monoculus quadriconis of Linne, Fabricius, Donovan. Cypris quadriconis of Müller and Latreille. Inhabits ditches and gently running streams of water. Amyrona nauplii of Müller, is merely the young of this species, or of some other.
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**Crustacea.**

**Sp. 2. Longiorinis.** Two very long antennae; tail bifid.

*Monoculus longiorinis,* Fabricius.

*Cypris longiorinis,* 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 *Cypris rubens,* *cercatus,* *claviger,* and *mulleri.* On the latter, a long and elaborate paper is given in the *Anales du Musée 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.**

10. Polyphemus. **Genus X. Polyphemus.** Head distinct from the thorax. One eye. Thorax distinct from the abdomen, which is oval and crustacean, compressed and crooked. Tail very much inflected. Two bifurcate processes extended horizontally. Eight short retuse feet, armed with setae.

*Oculus.*

Species 1. *Oculus.* Body greenish-grey, ears 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. Zoea. **Genus XI. Zoea.** Head indistinct, with two large golden spots. Two very long antennae; tail fins. The organs of generation situated at the base of the tail about the length of the body, composed of six or eight jointed lamellae. The anterior with two, the posterior with three lamella; The organ of generation, consisting of a double. In both sexes, the mouth has a hooked rostrum, in the male,) which are notched: those of the female 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 seizure; yet (Dr Shaw observes) I never observed those which I kept to attack any of the animalculles which were in the same water; on the contrary, *Monoculus conchaceus* of Linne very frequently assails 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 exuviae or slough being frequently found in the water in which these animalculles live.

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

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


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 shallow of rainwater which are so frequently seen in the spring and autumn, and in which the *Monoculus pulex* of Linne, 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 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 seizure; yet (Dr Shaw observes) I never observed those which I kept to attack any of the animalculles which were in the same water; on the contrary, *Monoculus conchaceus* of Linne very frequently assails 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 exuviae or slough being frequently found in the water in which these animalculles live. 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,
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 ears, 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 (Syst. Nat. 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 salinus of Linné, and Cancer paludosus of Otho Fabricius, may also belong to this genus.

**ORDER II. MALACOSTRACA.**

**FAMILY VII. CANCERIDES.**

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

**Genus XIII. Podophthalmus.** The peduncle, or footstalk, on which the eyes are placed, as long as the external angles of the shell. 


**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.

*Pelegrinus.* Sp. 1. *Pelegrinus.* 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 pelagicus,* Leach's MSS. "Shell with five teeth on each side; transverse much greater than the longitudinal diameter. *Orbit of the eye behind, with one fissure.* Gen. *Carcinus,* Leach's MSS.

**Menas.** Sp. 2. *Menas.* 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 and prove to be an accidental variety of this species; but Mr Montagu considers this as the male of *Portunus emarginatus.* Mr Leach thinks that *Cancer depurator* 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 Depurator 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 Newhaven, 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 Marmoreus very obsolete granulations; front with three equal well-reckoned teeth, sides with five; hands smooth; wrists with one sharp tooth within. *Cancer spinatus marmoreus,* Montagu's MSS.

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

The shell, when alive, most beautifully marbled with
Canceridae. 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. Portmannus, 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 lambdoidated.

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 Portmannus. Index.

Portmannus latipes, Leach’s MSS.

Cancer calyptrae, Fabric. and Latreille.

17. Granulata.

Granulata. Shell tuberculated, with the posterior angles of the shell arched, receiving the feet when contracted. Hands crested.

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.


Inhabit New Holland.

Calappa fornicata of 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 frequently lurking under fucis. Cancer granulatum of Linne; 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.


Inhabit America. Calappa angustata of Fabricius; Hepatus fasciatus Latreille.

18. Cancerus.

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. Cancer pagurus of Linne, Fabricius, Latreille, and Pennant.

The common crab of our markets, the Crab pagurus of French writers, is in season between Christmas and Easter, and about harvest, and is esteemed the most delicous 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 incisus, 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 Linne, which is an unknown species, as the description in the "Amoenitates Academicae" 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 hirtellus, with five dents on each side; claws somewhat muricata on the outside.

Inhabit the European ocean. In England it is esteemed a great rarity, having only been found hither to on the coasts of Devonshire. Cancer hirtellus, Pennant. Brittle crab.

Mus. Donovan, Leach, Montagu.

Sp. 4. Spinifrons. Shell smooth, with teeth on each spinifrons, side; the second and third teeth bifid; the front and claws with many spines.

Inhabit the European ocean.

Cancer spinifrons of Fabricius, Sup. Ent. Syst. p. 359; and of Latreille.

Sp. 5. Deniculatus. Shell tuberose, with the sides deniculatus; clypeus with five teeth, the middle one longest, the basilar ones shortest; arms angulata.

Inhabit England and Scotland.

Described and named by George Montagu, Esq. in the "Transactions of the Linnean 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 Ocypode, 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 warby; hands tuberculated with tufts of hair both above and below. Cancer uca of Linne; Ocypode uca of Latreille.

Inhabit 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
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, into the crevices 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 their 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 road before the greater part of the marchers. They are otherwise 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 they come to a vessel, 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 these rapacious invaders. The eggs that escape are hatched under the sand, and soon after millions at a time of these 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 sink in the flesh, and when 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 its descent in eager expectation of its 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 not eaten raw, but boiled for a short time, 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 redish, 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...
C U R S T A C E O L O G Y.

Cancer grapsus of Linné and Fabricius.

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

Sp. 2. Verris. Front of the shell with four folds; varius, 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 Cruentatus, smooth folds; fingers conical; wrists tuberculated and spiny.

Inhabits South America.

Grapsus cruentatus of Latreille.

Genus XXI. Plagusia. Eyes with a very short Plagusia, peduncle affixed to the anterior angles of the shell, genul, which is quadrangular. The anterior antennae fixed into two little foveolae on the upper part of the clypeus.

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

Inhabits the Indian ocean.

Plagusia clavimana of Latreille. Sela Mus. tom. 3. fig. 21.

Sp. 2. Depressa. Shell depressed, the sides on each Depressa, 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 ciliat- Squamosa, ed; 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 with- Semicylindrica, out 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. Pinotheres. 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 conscientious 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 pinnae hide,
And through the silent paths obscurely glides;
A stupid wretch, and void of thoughtful care,
He forms no hint, nor lays the tempting snare;
But the dull sluggard boots 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;
Nucleus. 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 planes sudden join,  
And twist the pressing sides the prey confines.  
Thus fed by mutual aid, the friendly pair  
Divide their gains, and all the plunder shares.

PlatXXI.

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

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

et des Ins. tom. vi. p. 83. pl. 48.

p. 153.

p. 35.

It is highly probable that Cancer pinnophylax and
Pinnotheres of Linne belong to this genus. They are
unknown to all the naturalists of the present time. See
Pinnotheres mytili, modioli, pinnæ, pism, 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. Oxyrhynchii.

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 de-
scribe it in his own words.

Cancer rhomboidalis in a dim and rough thorax,  
destitute of spines, but furnished with three large tu-
bercles 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, reti-
culated, 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 pro-
boscis to the end of the tail, a quarter of an inch. Found
among alcyonæ, sponges, fuci, and other marine substances.

Genus XXIII. Leucosia. Shell somewhat oval and
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.

Sp. 1. Nucleus. The clypeus with two teeth-like pro-
cesses 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 Linne; Leucosia nucleus of Fabri-
cius and Latreille.

Sp. 2. Cranio-laris. Shell granulated; anterior part de-
 Cranio-laris, pressed above, posterior margin wrinkled, without
spines; one tooth-like process in the middle of the cly-
peus; arms warty beneath; hands cylindrical and com-
pressed; fingers conical, the internal side with sharp
teeth.

Inhabits the shores of Malabar.

Cancer cranioliris of Linne; Leucosia cranioliris of Fabri-
cius and Latreille.

nerally 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
spiny. See Illyas Isocucus, in the Index.

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

Sp. 1. Horrida. Shell spinous, the upper surface very
Horrïda unequal and irregular; tail as if worm eaten; hand oval.
Inhabits the Asiatic Ocean.

Cancer horridus of Linne; Parthenope horrida of Fab-
ricius; Maia horrida of Latreille.

It is described by Petiver under the name of the
great warty crab; is the Rotakrabbe 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-
Girafla ed; hind claws very long and tuberculated beneath.

Inhabits the East Indies.

Cancer giraffe of Fabricius.

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

Habitat unknown.

Cancer muricatus of Fabricius. Enc. Syst.

Division II. Arms extended forwards, and not remark-
ably thick.

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

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

Inhabits the European seas, frequenting all our sandy
coasts, particularly the mouths of rivers, where it re-
sides in deep water, and is taken by the oyster dredgers,
who name it harper or spider crab; and, as they sup-
pose it injurious to the beds, always bring it ashore and
regularly remove it.

In the Index.

form, hairy, with three dents behind; clypeus with two
strong spines; hands elongated.

Maia armata of Latreille. Inoculus opilio of Fabricius.

Inhabits the Mediterranean Sea.

Sp. 6. Squinado. Shell rough; the front with two Squinado.
spines, the sides with six elongated conic spiny pro-
cesses; the arms scarcely longer than the following pair
of feet; hands cylindrical and smooth; fingers tuber-
culated.

3
Inhabits the Mediterranean Sea.

To this division belong Cancer asper, Dorsetensis, and \textit{Tetradon} of Pennant's British Zoology.

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

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

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

\textit{Maja sagittaria} of Latreille. \textit{Inachus sagittarius} of Fabricius.

Inhabits the island of Guadaloupe.


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.

** Fig. 4. CCCR. PLATE CCXXI. Fig. 4. and Appendix.

\textit{Cancer phalangium} of Pennant. \textit{Leptopodia phalangium}, Leach's MSS. See Plate CCXXI. Fig. 4. and Appendix.

** GENUS XXV. \textit{Macropodia}. Shell nearly triangular (which has been rostrated in figure); external double palpæ narrow and porrected: the second joint of the internal peduncle pretty long. Eyes distant: feet alike, the hinder ones neither spurious nor minute.

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

Cancer dodecos of Linné?

\textit{Inachus longirostris} of Fabricius. \textit{Macropus longirostris} of Latreille. \textit{Macropodia longirostris}, Leach's MSS.

** GENUS XXVI. \textit{Lithodes}. Shell nearly triangular and unequal, the anterior part rostrated. The external double palpæ with narrow cylindrical footstalks. Eyes near each other at their base, but diverging above the shell. Hinder feet minute and spurious.

** Sp. 1. \textit{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 mistaked by Pennant under \textit{Cancer horridus} of Linné, which we have already shown to belong to a distinct genus. \textit{Vid. Gen. 24. Maia horrida.}


\textit{Mus. Donovan, Montagu, Neill, Leach, Fleming, Sowerby.}

** GENUS XXVII. \textit{Corystes}. Shell somewhat oval. External antenna porrected, as long as the body. The second joint of the internal peduncle of the external double palpæ lengthened, and gradually narrowing towards the apex. Arms of the male three times the length of the body.

** Sp. 1. \textit{Corystes.} Thorax rugulose, with four teeth on each side. Wrists with two or three spines.

\textit{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.

\textit{Obs. Coristes longimanus} of Latreille is merely the male of this species.

** GENUS XXVIII. \textit{Mictyris}. Shell nearly oval, elevated, and truncated behind. Antennæ short. The basilar joint of the internal footstalk of the external double palpæ very large. Arms at the base of the wrist hilted.

** Sp. 1. \textit{Longicarpus}. Body nearly oval, thick, rather Longicarpus-narrower in front, truncated behind, soft, and of a pale pus, 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 \textit{Oxyopes}) 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 \textit{Ocyopides}) 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. \textit{Dorippe}. Shell somewhat oval, depressed, narrow before, and truncated. The four posterior feet dorsal; the last joints shortest.

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

\textit{Cancer lanatus} of Linné; \textit{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 foliately.

** GENUS XXX. \textit{Orthia}. The two hinder feet \textit{Oxyopus} alone formed for swimming.

** Sp. 1. \textit{Mamillaris}. \textit{Oxytoma mamillaris} of Fabricius and Latreille, on whose authority we have inserted it here. They refer to a figure in \textit{Herbst}, tab. 18. fig. 101. Inhabits the Indian Ocean.

** GENUS XXXI. \textit{Matuta}. All the feet, with the exception of the branchial, inserted in the same horizontal plane, and furnished for swimming.

** Sp. 1. \textit{Victrix}. Shell punctured on all sides, but not Victrix-straited behind.

\textit{Matuta victor} of Fabricius and Latreille.

Inhabits the Indian Ocean.

** Sp. 2. \textit{Herbsti}. Shell with impressed dots; deeply Herbsti-straited behind.

\textit{Matuta Herbsti}, 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 \textit{Von Krabben}, illustrated with correct plates.
CRUSTACEOLOGY.

Crustacea.

Genus XXXII. Ranina. All the feet, except the branchia 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.

Serrata.

Sp. 1. Serrata. Arms very spiny; anterior margin of the shell with toothed lobes.

Cancer serratus Linne and Fabricius; Ranina serrata of Latreille.

Inhabits the Indian Ocean.

Dorsipes.

Sp. 2. Dorsipes. Anterior margin of the shell with seven teeth; the hands with a few tooth-like processes.

Cancer dorsipes of Linne; Albunea dorsipes of Fabricius; Ranina dorsipes of Latreille.

Family IX. Paguril.

* Peduncle of the anterior antennae much shorter than the two articulated setae. Hands with one finger or none. Some of the feet formed for swimming, the last joint being compressed and leaf-shaped.

Genus XXXIII. Albunea. Hands with one finger. Hinger feet minute, filiform, and spurious; the last joint of the other feet compressed and hooked.

Symnista.


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.

Testudinaria.

Sp. 1. Testudinaria. 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 antennae somewhat bent backwards, ciliated with fine hair, and furnished with a thick peduncle. The exterior antennae bent inwards under the others, with its peduncle flattened and jointed, having an elongated hairy footstalk.

Remipes testudinaria, Latreille; Hippa adactyla of Fabricius?

Inhabits New Holland.

Hippa.

Genus XXXV. Hippa. Hands compressed, oval, and simple. The tarsus of the second and third pair of feet hastened; of the fourth triangular (rarely sub-quadrate); the posterior feet minute, spurious, and filiform.

Emeritus.

Sp. 1. Emeritus. Tail inflexed; the last joint oval.

Cancer emeritus of Linne? Hippa emeritus of Fabricius and Latreille.

Inhabits the Indian Seas.

** Peduncle of the interior antennae longer than the two articulated setae. Feet formed for walking. The tarsi conic. Hands compound, furnished with a finger and thumb.

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 tubulated 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 ne-rite as large as a nut, 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.

Sp. 1. Bernhardus. Arms hairy and rough, the right Bernhardus (generally) largest; hands somewhat heart-shaped; dus. fingers broad. The appendix of the exterior antenna somewhat produced.

Cancer bernhardus of Linne 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 xiphosura. 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.

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 sparsa (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.

Cancer lairo of Linne.

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.

Sp. 4. Diogenes. Hands rough and pubescent; left Diogenes, hand largest.


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.

" 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
**CRUSTACEOLOGY.**

**Crustacea.**—The 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 antagonists.

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 Mediterranean 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 König. 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 antenna not inserted behind the eye.

**St. Scyllarini.**

**Genus XXXVII. Scyllarus.** Exterior antenna with broad squamiform joints, resembling a crest. Eyes distant.

*Sp. 1. Latus.* Shell granulated; squamiform joint of the external antenna entire.

*Scyllarus latus* of Latreille, who supposes it to be distinct from *Scyllarina 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 antenna 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 antenna were taken away by Fabricius, we cannot pronounce, with that degree of certainty we could wish, this to be really sufficiently distinct from *Scyllarina latus*.

*Sp. 3. Arcutus.* Plates of the antenna aculeated and hairy; the anterior part of the shell in front, with five spines.


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 antenna 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 antennae serrated and ciliated. Inhabits our rocky coasts. It is rather smaller than *Astacus marinus*. 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.

**Genus XXXVIII. Palinurus.** External antenna very long and setaceous. Peduncle of the eye transversely broad.

*Sp. 1. Vulgaris.* Spines placed over the eyes, which are dentated below; the segments of the abdomen with a transverse impressed line, which is interrupted in the middle.

*Palinurus quadrirarvis* of Fabricius. *Palinurus vulgaris* of Latreille.


*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 antenna 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 basiliary joint of the internal footstalk of the external double palpi dilated.

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

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

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

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

**Cancer longicornis** of 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, *Platycia 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.

**Genus XL. Galathea.** Shell oval. The basillary joint of the internal peduncle of the external double pulpi, neither plain nor dilated on its internal margin.

**Strigosus.** 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 squamifera** of 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.

**Barnia.** Sp. 6. *Barnia*. Thorax anteriorly wrinkled and spiny; rostrum with three teeth; arms very long and slender.


Inhabits the European Ocean.

It was discovered in this country by the Rev. Mr. Croft, near Baff, 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.

**Observ.** 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*.)

"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. Amplicent.** Thorax smooth; rostrum very Amplicent-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 ciliate antennae, 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 1. Hands compound, that is furnished with a finger and thumb.

**Antenna** inserted under the eyes, furnished with two articulated setae.

**Genus XLII. Astacus.** Antenna inserted in nearly 41. *Astacus* the same transverse horizontal line; the peduncle of the external either supported by a small lamella or none. Six anterior feet compact; the anterior ones largest. The middle table of the swimming tail-fin broader at the base than at the apex.

In *A. gammarus* and *fleuretta*, the external antennae are simple, in *Nereis* 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 globular, 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 oblique spines. Cilia 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.


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
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 kreels) 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. The following 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 caught 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 knobbled or numb-claw, as the fishermen sometimes call it, is sometimes on the right side, and sometimes on the left indiscriminately. 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. It will never fail in the case 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 riper berries before they are deposited, and turn of a dark brown color. They are carried by the parent to the bottom of the sea, and submersed in the sandy bottom. When the ova first appear under her belly, they are the size of a goose quill, which enables them to draw its parts through the joints and narrow passages near the trunk. The new shell is quite membraneous 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 the 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 kreels, 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 the hoop itself. 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 Philo­sical 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. 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, after the boats of the fishermen.)\) "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 the entrance barely sufficient for their diameter 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 50,000 or 70,000 are yearly sent from Montrose alone. They are said to fear thunder, and to cast their claws on a great clip; 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 joyful 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,
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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 *astracum*.


Inhabits the rivers of Europe, especially such as have a clayey bottom. It is the common *crabo-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 water, which is then shot, or by the hand. Colour, when alive, dark brown approaching to black.

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 with smooth and short-haired spaces placed alternately.

*Cancer norvegicus* of Linne. *Astacus norvegicus* of Pennant. *Nephrops norvegicus* ico, 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*. Antenne inserted in nearly the same horizontal line. The four anterior feet compound, the first or front pair largest.

*Scabra*. Shell oval, sides compressed, and spiny behind with two longitudinal furrows, one on each side; these converge towards the posterior margin, and include another very deep groove. Tail cyndrical, 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 denticated; 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.

Genus XLIII. Upogeia. Antenne inserted in nearly the same horizontal line. Eyes pedunculated, and concealed under the maxillae. Abdomen composed of quadrate crustaceous joints. Anterior foot compound, being furnished with a very long moveable thumb; feet compressed, decreasing in size, the anterior being largest. Middle process of the tail nearly quadrangular, the apex being scarcely notched. Under part of the hands hairy, fingers very sharp; wrists and arms angulated, and set with hairs beneath and inside. Feet somewhat compressed. Extreme of the middle process of the caudal fin slightly notched; movable processes, with an elevated ridge, in the middle. Length two inches. Colour yellowish white, covered with minute yellow or orange spots.

*Upogeia stellata*, Montagu; *Upogeia stellata*, Leach's MSS.

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

Genus XLIV. Callianassa. Antenne placed in nearly the same horizontal line; the peduncle of the ex- antenna with four joints, or the four sets of appendages along the peduncle; the footstalk of the interior antennae with three joints, and a jointed seta a little longer than the peduncle. A large scale attached to the base of the internal antennae above. Ablomen 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.

*Callianassa subterrana*. Thorax smooth and membra- naceous, the anterior part crustaceous above. Claws nearly equal; the larger one very smooth, with the margin and fingers ornamented with tufts of hair; inner side of the thumb denticated; wrist triangulated, with the margins toothed, armed at the base with a hooked process; arm angulated, denticated 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 tarsy.

*Cancer astacus subterraneus*, Montagu, *Linn. 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 XL. Alpheus. The exterior antennae *, Al- phes*.

G. Attenuated 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.

* The anterior larger than the second pair of feet.

Sp. 1. *Avarus*. Hands unequal and disformed; torus *Avurus*.


The second pair of feet larger than the first.
CRUSTACEOLOGY.

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. Niterencus.* Rostrum without teeth.

*Crangon.* Anterior pair of feet 48. Crang. Anterior pair of feet on each side four; the four pair unequal and simple.

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

*Crangon vulgaris* of Fabricius and Latreille. Length one inch, or rather less.

**50. PENNEUS.** Pubescent, furnished with a movable thumb; the other four pair unequal and simple.

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

*Crangon vulgaris* of Fabricius and Latreille. Length one inch, or rather less.

**51. PALEMON.** Four anterior feet compound.

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

**52. SQUILLA.** Rostrum acute, and turning upwards; serrated above, armed with three teeth below.

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

*Crangon.* Middle process of the tail-fin deeply notched.

**5 E**
Crustacean 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 *Pseudos germarellus*, but on examination found that they not only differ in size, but most essentially in the middle process of the tail-fin. Length a third of an inch.

**Family XII. Squillarii.**

*Genus L. Squilla.* Interior antennae with three articulated setae. Two large arms. Ten feet, with an hooked hand; the other six simple.

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*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 Linne. Astacus mantis of Penant? Squilla mantis of Fabricius and Latreille.*

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

**Genus LI. Myysis.* Interior antennae with two articulated setae. Arms small. Twelve feet, all armed with a claw, and formed for swimming.

*设计理念.*


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. Gnathoni.**

*Genus LII. Gnathia.* Mouth with two strong porrected mandibles or jaws, concave above, convex below. Antennae 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 Astacini.

*设计理念.*

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

*Cancer maxillaris of Montagu. Gnathia termiteides, Leach's MSS.*

Inhabits the British Ocean, but is not common.

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

**Family XIV. Gammarini.**

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

*Genus LIII. Talitrus.* Anterior pair of feet larger than the second pair; no hands.

*设计理念.*

*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 antennae as long as the body; the last division with between thirty and forty small joints.

*Cancer locusta of Pennant and Guexin. Onicus locusta of Pallus. Gammarus locusta of Fabricius? Can-

**Genus LIV. Orchestia.** Two anterior pair furnished with a movable thumb, which is capable of being bent on the edge of the hand; second pair largest, having a compressed hand.

*设计理念.*

*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. CCXXI. The female wants the hands. See Plate CCXXI. Fig. 6.

*Pulex marinus of Baxter. Cancer gammarus of Montagu; Orchestes litoreus, Leach's MSS. Talitrus gammarus, 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 gammarus*; but as he quotes also the *Onicus gammarus* of Pallus, it still remains in some doubt.

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

**Genus LIV. Gammarus.** The four anterior feet furnished with a movable thumb, which is capable of being bent inwards on the hand. Abdomen with thirteen joints. Peduncle of the antennae with three joints.

*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.

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

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

This species is utterly inconstant of living in the sea, although we have the authority of Linne and many of his followers to the contrary; the truth is, that Linne 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
Inhabits the rocky shores near Plymouth in Devonshire.

*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 movable 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 excretion, until they are enabled to shift for themselves.

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 cínereous, 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.


*Caprella acanthifera*, Leach’s MSS.

Discovered in Devonshire, where it is not uncommon.

Genus LXI. *Panora*. Body depressed. Eyes situated on the vertex of the head. Antennae 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.

Celt. Sp. 1. *Celt*. Base of the fins with a process resembling 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 celts* of Linné; *Pycnogonum celti* of Fabricius; *Panaete celti*, Leach’s MSS.

Family XVII. *Apseudi*.

Genus LXII. *Apsides*. 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.


Cancer *gommatus talpa* of Montagu; *Apsides talpa*, Leach’s MSS.

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

Mus. Montagu, Leach.

ORDER III. *Myriapoda*.

Family XVIII. *Aseellides*.

I. The four antennæ very distinct.

Genus LXIII. *Aseillus*. Tail composed of one 63. *Aseillus*, piece, with two longitudinal foliaceous double-jointed lamellae, 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 cínereous, often spotted with *Vulgaris* grey or white.

Inhabit 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; *Idotes aquaticus* of Fabricius; *Entomos hieroglyphicus* of Klein; *Aseillus vulgaris* of Latreille.

Genus LXV. *Idotes*. Tail with two or three segments, and two longitudinal plates as in the genus *Aseillus*. The internal or middle antennæ composed of four joints, and placed somewhat above the exterior ones.

Genus *Stenosoma* of Leach.

** Body thickest in the middle. *Idotes*, Leach.

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

Inhabit the European Ocean.

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

** Body thickest in the middle. *Idotes*, Leach.

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

Inhabit the European Ocean.

*Oniscus estron* of Pennant.

Genus LXV. *Anthura*. Body linear; tail with six and 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.


Inhabit 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 suberote, with two smaller lateral ones on each side, which, when spread, give it a quinquepartate appearance; antennae 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, cloaked with cinerous on the sides."

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. Antennae setaceous and many-jointed, inserted one pair above the other, under the clypeus. Feet with strong, sharp nails.

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 Linne and Pallas; Cymothoa asilus of Fabricius and Latreille.

Genus LXVII. Spherooma. Tail composed of two segments; the last furnished with a double foliaceous appendage, placed on a common footstalk on each side. Body oval, capable of rolling into a globular form, composed of seven joints. Antennae 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.

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

Oniscus globator of Pallas; Cymothoa serrata of Fabricius; Spherooma 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, cinerous, very beautifully speckled with black.

Regianda. Sp. 2. Regianda. Body smooth; the anal segment rough, rounded at the apex; the sides obliquely truncated; the lamelae equal; the hind joints somewhat rounded.

Spherooma rugosum, 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 Spherooma 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 antennae. He has since observed it in very great plenty near the Ware-head, on the river Tamar, in Devon, where the water is but brackish; a curious contrast with the original habitat in the Atlantic!

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

Genus LXVIII. Neesia. Apex of the tail on each side with a single foliaceous appendage placed on a footstalk. Body oblong. Antennae 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 antennae 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 bidentata, Linnean Transactions.

Neesia bidentata, Leach's MSS.

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

Genus LXIX. Campepoea. Base of the tail armed with a bent foliaceous process on each side. Body composed of six joints. Antennae setaceous, the upper pair longest, with the peduncle composed of two visible joints; the intermediate space between the superior antennae very great.


Oniscus hirutus, Montagu, Lin. Trans. vol. vii. t. 6. Campepoea hirutus, 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 antennae 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.


Monocerus evagorum 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 (Palaeon 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 surprizing that 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 inhabiting the thoracic plate of Callianassa subterranea; and as we have never seen the species, we...
CRUSTACEOLOGY.

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

Oniscus convexus. 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. Antennae four, short; the outer pair longest, and only visible above. The two first joints of this body furnished with a long, flat, ear-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.

Inhabits the shores of the European ocean. Obs. This species is found under stones, in rotten wood, and is very common on the rocky coasts of Devonshire. It is nearly three times the size of L. oceanica, and only visible above. The two first joints of this body furnished with a long, flat, ear-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.

Inhabits the shores of the British Ocean.

Oniscus asellus. Of Cuvier and Fabricius. Obs. To this genus, Oniscus, the external antennae composed of a number of small articulations. A bident style, placed on a peduncle on the external antennae composed of a number of small articulations; styles of the tail equal, exserted; the footstalks narrow and elongated.

Ligia oceanica. Oniscus oceanicus, Fabricius. Obs. 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 skeleton.


Oniscus agilis of Panzer. 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 skeleton.


Sp. 2. Macrosoma. Body variegated with cinereous and white. Oniscus assimilis of Scopoli and Cuvier. 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 skeleton.

**Crustaceology.**

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**Oniscus armadillo** of Linné and Cuvier; *Armadillo vulgaris* of Latreille.

Inhabits the roots of trees and rocks all over Europe.

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

Its vulgar name is *Pill millipede*.

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

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

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

**Family XX. Julides.**

**Genus LXXVI. Glomeris.** Antennae inserted on the upper anterior margin of the head; the two basilar 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.*

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

Inhabits Britain, France, and Germany, under stones.


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

Inhabits the southern parts of France and Germany.

*Oniscus pastulatus* of Fabricius; *Oniscus armadillo* of Scopoli.

*Feet on each side twenty.*

*Cruxys, Leach’s MSS.*

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

Inhabits the ocean.

*Julus ovalis* of Linné, *Julus ovalis* of Fabricius, *Glomeris ovalis* of Latreille, *Cruxys ovalis* of 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 in entertaining this opinion; its economy, the number of legs, at once exclude it altogether from this genus; which, in Mr Leach’s manuscript, as above quoted, is considered as a distinct genus.

*Genus LXXVII. Julus. Antennae 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, serpentine, 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 CXXI. Fig. 9.*

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

**Sp. 7. Realiusi.** Body blackish; back with two *Realiusii* 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 Realiusi. Leach’s MSS.*

Discovered by a very assiduous entomologist, Richard Rawlinn, 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 Lavelston wood.

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

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*We have now most sincerely to lament the premature death of this gentleman, who, had he survived, would have proved one of the greatest ornamentals 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 stately appearance remained to his last moments.*
the segments laterally produced, bearing little spines; back with one longitudinal groove; each segment with two slight tubercules on the sides of the groove. 

Inhabits Devonshire, often occurring under stones. 

78. 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. 

Julia complanata of Linne and Fabricius; Julie aplane of De Geer, Polydesmus complanatus of Latreille. 

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

79. POLYXENUS. 

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

Lagurus. 


Scolopendra lagurus of Linne and Fabricius, Pollyxenus lagurus of Latreille. 

Inhabits Europe. Not yet observed in Britain.

Family XXI. SCOLOPENDRIDES. 

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

58. SCUTGERA. 

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

Coleopteratus. 

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

Genus CERMATIA of Illiger.

Julis 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.

Genus LXXXI. SCOLOPENDRA. Antennæ conico-quadrate, composed of many articulations, which are nearly conical. The inferior lip somewhat narrower than the superior, and bearing on the inner edge a short denticulated ridge, 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.

Obs. All the species of this genus have been considered as one by all authors, their characters being "Feet forty-two (at least), oculis octo," Linne's Systema Nat. 1685. 

In the 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 one 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. Spintipes. The segments rusty-brown; the spines, angles rounded; the antennæ, palpi, galeae, posterior margins of the segments, and feet, yellowish; all the feet (excepting the anterior pair) with small spines on their joints.

Scolopendra Spintipes. Leach's MSS. 

Habitat unknown. 

Described from a specimen preserved in the College Museum of Edinburgh. Length about 11 inches. The tip and base of the mandibulæ ferrugineous. 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 more or less pale. 

Habitat unknown. 

Mus. Dr Barclay. 

Scolopendra morsitans. Leach's MSS. 

*** Segments alternately oblong and transversely quadrate. 


Habitat unknown. 

Scolopendra inaequalis. Leach's MSS. 

Genus LXXXII. CRYPTOPS. Antennæ conico-sectaeros, with 17 globular sub-conical joints. Anterior portion of the 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. LITHOBUS. 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 coleopterata of Panzer is referable. Leach's MSS. translated. 

Sp. 1. Forficatus. The whole under lip deeply punctured, the dots impressed; feet testaceoust-yellow. 

Scolopendra forficata of Linne, Fabricius, and Latreille; Lithobius forficatus of Leach's MSS.
GEOPHILUS.

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

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

LITHOBIUS variegatus. 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.

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

LITHOBIUS lavilabrum, Leach's MSS.

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

GENUS LXXXIV. GEOPHILUS. Antennae filiform, composed of fourteen nearly equal joints.

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

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

Inhabitats 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.

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 Greek, a spider, and class, 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 antennae, are placed in the class ARACHNIDES; consequently, the orders, 1. Tetra- ptera, 2. Myriapoda, 3. Thysanura, 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.

Anatomical Character.

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

External Character.

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

ORDER I. PODOSOMA.

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. Oslera one on each side. Mandibles.

* See the Introduction to his Considerations générales sur l'Ordre naturel des Crustaces, des Arachnides, et des Insectes.
† Visible from the external openings.
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**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. Ovifera 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.

**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. Limnocharis.** 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.

* In the Appendix we have added two other genera to this tribe, viz., Nyereridia, which Latreille places with the Insecta, and a new genus, named by Dr Leach Ocypete.
Mandibles terminated by a simple hook or nail; abdomen connected closely with the thorax; anus with nipples.

1. Feet not formed for leaping.
2. 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 maxillae, nor prominent, but much longer than broad.

a. Mandibles projecting.
   Genus XXXVI. Mygale. Palpi inserted on the extremities of the maxillae.
   Genus VXVII. Atrypus. Palpi inserted towards the base of the maxillae. Lip quadrate, not prominent.
   Genus VXVIII. Eriodon. Palpi inserted towards the base of the maxillae; 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. Maxillae 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 pair of feet, 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 XXXII. Drassus. Maxillae 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. Maxillae 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 first, longest. Eyes not placed on a groove at the insertion of the palpi, they being inserted at the hinder side.
Genus XXXIV. Clubiona. Maxillae 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 in an arched and somewhat concentric manner; those of the hinder line disposed in pairs (geminated).
Genus XXXV. Aranea. Maxillae nearly straight, with a groove at the insertion of the palpi. Lip shorter than the maxillae. The four middle eyes disposed in a quadrate form, the lateral ones geminated.

a. Eyes not describing the segment of a circle.

b. Eyes describing the segment of a circle.
   Genus L. Ctenus. Maxillae straight; lip much broader than long; the first, and then the fourth pair of feet longest.
   Genus XLVII. Thomisus. Maxillae inclined; lip much broader than long; 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. Maxillae straight, and remarkably longer than the lip; eyes in four transverse lines.
   Genus XLIX. Storena. Maxillae inclined, much longer than the lip; eyes in three transverse lines.
   Genus L. Ctenus. Maxillae straight, and remarkably longer than the lip; eyes disposed in three transverse lines.

B.ym.
   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 LII. Araneus. The four middle eyes forming a quadrangle; on the outside of which the others are placed, as if forming another quadrangle to inclose them.
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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 LIV. Salticus. Eyes forming a horse-shoe or parabole open behind.

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. Cellulardia.

Observation. Besides the genera above defined, we shall, intermediate between Arachnides and Scorpiones, 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 hindermost 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 actually 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 hindermost 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 independant 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 Cellulardia Bassani, with the following generic characters: Head, thorax, and abdomen united; no eyes, antennae, palpi, nor proboscis; legs eight, the four posterior remote from the four anterior; feet unarm'd, 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 Cellulardiae, and be placed, as we have before mentioned, between the Mites and Tiques.

ORDER I. Podosoma.*

Family I. Nymphonides.


Phalangium grossipes. Linné.

Nympohon grossipes. Fabr. Latr.

Pycnogonum grossipes. Otho Fabricius, Miller.

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, (mijilli,) and sucks out the softer parts of the animal.


and hairy about the joints.

Phalangium aculeatum. Montagu.

Nympohon 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 Pycnogonum spinipes of Otho Fabricius and Gmelin, as has been supposed by Montagu, that species being referable to the following genus.

Family II. Phoxichilinides.


Phoxichilus spinipes. Latreille.

Pycnogonum spinipes. Otho Fabricius.

Phalangium spinipes. Gmelin.

Phalangium spinipes. Montagu.

Inhabits the Norwegian and British seas.

This species, which is certainly Phalangium spinipes 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 tides. The females of the first tribe are furnished with several 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 Balsemon; 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.
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ORDER II. ELEUTEROSOMATA.

FAMILY IV. ASTOMIDES.

A. Palpi and Rostrum very conspicuous.

Sp. 1. Phalangioides. Body oval, bright red, with an elevation in front, and two black eyes; rostrum somewhat conic, four-jointed, porrected, and as long as the rostrum.

B. With Mandibles.


Obs. To this genus, according to Latreille, all the trombidium hexapoda (six-legged trombidia) of Hermann, and the acarus autumnalis of Shaw's Naturalist's Miscellany, are referable.

Genus VI. ASTOMA. Latreille.

Mouth nearly obsolete. Body soft and oval. Feet very short.


II. Eight Feet.

FAMILY V. HYDRACHNIDES.

A. No mandibles.


B. With Mandibles.


B. With Mandibles.


Obs. Latreille, in his Genera Crustaceorum et Insectorum, says, he suspects the following Hydrachna of Muller, viz.: undulata, fuscata, maculata, umbra, to belong to the genus Elyas. This future observers must decide.

FAMILY VI. RICINIDES.

1. Eyes distinct. Body very soft and thickish, the dorsal skin not coraceous.

A. Palpi obscure.

Sp. 1. Passerinus. Third feet very thick.


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

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Acrachnides. E. teces 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. Schrank, Acrus exulcerans, Lam., and Acrus destructor of Schrank, (Enuermatio Insectorum Austriae, No. 1037.) and Acrus torosus of Hermann.


Acarus longirostris, of Hermann, appears not to be very distinct from the above species; p. 32. tab. 6. fig. 19. The antenna three-jointed, the last joint shortest: the second, by its subulate rostrum, antenne with two joints, the apex with one seta. They both inhabit mosses, and are red.


Note. Scirns longirostris of Hermann, appears to be not very distinct from the above species; p. 32. tab. 6. fig. 19. He mentions two other species, viz. Latriosorbo, and Setisirostris; the first is distinguished by its rostrum being shorter than the thorax; the antenna three-jointed, the last joint shortened: the second, by its subulate rostrum, antenna with two joints, the apex with one seta. They both inhabit mosses, and are of a red colour.


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A. Rostrum and palpi obscure.

B. Rostrum and palpi distinct.

C. Rostrum and palpi apparent.

D. Rostrum and palpi apparent, but the margins of the rostrum and palpi obscure.

E. Rostrum and palpi distinct, and the margins of the palpi and rostrum distinct.

F. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

G. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

H. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

I. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

J. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

K. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

L. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

M. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

N. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

O. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

P. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

Q. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

R. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

S. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

T. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

U. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

V. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

W. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

X. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

Y. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

Z. Rostrum and palpi distinct, and the margins of the palpi and rostrum obscure.

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.

Acrus vegians, De Geer, Shaw.

Acrus coleopterorum, jun. Donovan.

Uropaedia vegians, Latreille.

Inhabits sphericals, heteres, scarabæi, and aphytis.

This curious animal is found on most of the dung-feeding coleopterous insects. Donovan has figured this species for the young of Gammarus coleopterorum.

B. Rostrum and palpi distinct.


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. Fabr. Inclined to violet; body margined, the squamae very short, the sanguiferous vessels branched.

Acrus marginatus, Fabr. F. Coquebert.

Argas reflexus, Lam. Herm. A. Dobes.

Inhabit houses, sucking the blood of pigeons.

Observe. Latreille thinks it highly probable that Acrus niger of De Geer, (tom. 7. pi. 37. fig. 9.), and Rhynchophrum americannus of Hermann, (p. 71.) form an intermediate genus between Argas and the following genus Isodes. Should this be found correct, it might be named Rhynchophrum, which would prevent any useless confusion arising from synonyms.


Cynorhists, 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.

Isodes oblong-quadrate, depressed, obtuse, three-jointed; the basilar joint very small; the others nearly equal; the internal edge hollow.

Isodes horný, with three lamellae.

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 Ricinus, dorsum, and feet blackish red; the abdomen light red, with a few scattered villi, the sides margiitatis; the palpi free, or scarcely sheathing the haustellum.

Acrus ricinus, Lin. Fabr. Isodes ricinus, Lam.

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 punctuated or Sanguineus, dotted, with three impressed lines behind; the dorsum without any distinct mark on the anterior part.

Inhabit France, and is here given on the authority of that celebrated entomologist Latreille, who says it is rather smaller than the preceding species.
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Acarus coleopteratus. Linn.
Acarus marginatus. Linn.
Oribita alata. Latr.
Notaspis alata. Herm.

Inhabits mosses.
Sp. 5. Humeralis. Abdomen blackish-brown-red. Herm. and very smooth; the sides produced into a straight angular membranaceous process.
Notaspis Humeralis. Herm.
Orbita Humeralis. Latr.

** Abdomen somewhat quadrato, neither angulated nor winged.

Sp. 6. Tegeocrana. Abdomen oblong; the anterior Tegeo- margin with four white setae; the head covered by a na. triangular scutum; the lateral squama luculent.
Notaspis tegeocrana. Herm.
Oribita tegeocrana. Latr.

Inhabits mosses.
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 Nor- folk, near Cossey, by Mr Leach.
I. Palpi exerted and prominent.
A. No moveable appendage at the extremity of the palpi.

Oliv. Hermann.

Body soft; parts of the mouth naked.

Tarsi with a pedunculated vesical at the apex.
Acatus siro. Linn. Fabr.
Ciron du froncege. Geoff.
Acatus 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 * Acanus dimidiateus of Hermann may be this species.

Farina.

Sp. 2. Farina. Oblong and white; head reddish; feet conical, thicker, and of an equal length.
Acatus farina. Schrank. Latreille.

Acatus favorum. Hermann?

Observe. Are * Acatus lactus and Dysenteria, of Limén and Fabricius, distinct from Acatus farina of Latreille? They are probably merely the young of that species.

Farina.


Pulvilli vesicular at the apex of the tarsi.

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


Inhabits mosses. In this country it appears to be very rare, having been found but once in a wood in Nor- folk, near Cossey, by Mr Leach.

1. Palpi exerted and prominent.
1. No moveable appendage at the extremity of the palpi.


Pulvilli vesicular at the apex of the tarsi.

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Inhabits mosses. In this country it appears to be very rare, having been found but once in a wood in Nor- folk, near Cossey, by Mr Leach.

1. Palpi exerted and prominent.
1. No moveable appendage at the extremity of the palpi.


Pulvilli vesicular at the apex of the tarsi.

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


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 Geo-
Top. To this family, acarus testinarius 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.

Sp. 2. Marginatus. Oval, brown, and hairy; cori- Margina- aceous above and below; the sides of the abdomen be- ting alone membranaceous and white; the anterior feet nearly twice as long as the rest.
Acatus marginatus. Hermann.
Gammus marginalis. Latreille.

Inhabits dung and putrescent plants, where it fre- quently occurs. Latreille supposes * Acanus 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 Cras- ipes, toothed.
Acatus crassipes. Hermann.
Gammasus crassipes. Leach's MSS.

Obs. To this family, acarus testinarius of Hermann,
(top. 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 com- posing this family; and shall therefore give Latreille's idea on the species which he supposes to belong to it.

" Some few of the Trombidia and Acari of Hermann
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. Trimalcatus, 2. Miutilatum, 3. Parietium, (Acarus baccarum, Linn.) 4. Congericeum. 5. Lapidum, 6. Telerium. 7. Sociare of Hermann. Trombidium trimalcatus is figured by Rossi. Acarus Hirundinis, and Fesperititionis seem to form a distinct genus.

B. A movable appendage at the extremity of the palpi.


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.

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.

Erythreus phalangioides. Latreille.

Inhabits the ground, running with rapidity; is found throughout the greater part of Europe; found by Mr. Leach at Swansea.

GENUS XXI. Trombidium, Fabr. Ohn. Linn. 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 movable 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. Mandibulae two, compressed and horny, incurved at their base. Lip (labium) membranaceous, somewhat conic, sheathing the mandibulae. 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.

Sp. 1. Tinctorium. Body somewhat quadrate; blood red, immaculate, and covered by a velvety down; the hairs setaceous, elongate, and bearded.

Acarus tinctorius, Linne.


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.

Sp. 2. Holosericeum. Body somewhat quadrate; blood red, without spots, and tomentose; the down short, composed of hairs, or cylindrical papille, rounded or obtuse at their points.

Inhabits Europe; common, in the spring, on walls and trees in gardens. It is the Acarus holosericeus of Linnaeus; Trombidium holosericeum of Fabricius, Hermann, and Latreille.

Sp. 3. Fuliginosum. Body elongate-quadrate, of an immaculate obscure red colour, and tomentose; the down short, with bearded hairs.

Trombidium fuliginosum, Hermann, Latreille.

1. Eyes not placed on a common peduncle, but at some distance from each other.

GENUS XXII. Siro, Latreille.

Mouth naked, with two mandibles, which are double-jointed, cylindrical, and compressed, with their points armed with forceps placed between two long narrow maxillae, 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 tibiae and tarsi consisting of two joints; the last larger and clavate, being armed with a bent nail.


Siro rubens, Latreille.

Inhabits France, harbouring under moss at the roots of trees. Length about a line.

GENUS XXIII. Troglolus, Latr. PHALANGIUM, Linn.

Mouth situated in a cavity under the anterior part of the thorax, furnished with two mandibulae, palpi, and maxillae.

Mandibles cylindrical, elongate, compressed, double-jointed and knied, the last joint armed with a forceps, and nearly equal chela.

Palpi filiform, a little longer than the mandible, inserted at the internal lateral base of the maxillae, 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 hornv nail.

Maxillae 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 chela.

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 tibiae and tarsi 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.


Phalangium tricarinatum, Linne.

Phalangium carinarum, Fabricius.

Acarus nepafeorum, Scopoli.

Troglolus nepafeorum, 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.
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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 in colour; the spines of the eye-bearing tubercle very conspicuous; the chela conic and equal; the thumb or external chela moveable.

Palpi inserted at the base of the first maxillae, under the origin of the mandibles; 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.

Maxillae (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 lower 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 maxillae; 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 maxilla, 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 coxae composed of three, the tibiae 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; 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.
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.


Mouth provided with two mandibles and maxillae, with palp, 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 maxillae; 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.

Mandibulae horny and oval, externally convex, internally plain, bearing two chelae, which are very bare and porrect; the chelae more horny, very strong, and tooth-shaped, of the length of the mandibles, compressed; the apex very acute, arcuated, the internal tooth-shaped, of the length of the mandibles, compressed.

Mandibulae armed with five teeth; the first joint very short; the three following cylindrical, elongated; the last smallest.

Maxillae resembling coxae, 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 maxillae 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 laciniae, with two needle-like, moveable, vilose processes at their point.

Body elongate and filiform (the anterior pair excepted), double or twins being transversely connected at their base; the chelae 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 chelae bearing cirrhi; body villose; the palp and feet bearing elongated hairs resembling spines, taking their origin from a glandular elevation. Latreille says this genus is called Phazi by Hermann.
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 sheet 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 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 backward. 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 their numbers are so immense as to render the head of a pin insufficient 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 palpæ or teats, 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 issue 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 so large as a single papilla 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 glumly retired,
The villain spider lives, cunning and fierce,
Mixture abhorred! amid a mangled heap
Of corpses, in eager watch he sits,
O'er-looking all his wavering snare around.
Near the dire cell, the dreadless wanderer oft
Passes, as oft the rufian 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 fluttering wing,
And shriller sound, declared the treasure,
And ask the helping hospitable hand."

The weapons with which they seize their prey, is a pair of 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 prodigious 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 palpæ, 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
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 Lymonet, "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 kill 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, and 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 female, 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 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 maxillae, &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.

1. Feet not formed for leaping.

2. Palpi attached to the apex of the jaws.

3. The tarsus of the tarsus with very few or no teeth on the under side.

4. Mandibulæ without any apical rostellum; the under part of the last joint of the palpi and tarsi with a hairy scapula.

5. Aranea asculenta. Body covered with long and thick black hair; the tarsi and feet rust coloured; tarsi broad; nails not exserted.


7. Mygale de la Blondii. Covered with rust-coloured hair; blendii, the basilar joint of the tarsi (especially of the posterior feet) with visible black spines.

8. Mygale de la Blondii, Latreille. Inhabits the island of St Domingo, where it is called araignée-crate. 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.

9. Mygale de la Blondii. Covered with rust-coloured hair; blendii, the basilar joint of the tarsi (especially of the posterior feet) with visible black spines.

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14. Mygale de la Blondii, Latreille. Inhabits the island of St Domingo, where it is called araignée-crate. 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.

15. Mygale de la Blondii. Covered with rust-coloured hair; blendii, the basilar joint of the tarsi (especially of the posterior feet) with visible black spines.

16. Mygale de la Blondii, Latreille. Inhabits the island of St Domingo, where it is called araignée-crate. 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.

17. Mygale de la Blondii. Covered with rust-coloured hair; blendii, the basilar joint of the tarsi (especially of the posterior feet) with visible black spines.

18. Mygale de la Blondii, Latreille. Inhabits the island of St Domingo, where it is called araignée-crate. 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.

19. Mygale de la Blondii. Covered with rust-coloured hair; blendii, the basilar joint of the tarsi (especially of the posterior feet) with visible black spines.

20. Mygale de la Blondii, Latreille. Inhabits the island of St Domingo, where it is called araignée-crate. 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.

21. Mygale de la Blondii. Covered with rust-coloured hair; blendii, the basilar joint of the tarsi (especially of the posterior feet) with visible black spines.

22. Mygale de la Blondii, Latreille. Inhabits the island of St Domingo, where it is called araignée-crate. 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.

23. Mygale de la Blondii. Covered with rust-coloured hair; blendii, the basilar joint of the tarsi (especially of the posterior feet) with visible black spines.

24. Mygale de la Blondii, Latreille. Inhabits the island of St Domingo, where it is called araignée-crate. 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.
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Arachni- 

<table>
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<tr>
<th>Atypus faciata, Latreille.</th>
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Mandibles green; the breast and base of the feet brown.

** Atypus facieés, Walckenaer, p. 4. **

Said by Schaw, who has given a figure of this species, (tom. i. tab. 60. fig. 1.), to be a native of Ceylon.

** Apex of the mandibles furnished with a rostellum; palpi and tarsi without any scopo. **

Cementa- 

| Sp. 5. Cementaria. Rusty brown coloured; mandibles blackish, the border and carina of the thorax paler; each rostellum with five elongate nearly equal teeth. |

Mygale cementaria, Latrielle.

Mygale mucovae, Walckenaer, p. 5.

Inhabits the South of France. See Linnnean Transactions, vol. ii. pl. 17. fig. 4.

Sauvegesii. 

| Sp. 6. Sauvegesii. Obscure brown; each rostellum with four short unequal teeth. |

Aranea Sauvegesii, Rossi (Fauna Etruscana, tom. ii. tab. 9. fig. 1.)

Mygale pinniææ, Walckenaer, p. 5.

Mygale Sauvegesii, Latrielle.

Inhabits Corsica and Italy.

B. Nails of the tarsi armed with toothed combs below.

Calpeiana. 


Mygale calpeiana, Walckenaer, p. 5.

Mygale calpeiana, Latrielle.

Inhabits France.

To this division of the genus belong also Mygale notasiana of Walckenaer.

GENUS XXVII. ATYPUS, Latr. Oleteæ, Walck.

Aranæ, Ravn.

Sp. 1. Sulzeri. Black and shining; mandibles 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, externally acutely terminated.

Oletere disformæ, Walckenaer, p. 7.

Atypus sulzeri, Latrielle. (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 Latrielle in the Nouveau Dictionnaire d'Hist. Nat. tom. xxiv. table page 133. under the name Atypus, which having the right of priority over that given by Walckenaer, we have retained.

GENUS XXVIII. EHIONIDON, Latr. Missulæna, Walck. 

Lip linear exerted between the maxilla.

Palpi inserted in the external base of the maxilla.

EHIONOCERUS, Latrielle. 

Missulæna herseuse, Walckenaer.

GENUS XXX. SEGESTRIA, Latr. Wалк. ARANÆ, Ravn.

Linn. Fab. Rossi.

Maxillæ straight, longitudinal, with the base thickened, dilated externally, somewhat wedge-shaped, the middle longitudinally convex.

Lip elongate-quadrato, 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.

* Two other specimens have been since taken, one by Mr Standitch of Walworth, the other by Mr Tuther, optician, London.

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Sp. 1. Cellaria. Brownish-black, obscurely cinereous-silky; mandibles 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, Latrielle.

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. Senocaleula. Thorax blackish brown; abdomen oblong, grey, with a longitudinal band of black spots; feet light brown, with obscure fascia.

Aranea senocaleula, Linn. Fabr.

Segestria senocaleula, Walckenaer, p. 48; Fourcroy.

Segestria senocaleula, Latrielle.

Is found in the same situations as the last species. A good figure is given in Lister's work on British spiders, p. 74. Entomol. 24. fig. 54. 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, we probably would 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.


Fourcroy.

Marille 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, quadrato, 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. Mandibles and thorax bloody-red; the feet lighter coloured; abdomen very soft, greyish yellow, and silky.


Dryderea érythrina, Walckenaer, p. 47.

Dryderea érythrina, Latrielle, 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. 1419.) is merely a variety of this species.

Observation. To this genus, Aranea rubripes of Fabricius, (Entomologia Systematica, tom. ii. p. 426.), seems 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." Latrielle supposes this may be even the same species with erythrina, as we are unacquainted with the Fa-
CRUSTACEOLOGY.

Arachni-  
31. Filis-  

tata.

brian araneus rusticus, we cannot but hesitate on giving  
thing any idea of a decided opinion.

GENUS XXXI. FILISTATA, Latreille.

Eyes placed on an uneven elevation; the four ante-  
orior ones forming a semicircle opened in front; the  
four hinder ones disposed in pairs in nearly the same  
transverse straight line.

Maxilla 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.

\* Observation. This genus contains one species, Filis-  
tata testacea of Walckenaer's MSS., of which we have  
no description; it has lately been discovered in the  
environis of Marseilles.

GENUS XXXII. DRASSUS, Linn. \* Graphosa, Latt.

Palpi inserted under the lateral and external margin  
of the maxille towards the middle.

Maxilla longitudinal, arcuated, gradually becoming  
broader from the base towards the middle, somewhat  
concave internally, smooth exteriorly, the middle im-  
pressed, the points bent inwards above the lip, and  
obliquely truncated within.

Lip elongate, ovate-quadrize, or rather oval, the base  
transversely truncated, enclosing the maxille.

Feet, the fourth, then the first, and afterwards the  
second pair longest.

\* Lip somewhat oval; the external side of the max-  
ille much bent or arched.

Sp. 1. Melanogaster. Mandibules blackish; thorax  
and feet obscure brown, thighs light reddish brown;  
abdomen cinereous-brown and silky.

Drassus melanogaster, Latreille.

Drasse testacea, Walckenaer, p. 45.

Inhabits the South of France, under stones.

** Lip ovate quadrize.

Sp. 2. Fuscus. Obscure reddish-brown, silky, the  
abdomen blackish mouse coloured.

Drassus fuscus, Latreille.

Inhabits the South of France, south of stones.

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 firm-  
ly; when first hatched they are of a reddish colour.

Sp. 4. Relucens. Red, very smooth, like purple vel-  
et; abdomen black, with two transverse golden yellow  
lines.

Drasse brilliant, Walckenaer, p. 46.

Drassus relucens, Latreille.

Common in the south of France; it sometimes oc-  
curs in the neighbourhood of Paris.

GENUS XXXIII. CLUBIONA, Latreille.

Maxilla much inclined towards the lip, with no groove  
or 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 con-  
centric manner; those in the hinder line disposed in  
pairs.

\* Observation. This genus contains but one species  
described in the manuscripts of Walckenaer, who com-  
unicated the generic character to Latreille, who has  
published it in his last work, entitled, "Considerations  
générales sur l'ordre naturel des Crustacees, des Arach-  
nides et des Insectes."

with pale yellow; abdomen black, with five red spots,  
arranged 2, 2, 1 ; feet livid brown.

Inhabits Montpellier, building its web amongst the  
stones.

Clado durandi, Latreille.

GENUS XXXIV. CLUBIONA, Latreille.  
Aranea, Linné, De Geer.

Aranea, Linne, De Geer.

Maxilla straight and longitudinal; the basis a little  
dilated externally; the apex rounded and obliquely  
truncated on the inside.

Lip elongate, quadratic, gradually narrowing towards  
the point.

Feet, the first, and then the fourth pair, (or the con-  
trary), longest; then the second pair.

* The two outermost eyes on either side neither pla-  
ced very close together, nor inserted on a distinct pro-  
minence. The maxilla in all with an incrassated base;  
the fourth pair of feet, (or the con-  
trary), longest.

Sp. 1. Lapidicola. Thorax and mandibles pale Lapidicol  
reddish; feet very light red; abdomen ash-grey col-  
oured.

Clubione lapidicola, Walckenaer, p. 44.

Clubione pallidicola, Latreille.

Inhabits France and Britain under stones, construct-  
ing a somewhat globular nest of the size of a common  
mouse; in the centre of which are deposited a vast  
number of pale yellowish eggs, agglutinated into a  
spherical mass.

The mandibles of the male longer, and rather more  
half the length of the thorax; those of the female  
somewhat vertical.

Sp. 2. Tholocerica. Mandibles blackish; thorax pale Tholo-  
cerca livid green; abdomen reddish-black, covered with  
cia, mouse-coloured down; feet lighter than the thorax,  
the fourth pair longest.

Clubione lapidicola, Walckenaer, p. 44.

Clubione pallidicola, Latreille.

Aranea holosericea, Linné.

Aranea holosericea, Linné.

Inhabits Europe, getting under the bark of trees.

The four anterior feet nearly of the same length.

\* Observation. From the position of the eyes it is pro-  
bable 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 sometime placed  
close together. (Maxille not thickened at their base;  
the first and then the second pair of feet long-  
est.)

A. Maxille somewhat thickened at their base, and  
transversely impressed before the middle.

Sp. 3. Nutrix. Unguile black; thorax and man- Nutrix  
dibles light red; feet very light red; abdomen yel-  
lowish green, with an oblique longitudinal band.

Clubione nourris, Walckenaer, p. 43.

Clubione nourris, Latreille.

Inhabits the environs of Paris; common in a place  
called Sévres, building a nest amongst the leaves of  
the Eryngium campestre. The mandibles of the male  
stronger than those of the female.

B. Maxille not at all thickened at their base; front  
not transversely impressed.

Sp. 4. Atroca. Brown; feet pale; the tibiae with Atro-  
ca more obscure or dark spots; the middle of the back  
of the abdomen with a somewhat quadratic black spot mar-  
gined with yellow.
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Arachnides.

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.


Sp. 1. Labyrinthisca. Pale grey, inclining to red; the thorax on each side with a longitudinal black line; abdomen blackish, the thorax of the & Domestica.

Sp. 2. Domesticis. 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.

Domestica.

Agelena domestica. Walckenaer.
Agelena labyrinthisca. Walckenaer.

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 Schenck's Icones Insectorum, (tab. 29. fig. 12.; tab. 19, fig. 8.)

Agelena labyrinthisca. Latreille.

Aranea domestica.

Araignée domestique. De Geer.

Scytodes thoracica.

Scytodes thoracique. Walckenaer, page 79.

Scytodes thoracica. Latreille.

Inhabits houses in Paris. Is figured in the Genera Crustaceorum et Insectorum de Latreille, (tab. 5. fig. 4.)


Theridion Sisiphe. Walckenaer.

Theridion Sisiphe. Walckenaer.

Maxillae oblique and longitudinal, covering the sides of the lip; the base thickened, the apex internally obliquely truncated.

Lip somewhat quadratic, the base a little contracted.

Feel, the fourth, then the first, lastly the second pair longest.


Abdomen blackish-brown; the abdomen Aquatica, black and velvety, impressed with dorsal punctures.

Argyroneta aquatica. Linné, Fabricius.

Argyroneta aquatica. Walckenaer.

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 illustrous zoologist, Edward Donovan, Esq.

GENUS XXXVII. SCYTODES. Latreille, Walckenaer.

Aranea aquatica.

Araignée aquatique. Latreille.

Aranea aquatica.


Scytodes thoracica.

Genus Aranea.

Agelena labyrinthisca. Walckenaer.

Obs. The sexual distinctions are the same in this genus as in the Clubione.

Araignée atroce, De Geer.

Araignée atroce, De Geer.

De Geer.

Araignée atroce, De Geer.

Aranea atroce, De Geer.

Clubione atroce, Walckenaer.

Araignée atroce, De Geer.

Araignée atroce, De Geer.
**CRUSTACEOLOGY.**

*Arachnides.*

**Theridion Sisypium.** Latreille.

Inhabits Europe, nidificating under the prominences of pillars, or projections of walls.

Sp. 2. Redimium. Yellowish white; abdomen oval, with a rose-coloured dorsal ring.

*Aranea redimita.* Linné.

**Theridion couronné.** Walckenaer.

**Theridion redimium.** Latreille.

Inhabits plants. Abdomen often spotted. Latreille supposes Theridion unstable 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 618) is referable to the same variety.

**Pholcus phalangioides.** Latreille.

Inhabits the European houses; its body vibrates after the manner of *Tiphulare,* or gnats. It 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.

**Maxille 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. Waldenariaeus. Pale reddish yellow; thorax dark brown, 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 XI. TETRAGNATHA, Latr. Walck. Ara-**

**NEA. Linn. Fab. Ott.**

**Maxille straight, elongate and narrow; almost as broad as 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 Extensa, green, with the sides and two lines below yellowish; the middle below longitudinally black.

**Aranea extensa.** Linné, Fabricius.

**Tetragnatha extensa.** Latreille. (Gen. Crust. et Ins. i. p. 98.)

**Latrodectus 13-guttatus.** Latreille (Gen. Crust. et Ins. i. p. 98.)

**Latrodectus 13-guttatus.** Latreille. (Consid. Ord. Nat. &c.)

Inhabits Italy, and is common in the plains of that country.

**Genus XXXIX. PHOLCUS, Walch. Latr. ARANEAE, Geoff. Scopoli.**

**Maxille oblique, covering the sides of the lip, converging from the base to the apex; apex internally truncated.**

**Lip transversely quadrated, the lateral angles at the apex rounded and somewhat margined.**

**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 tibiae and thighs with a whitish, pale anulus or ring.

* *Phalangioides.* Walckenaer, page 80.

*Aranea phalangioides.* Scopoli.

*Aranea phalangioides.* Fourcroy. (Entomologia Paris, ii. 213.)
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Arachnida.

Sp. 1. Armata. Abdomen depressed and punctate, with four spines; the two lateral ones very short; the others very long and crooked.

Aranea armata, Fabricius. Epeira armata, Latr.

Inhabits the island St Domingo.

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.


Inhabits Cayenne.

b. Abdomen extended in breadth.

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.

A. Abdomen soft, without spines; generally elongated, and somewhat cylindrical, rounded at the base and apex; there are with two dorsal tubercles. The tibia, the third excepted, generally covered with tufts of hair.

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, Latreille.

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.


Inhabits the Cape of Good Hope.

Sp. 6. Umbrota. 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 ciliated black dorsal spots, placed in a double longitudinal series, with two undulating lines marked with pale, one on each side, conjoining behind.


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.

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.


Inhabits Europe; it is very common in gardens.

b. The lateral eyes somewhat geminated. The anterio? margin of the thorax about a third part of the breadth of the broadest part.

1. Sides of the abdomen entire.

Sp. 8. Fasciata. Thorax and base of the abdomen above silvery; abdomen ovate, with yellow bands and black transverse lines.


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.


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.

Sp. 10. Cucurbitina. Abdomen globose, of a yellowish green colour, somewhat spotted with black; a red spot behind.


Sp. 11. Calophylla. Thorax and feet pale livid yellowish calophyllow; the mandibles a triangular spot on the anterior part of the thorax, and spots on the feet blackish; abdomen globosely oval cinereous-grey; back with four impressed spots; and a large silvery-grey oval spot, truncated behind, sinuated 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.


Inhabits the caves of houses; is common in Paris.

Sp. 12. Menardi. Livid reddish; hinder part of Menardi; 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.

Epeira brun, Walckenaer. Epeira menardi, Latr.

Sp. 13. Conica. The lateral and inferior middle eyes Conica. resting on a common tubercle; thorax black; abdomen oval, 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.


Inhabits the European woods; is common in Britain.

Genus XLV. EPIPELUS, Walckenaer's MSS. Latr. 45. Epeis. Musciphora straight and longitudinal, the base a little nus, 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
47. Thomusus, Walck. Latr.


CR.0MM1TA. Sparassus, 4G. Mi-

GENUS XLVI. MICROMMATA, Cristatui. Lateral eyes placed in a tubercle, 2. Sp. Eteropoda

Figure is given; on this account we have retained it, Walckenaer, Latreille's name having the right of priority. Sparasse 6merandine, Microm-


ma smaragdina, Latr.

3. Alt e r o p o d a.

Maxilla 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.


Maxilla oblique, covering the sides of the lip, and in some degree converging; the internal apex truncated.

Lip somewhat oval, or nearly quadrilateral, 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 mandible is either perpendicular or somewhat inflected, in many conical, with very short nails. Latreille formerly included this genus under the titles Heteroptera and Mismumena. ** 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 maxilla, beyond the insertion of the palp; sometimes an equal breadth; distinctly and abruptly truncated; lip somewhat quadrate; hinder lateral eyes evident.

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. Thomius 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 maxilla shorter, much inflected above the level; palp of an equal breadth beyond the insertion of the palp; 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. Lecosisia. 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. Aranea regia, Fabr. Thomise lecosia, Walck. p. 36. Thomius lecosia, Latr.

Inhabits Tranquebar and the Isle of France.

Large; the mandibles obscure red with black umb. gles; an obsolete blackish spot at the base of the tibia; 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. Lameciius. The eyes of the front line largest, Lamare 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. Aranea nobilis? Fabr. Thomius Lameciius, Latr.

Inhabits the Isle of France. Was named by La-
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Arachnida.

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.

Venatorius.

Sp. 7. Fenusius. Yellowish-red; abdomen yellow-grey, clouded with ash-grey; feet spotted with black.


Inhabits the American islands.

C. Eyes disposed in a circle; tarsi scarcely hairy beneath; third pair of feet longer than the fourth.

Aranea leuipes, Linné, Fabr. Thomise tigris, Waleck.

p. 34. Thomsius tigrinus, Latr. T. leuipes, Leach's MSS.

45. OXYOPES, Latr. Sphinasus, Waleck.

Maxillae straight, longitudinal, and elongate, of an equal breadth nearly from base to apex; apex externally gradually arcuated or bent, internally obliquely truncated. Lip oblong-quadrangular.

Feet long and slender, the first pair longest, then the fourth and second, which are nearly equal; tarsi short; nails exserted, no brush beneath.

Oxyopes variegatus, Latr. Sphäse hiterophthalme, Waleck.


Inhabits France. The bag containing the eggs round, depressed, and white.

Lineatus.

Sp. 2. Lycosus. Mandibles, thorax, and feet, pale reddish-yellow; mandibles with a line; thorax with three longitudinal fasciae of a brown colour; abdomen obscurely brown, with longitudinal pale reddish-yellow lines; the dorsal line branched or forked before.

Oxyopes lineatus, Lattreille. (Genera Crust, et Insect. vol. i. plate 5, fig. 5.) Inhabits France.

49. Stracna.

Sp. 3. Lycosa. Mandibles, thorax, and feet, pale reddish-yellow; mandibles with a line; thorax with three longitudinal fasciae of a brown colour; abdomen obscurely brown, with longitudinal pale reddish-yellow lines; the dorsal line branched or forked before.

Oxyopes lineatus, Latreille. (Genera Crust. et Insect. vol. i. plate 5, fig. 5.) Inhabits France.

Maxillae straight, oval-quadrangular, 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 third; the nails of the tarsi exserted, with no brushes below.

Sp. 1. Mirabilis. Pale-reddish, covered with grey. Mandibles, thorax heart-shaped, anteriorly abruptly sloping; with the anterior angles and dorsal line whitish; abdomen conical, inclining to oval, back darker.


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 margined with white; thorax oval, truncate below; abdomen oval, feet green.

Dolomeö bordö, Waleck. Dolomeö marginatus, Latr.

Inhabits most woods and marshes in France, Germany, Sweden, and England.

II. Feet formed for leaping. Thorax not carinated.


Maxillae straight, longitudinal, and somewhat wedge-shaped; the apex broader, rounded externally, internally obliquely truncated.
C R U S T A C E O L O G Y.

Arachni-des. Lip nearly an equal sided triangle, the margins somewhat bent back on the point.

Feet strong and short; the fourth, the first, then the second, longest; the third rather shorter than the second pair.

Cinneberi-nus. Sp. 1. Cinneberrinus. 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 tibia of the four posterior feet, pale red.


Gen. LIV. Salticus, Letr.—Arantha, Linn. Fab. Latr. Inhabit the South of Europe; seen only once in Britain.

Salticus rumphii, Latr. Salticus sanguinolentus, Latr. Leach's MSS. Walekenaer.


Salticus formosus, Latr. Atte formosus. Aranea formosus, Rossi. Inhabit South America; is common in Jamaica, St Domingo, and other islands.


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Arachnides. The habitat is not known to us; but Latreille says it is an extra European species.

Scorpio maurus. Inhabits the south of Europe.

The genus BOPYRUS is to be altogether rejected from the title of MYRIAPODA, and has placed the ONISCIDES and ASELLIDES with the GASTERURI.

CLASS CRUSTACEA.

A. Shell with more than five teeth on each side.

B. Shell with five teeth on each side.

C. Shell much greater than the longitudinal; orbit of the eye behind, with two fissures. Eyes thicker than their peduncles.

D. Transverse diameter of the shell much greater than the longitudinal; orbit of the eye behind with one fissure; eyes not thicker than their peduncles.

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.

With gills or branchiae. | Class Crustacea.
-----|---------------------
With air tubes or tracheae. With a heart. Class Myriapoda.
Without a heart. Class Insecta.

The genus Homo 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.

when touched, it walks backwards, holding forwards its hands in a menacing attitude.

Scorpio maurus, Linne, Fabricius, and Latreille.

Araneidæ.

Cimicoides.

Chelifer cimicoides, Latr. 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 Onisium, a name proposed by Illiger for the genus as it now stands.

GENUS I. PODOPTHALMUS.

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.

** Peduncle of the eyes much shorter than the external angles of the shell.

A. Shell with more than five teeth on each side.

B. Shell with five teeth on each side.

C. Shell much greater than the longitudinal; orbit of the eye behind, with two fissures. Eyes thicker than their peduncles.

D. Transverse diameter of the shell much greater than the longitudinal; orbit of the eye behind with one fissure; eyes not thicker than their peduncles.

E. Longitudinal diameter of the shell equal, or nearly equal, to the transverse; or-
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 between 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, points naked, and scarcely acute.

Sp. 1. Pagenus. 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. Wrist with two tubercles above; shell on each side with four obtuse teeth, the inner ones 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 Spiniferus, 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 distinguishable 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 hippoc 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 not extending beyond the eyes; anterior feet very unequal.

GENUS II. UCA. Peduncle not extending beyond the eyes; anterior feet very unequal.

GENUS III. GONELAX. Peduncle not extending beyond the eyes; anterior feet equal.

** Shell truncate-heat-shaped; peduncle of the eyes much shorter than the anterior external angles of the shell.

GENUS IV. GECARCIUS. To the genus Ocypode, O. ceratophthalinus of this article are referable. To Uca, Cancer uca of Shaw's Nat. Miscellany, plate 388, belongs; the species to be named U. G. Angidata by him in the 11th vol. of the Lin. Trans.

Cancer pisum, Pennant, Fabricius, Linné.

Cancer mytilorum albus, Linne is referable.


Inhabits the shells of mussels and oysters; male unknown.

Sp. 2. Mytilus. (Female.) Shell oblong, soft, very smooth, with the front somewhat arcuate and entire; hands oblong, under the part a line of cilia, 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, Percnon, Fabricius, Linné.


To GONEPLAX.

Sp. 1. Pinnotheres. (Female.) Shell oblong, inclining to quadrate, soft, very smooth, the sides behind dilated; front straight, obscurely, somewhat notched; hands oblong; under parts, with the upper parts of the thighs of the other legs, having a ciliated line; thumb somewhat arcuate; abdomen very broad, the segments at the sides somewhat arcuate; hinder edge of the third and following joints notched in the middle; fifth segment broader, the last narrower than the preceding.


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-oblong, 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.


A single specimen of this species was taken by Dr Leach from Mytilus modiolus, dredged at Newhaven in the Frith of Firth, who, for a long time, considered it as the young of P. Pinnotheres. Male unknown.

Sp. 4. Var. albus. (Male.) Shell ovate-oblong, anteriorly somewhat narrower, convex very smooth, and solid; front produced, arcuate, and entire; hands ovate, beneath with two lines of cilia; fingers much arcuated; thighs above and below with a line of cilia; and sides of the abdomen broadly notched, the last joint abruptly narrower than the preceding, the apex narrower, rounded, and entire.
CRUSTACEOLOGY.

Appendix.

Cancer mytilarem fascus, Herbst.

Inhabits Mytilus modiolus. It 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. Pisum. 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?
Malacos. Britan. Pinnotheres, tab. B.


Discovered by Montagu in Mytilus modiolus, from the Salcombe estuary; since which, Mr Cranch has taken two females out of the same shell from the same situation.

Sp. 6. Medioli. (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.

Malacost. Brit. Pinnotheres, tab. B.

Discovered by Montagu in Mytilus modiolus, from the Kingsbridge estuary. Female unknown.

Mus. Montagu.

Genus Magalops. This genus includes Cancer rhomboïdalis, mentioned in a note, p. 394, but the characters have not yet been fully examined. Cancer graniarius of Herbst and Fabricius belong to this genus, if it be distinct from Montagu’s rhomboïdalis.

Genus Lucosia. See page 394. To this genus, Cancer tuscanus of Pennant, and Cancer tumefactus of Montagu. See Trans. vol. 9. Before this article, 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 Mai. 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. Maiia Horrida of this article, see page 394.

Sp. II. Maiia.

Sp. 1. Sp. and was considered as the doseusus of Linne by Montagu, in the seventh volume of the Linnean Transactions, when he describes his Cancer maxillaris.

Genus III. Hyas.

Sp. 1. Araneus. Maiia Araneus of this article, see p. 394.

Genus IV. Euryxene.

Sp. 1. Cancer Asper of Pennant. As full grown specimens have not yet occurred, we cannot give the specific characters.

Genus V. Blastus.


Genus VI. Pisa.


** Abdomen with six joints.

Genus I. Inachus. Exterior antennae, with the three first joints largest; eyes distinct; 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 tricupid, with equal teeth, middle one acute placed beneath; shell behind the rostrum, with four small equal tubercles disposed in a straight 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.


Inhabit the western coasts of England. It is common in 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 or opposite 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.


Genus II. Leptopodia. Exterior antennae, with the two first joints largest; eyes distinct; 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. Maiaphalangium, see p. 394, 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.

Inhabit the Plymouth Sound. First noticed as distinct by Dr Leach.

ORDER II. MACROURI.

Genus Penaeus. See page 401. To the generic character add pediform palpi, with five exserted joints, last joint obtuse and simple.

Genus Alpheus. See page 400. To this genus, Cancer spinosus of Sowerby, described in the British Miscel­

nary, is referable. The pediform palpi with three ex­serted joints, the last joint furnished with spines.

Sp. 2. Triloculata. Back of the thorax with three grooves; rostrum turning downwards, with two teeth beneath and many above.

Penaeus trisulcatus, Leach, Malacos. Brit. Penaeus, tab. A.

Mus. Sowerby.

Discovered in Anglesea by the Rev. H. Davies, who sent it to Mr Sowerby.

Genus Hippolyte. Superior antennæ with two setæ; the lower setæ largest, the upper compressed; pediform
CRUSTACEOLOGY.

Appendix.

Palpi, with three exerted joints, the last spiniferous; four anterior feet, didactyle, the anterior pair shortest and thickest; nails of other feet spinus; third joint of abdomen gibbose above.

Observe. To this genus Cancer astacus gibbosus of Montagu, already referred to in the note after Penaeus, page 401, belongs.

Sp. 1. Varis. Rostrum strait, 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 varius; Leach, Mem. Wern. Soc. vol. ii.

There are other species which are not well understood.

Gen. Pandalus. Superior antennae with two sets, 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 gibbose above; pediform palpi, with three exerted joints, the last acuminate and spinigerous.

Sp. 1. Montagi. Rostrum turning upwards, with many teeth above and the apex emarginate, with six teeth beneath; antennae ringed with white and red alternately.

Pandalus Montagi, Leach, Malacos. Brit. Pandal. Tab. A. named in honour of the first discoverer, Montagu, by whom it was called Astacus maculosus. The Rev. J. Fleming took this species in Zetland, whose successful labours in that country speak more than we can do in words.

Gen. Palaemon. 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 antennae with three sets.

Observe. We can correct an error in nomenclature, which we have lately discovered.

Sp. 1. Serratu. Rostrum strait, with from six to eight teeth, and the apex notched; beneath with from four to six teeth.

Astacus serratus of Pennant. Palaemon squilla of Latreille; and this article, page 401. Palaemon serratus of Pallas, so near resemble to a distinct genus, from his description, if it be correct.

Sp. 2. Squilla. Rostrum strait, with from seven to eight teeth above, and two to three beneath.

Cancer squilla, of Linne.

Is very common on the Devonshire coast; has the same colour as P. serratus, but spaws at a different season. A little shorter than the preceding species.

Sp. 3. Varian. The rostrum strait, 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. Palaemon. Page 401. B. Anterior larger than the second pair of feet; pediform palpi, with joint simple and acuminate longer than the preceding; superior antennae with three sets.


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. ORCHESTIA.

Antennæ four jointed, the last joint composed of several minute joints; the upper ones very short, shorter than the peduncle of the under ones.


Sp. 1. Locusta. Dr Leach has discovered T. littorialis 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. DEXAMERIDE.

Antennæ three-jointed, the last joint composed of several other minute articulations; upper ones longest.

Genus III. Dexamene. Four anterior feet nearly equal; hands subovate, compressed, and filiform.


** Anterior pair of feet didactyle; second pair monodactyle.

Genus IV. Leucothoe. Thumb of anterior feet with two joints; second pair with a compressed hand, furnished with a curved thumb.


FAMILY III. GAMMARIDE.

Last joint of the antennæ composed of several minute articulations; upper pair longest, four jointed; under ones five jointed, without fasciculi of spinules.

** 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.


Genus VI. Menia. Second pair of feet with a large compressed hand and single thumb; last joint of the antennæ bifid.


** 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 cilia of spines.

Contains Gammarus pulex, locusta, and camylops of this article, page 402 and 403.

Genus VIII. Ampithoe. Superior antennæ, without a seta at the base of the last joint; back of the tail without fasciculi of spines.


Genus IX. Pherusa.


FAMILY IV. PODOCERIDE.

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. Corophium. Body elongate, ten-jointed; tail three-jointed, the first joint and the second with a bifid style; the last with two moveable papilæ; 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 406.
CRUSTACEOLOGY.

GENUS XI. PODOCERUS. Eyes hemispherical and somewhat prominent; four anterior feet didactyle, anterior pair smallest with an elongate-subbute hand; second pair with an ovate hand, and the internal side nearly straight.


Podocerus variegatus. Leach's MSS.

Inhabits the rocky shores of Devon, walking about on fuci and corallines with its antenna 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. a. Internal edge of the hand of the second pair of feet with an elongated tooth at the base.

Var. b. Internal edge of the second hand with three teeth.


Inhabits fuscous fuci on the Devonshire coast every where. White painted with red.

Sp. 2. Pedetes. Hand of the second pair with the internal edge having a lunar notch.


Received through Mr Stevenson's kindness from the Bell Rock, in the German Sea.

Cancer gammarus jucatus 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. CAPRELLIDEE.

This includes our family Caprellina, to which we can add another genus, differing from Caprella in having true legs instead of the gelatinous fine-like legs, which is nayed.

Gen. Proto.


TRIBE V. APSEUDIDES.

Comprehending our family Apseudii, p. 404.

TRIBE VI. ASELLIDEE.

Antennae four, distinct; last segment of the tail long.

Family I. Anthuride.

Last segment of the tail very short, the last narrow, elongate, with two elongate lamellae on each side; antennae nearly equal, inserted one behind the other in nearly an horizontal line.

Genus II. Anthura. See Genus LXV.

Family II. Cymothoide.

Last segment of the tail with one or two appendages on each side; antennae placed in pairs, one above the other.

Stirps 1. Last segment of the tail on each side with a single appendage.

Stirps III. Campecopea. See Genus LXXIX.

Genus IV. Nesae. See Genus LXVIII.

Stirps 2. Last segment of the tail with two appendages on each side.

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* Upper antennae 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.


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. Spheroena. 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. 2. RugicauHa. Add, "foliaceous lamellae not serrated externally."

Sp. 3. Hookeri. Last joint of the tail with two oblong obsolete tubercles.


Discovered by Mr W. J. Hooker on the Norfolk coast.

** Peduncle of upper antennae not very large.

Genus VIII. Cymothoe. Head narrower than 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 on each side at the base.


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.


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. Aseilide.

Last segment of the tail very large; middle antennae very short; external antennae half the length of the body, or more.

Stirps 1. Tail with two styles at the apex; antennae filiform.

Genus X. Idota. External antennae half the length of the body, or scarcely longer, the third and fourth joints equal; body ovate.


Sp. 2. Estrum, see p. 404.

Genus XI. Stenosoma. External antennae longer than the body, the third longer than the fourth joint; body linear.


Idota hectica of this article. See page 404.


Appendix.

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Genus XXIV. Polydesmus. See Gen. LXXVIII. Appendix.

Stirps 2. Antennae inserted beneath the anterior margin of the head.

Genus XXV. Polyxenus. See Gen. LXXIX.

ORDER II. SYNGNATHA.

Family I. Scutigeridae.

Segments of the body bearing four feet.

Genus XXVI. Scutigera. See Gen. LXXX.

Family II. Scolopendrae.

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 arranged in a more perfect manner; we can add one new genus, and the genus Nycteribia of Latreille is referable to this division, although he has placed it with the insects.

HEXAPODA.

Tribe I. Cephalostoma.

Mouth situated in the head.

Family I. Phylumorhynchidae.

Mouth not readily to be seen.

Genus I. Caris. See Gen. IV.

Genus II. Leptus. See Gen. V.

Genus III. Ocypete. Mouth rostriform, not easily to be seen. The upper part anteriorly, as if divided into two parts by a transverse line; the anterior division a little narrower, and bearing the mouth, eyes, and four anterior feet. Two eyes on each side close to one another, prominent, (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 rostrum of the mouth at least.


Dr Leach took no less than sixteen specimens of this interesting little parasite, from one tipularous insect in Devon.

Family II. Aphlophonchidae.

Mouth hidden.

Genus IV. Astoma. See Gen. VI. of this article.

Tribe II. Notostoma.

Mouth placed on the back.


Phtiridium. Hermann.

Celeryips, Montagu, Lin. Trans. vol. ix.

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