

APPENDIX.

On the Classification of the Crustacea Choristopoda or Tetrade- capoda; by JAMES D. DANA.

THE term Choristopoda, applied to the Tetrade-capods, alludes to the subdivision of the thorax into segments, each devoted to a separate pair of legs; this is a prominent peculiarity of the species, distinguishing them from all the Podophthalmia, and with rare exceptions from the Entomostraca.

This division of Crustacea is subdivided by Latreille and other subsequent authors into three groups, the *Amphipoda*, *Læmipoda* and *Isopoda*. Krøyer has suggested that the Læmipods are essentially Amphipods in structure, and his investigations have shown that in the only important distinction between them, that based upon the abdomen, the two groups are united by gradual transitions. In the organs of the mouth, they are the same,—also in having thoracic branchial appendages and in the position of the thoracic legs; and moreover the abdominal appendages conform to the same type, as is seen when the abdomen in the Caprellidæ is partly elongated, as in the genus *Cercops* of Krøyer.

Rejecting the division Læmipoda, the number of tribes is reduced to two. There is however a third tribe, which hitherto has not been recognized. It is intermediate in its characteristics between the Amphipods and Isopods.

The AMPHIPODA are uniformly characterized by having—

1. The three posterior pairs of thoracic legs thrown backward and more or less obliquely outward, and constituting one series, while the four anterior pairs are thrown forward and outward, in another series; this arrangement may be represented by the figures 4 : 3, (or 2+2 : 3, as the four pairs of the first series are often in two sets of two pairs each).
2. The branchial appendages thoracic.
3. The abdominal members in two sets, the three anterior pairs subnatatory, the three posterior styliform—an arrangement represented by the figures 3 : 3.

The true ISOPODA, on the contrary, have—

1. The four posterior pairs of thoracic legs in the backward series, and three anterior pairs in the forward series—3 : 4.
2. The branchial organs abdominal.
3. The abdominal members in two sets, the 5 anterior pairs branchial (the first sometimes operculiform), and only the last styliform—5 : 1.

These are two distinct types of structure of fundamental character; and any species which do not partake of these peculiarities are inter-

mediate forms and are naturally arranged in a separate group. These constitute the tribe here named

The ANISOPODA.

1. Like *Amphipoda*, the three posterior pairs of thoracic legs are in one series, and the four anterior in a different series or usually in sets of two pairs each;—4 (or 2+2) : 3.
2. Like *Isopoda*, the three posterior pairs of abdominal members are not styliform, only the last pair being of this character; the branchial organs are abdominal and not thoracic, with a rare exception.

These are constant characteristics of the whole group. Although strongly *Amphipodan*, the species have in general more external resemblance to the *Isopods*; yet the intermediate character of some genera is so obvious that they have been arranged in the former group by one author and in the latter by another.

The genera that pertain to this tribe, Anisopoda, are the following: *Arcturus* and the allied *Anthura*, *Tanais*, *Apsæudes*, *Rhæa*, *Praniza*, *Anceus*, *Serolis*, *Bopyrus* and allied. Each of the larger subdivisions of the *Isopoda*, as laid down by Edwards, affords one or more genera, and they are genera which in his system are in some instances marked off as anomalous in character.

In *Arcturus* and *Anthura*, the thoracic members have the Amphipod character, the series being 4 (or 2+2) : 3, and not 3 : 4 as in the *Isopods*. The abdominal appendages are like those of *Idotea*.

In *Tanais*, there is the same arrangement. The abdominal appendages are *Isopodan* in being characterized by the series 5 : 1, but the 5 anterior are elongated and subnatatory, the abdomen is more flexibly articulated, approximating to the *Amphipods*; the 6th pair is a pair of stylets. *Apsæudes* and *Rhæa* are closely like *Tanais*, and actually more resemble *Amphipods* than *Isopods*. The abdomen is more elongated, and differs from the *Amphipodan* abdomen mainly in having but one pair of stylets with 5 pairs of subnatatories instead of three of stylets and three of natatories.

Praniza and *Anceus* have the thoracic legs *Amphipodan* in their arrangement. The abdomen in *Praniza* is considerably elongated and flexible, approaching the *Amphipodan*; but the arrangement of its appendages is *Isopodan*.

In *Serolis*, although the general aspect of the species is strikingly *Isopodan*, the arrangement of the thoracic legs is *Amphipodan*. Further than this, the abdomen is partly *Amphipodan*, for instead of the series 5 : 1, it has the series 3 : 3; yet while the 3 anterior pairs are natatory as in the *Amphipoda*, the next two, instead of being styliform, like the last, are branchial (one opercular to the other), and in this particular they are *Isopodan*.

In the *Bopyri*, the thoracic legs are so arranged in a single continuous series, that it is difficult to make out the series 4 : 3 or 3 : 4. Yet in some figures, the former (the *Amphipodan*) arrangement is indicated. The males are closely like *Tanais* in some instances, both in the length of the abdomen, its free articulations and its appendages.* In a female not adult of the *Bopyrus abdominalis*, figured by Kröyer,† all the tho-

* See Kröyer, in Voy. Scand., pl. 28, fig. 1 A., *Dajus Mysidis*. † Ibid. pl. 29, fig. 11.

racic legs of one side are obsolete excepting the 3 posterior, a fact pointing to the Amphipod arrangement 4:3. Rathke's figure of the "*Phryxus Hippolytes*"* represents a male with the 3 posterior legs either side thrown backward and the 4 anterior forward, confirming the same view.

In *Ione*, there are *thoracic* branchial appendages, which is a wide divergence from the Isopoda. In view of these facts, we conclude that the Bopyri are properly Anisopods. The resemblance in habit to the Cymothoidæ is no objection, for we find this habit also in the Cyami, species still more remote. In fact, the male Bopyri show that the species in all essential points of structure, are nearest to *Jæra* and *Tanais*. Moreover the *Jæra* are mostly parasitic.

The genera *Crossurus*, and *Liriope* of Rathke† are near *Tanais*, though also related in form to male Bopyri. In *Liriope* the thoracic legs are grouped as in *Tanais*, and the abdominal appendages are subnatatory or nearly Amphipodan in structure, although, like *Tanais*, diverse from true Amphipods in having 5 pairs subnatatory, and only one pair of stylets. *Liriope* is referred to the Amphipoda by Rathke. *Cryptothir* is the name of another related genus, a species of which was found by the author in the cavity of a living barnacle (*Creusia*).

We therefore adopt as the grand divisions of the Choristopoda, the three tribes, ISOPODA, ANISOPODA and AMPHIPODA.

It is an important fact, the basis of a philosophical principle, that the most sluggish and most stupid of the Decapods are found in the transition group, *Anomoura*. So in the Tetradeapods, the transition group, *Anisopoda*, contains those species of the order that are lowest in activity and structural perfection; for the Bopyri, the females especially, when mature, are nearly memberless, motionless and senseless.

The *Isopoda* seem to have the same relation to the *Amphipoda* that the *Brachyura* have to the *Macroura*, and are the higher in rank.

Tribe I. *Isopoda*.—The *Isopoda* thus stripped of genera that are not properly of the tribe, are naturally divided into three subtribes, as follows:—

Subtribus I. IDOTÆIDEA.—Appendices abdominales duæ posticæ bene operculiformes, appendices alias optime tegentes.

Subtribus II. ONISCOIDEA.—Appendices abdominales duæ posticæ styliformes et non operculiformes, fere terminales, raro obsoletæ.

Subtribus III. CYMOTHOIDEA.—Appendices abdominales duæ posticæ lamellatæ, apud abdominis latera dispositæ.

Tribe 2. *Anisopoda*.—Among the *Anisopoda*, we find the three subtribes of the *Isopoda* represented. Allied to the *Idotæidea*, there are *Arcturus*, *Leachia*, *Anthura*; allied to the *Oniscoidea*, the genera *Tanais*, *Apseudes*, *Bopyrus* and others related; allied to the *Cymothoidea*, the genera *Serolis*, *Praniza*, &c. *Praniza* is an aberrant form, abnormal in the number of its legs. The three grand divisions are hence as follows:—

Subtribus I. SEROLIDEA, vel ANISOPODA CYMOTHOICA.—Appendices duæ posticæ abdominales lamellatæ, apud abdominis latera dispositæ.

* Fauna Norwegens, pl. 2, f. 3.

† Fauna Norwegens, pp. 35 and 60, pl. 1.

Subtribus II. ARCTURIDÆ, vel ANISOPODA IDOTÆICA.—Appendices duæ posticæ abdominales lamellatæ et bene operculiformes, appendices branchiales tegentes.

Subtribus III. TANAIDEA, vel ANISOPODA ONISCICA.—Appendices duæ posticæ abdominales plus minusve styliformes, subterminales, interdum obsoletæ.

Tribe 3. *Amphipoda*.—The Amphipoda contain two prominent divisions, distinguished by the organs of the mouth, the eyes and general habit, the Gammarus and Hyperia sections, as laid down by Edwards. The addition of the Læmipoda to the Amphipoda introduces a third division. The sections are hence:—

Subtribus I. CAPRELLIDEA.—Maxillipedes elongati, palpiformes. Caput oculique mediocres. Abdomen obsolescens.

Subtribus II. GAMMARIDEA.—Maxillipedes elongati, palpiformes. Caput oculique mediocres. Abdomen appendicibus sex natatoriis sexque styliformibus instructum.

Subtribus III. HYPERIDEA.—Maxillipedes abbreviati, lamellati, operculiformes. Caput grande, oculorum corneis plerumque tectum. Appendices abdominales ac in *Gammarideis*, latius lamellatæ.

The Caprellidea have the habit of certain of the Anisopoda, and their short abdomen calls to mind the Isopoda. They therefore properly stand first among the Amphipoda. The Caprellids like the species of Arcturus and Tanais, cling and stand upon seaweeds, etc., by their six hinder legs, while the body and the other legs are extended, for the purpose of capturing their food and conveying it to the mouth.

In the following synopsis of the Families, Subfamilies and Genera, some new genera are included, discovered by the author in the course of the cruise of the Exploring Expedition under Capt. Wilkes.

TRIBUS I.

ISOPODA.

Subtribus I. IDOTÆIDEA.*

Fam. I. IDOTÆIDÆ.

Pedes fere consimiles, plus minusve ambulatorii.

G. 1. IDOTÆA, *Fabr.*—Antennæ externæ longiores, flagello multiarticulato confectæ.

G. 2. EDOTEA, *Guerin.*—Antennæ externæ internis parce longiores, flagello pauci-articulato confectæ, basi paulo longiore quam basis internarum.

G. 3. ERICHSONIA, *Dana.*—Antennæ externæ internis multo longiores, geniculatæ, 6-articulatæ, flagello carentes. Pedes subæqui consimiles.

G. 4. CLEANTIS, *Dana.*—Antennæ externæ multo longiores, 5-6-articulatæ, non geniculatæ, flagello carentes. Pedes 4ti 3tiis valde breviores, et 4ti 5ti 6ti 7mi longitudine sensim increscentes. Abdominis opercula laminam appendiculatam ad articulationem gerentia.

G. 5. EPELYS, *Dana.*—Antennæ breves, longitudine subæquæ; externæ flagello carentes, non geniculatæ. Pedes subæqui.

Fam. 2. CHÆTILIDÆ.

Pedes 6ti longissimi, setiformes et multi-articulati.

G. 1. CHÆTILIA, *Dana.*—Antennæ 1mæ longiores, superiores, 2dæ flagello multi-articulato confectæ. Pedes 7mi breves, non unguiculati. Abdominis opercula laminam appendiculatam ad articulationem gerentia.

* The genera *Erichsonia*, *Cleantis*, *Epelys* and *Chætilia*, are described by the author in this Journal, [2.] viii, 424, 1849.

Subtribus II. ONISCOIDEA.

Fam. I. ARMADILLIDÆ.*

Corpus bene convexum, stricte articulatam. Abdomen multi-articulatum, segmento ultimo parvo. Appendices caudales† ultra abdomen non exsertæ, lamellatæ. Mandibulæ non palpigeræ. Antennæ internæ inconspicuæ.

Subfam. 1. TYLINÆ.‡—Appendices caudales infra abdominis segmentum posticum celatæ et operculiformes.

G. 1. TYLUS, Latreille.

Subfam. 2. ARMADILLINÆ.§—Appendices caudales inter duo abdominis segmenta postica partim visæ.

G. 1. ARMADILLO,|| Latr., partim, Brandt, Edw.—Basis appendicum caudalium grandis, ramo interno parvulo, altero obsoleto.

G. 2. SPHERILLO, Dana.—Basis appendicum caudalium grandis, ramo interno parvulo, externo parvulo, in latere basis interiore versus apicem insito.

G. 3. ARMADILLIDIUM,¶ Brandt.—Basis appendicum caudalium brevis, ramo externo lato, terminali, interno parvulo.

G. 4. DIPLOEXOCHUS, Brandt.—Armadilloni appendicibus caudalibus similis. Segmenta thoracis processu horizontali utrinque armata.

Fam. II. ONISCIDÆ.

Corpus sæpius minus convexum, vel stricte vel laxè articulatam. Abdomen multi-articulatum, segmento ultimo parvo. Appendices caudales valde exsertæ, styliformes. Mandibulæ non palpigeræ. Antennæ internæ inconspicuæ.

Subfam. 1. ONISCINÆ.**—Maxillipedes 3-articulati, articulis duobus ultimis brevibus et parvulis. Antennæ externæ ad articulationem 5tam bene geniculatæ. Basis appendicum caudalium perbrevis, duos stylos multum inæquos gerens, stylo interno sub abdomine partim celato.

G. 1. ONISCUS, Linn.—Antennæ externæ subcylindricæ, ad basin fronte partim tectæ. Flagellum 1-3-articulatum,†† articulo precedente vix brevius vel longius.

Subgen. 1. TRICHONISCUS, Brandt.‡‡—Antennæ externæ 6-articulatæ.

Subgen. 2. PORCELLIO, Latr.—Antennæ externæ 7-articulatæ.

Subgen. 3. ONISCUS, Latr.—Antennæ externæ 8-articulatæ.

G. 4. PHILOSCIA. Onisco affinis. Antennæ externæ usque ad basin apertæ, 7-articulatæ, subcylindricæ. Flagellum ac in Porcellione.

G. 5. PLATYARTHERUS, Brandt.—Antennæ externæ quoad articulum 5tum latæ, latere externo dilatatæ.

G. 6. DERO, Guérin.—Flagellum antennarum externarum perbreve, 4-articulatum, articulo precedente multo brevius, articulo 5to cylindrico.

* *Armadillidæ*, Koch, Deutschl. Crust., 34th Heft, 1840; also Cat. Brit. Crust. Brit. Mus., 1850, p. 73.

† Appendices normales abdominis 6tæ nobis denominatæ *appendices caudales*; segmentum abdominis ultimum *segmentum caudale* est.

‡ *Tylosiens*, Edw.

§ *Armadilliens*, Edw.

¶ *Pentheus*, Koch.

|| *Armadillo*, Koch, et Latr. partim.

** *Porcellioniens*, Edw. *Porcellionidæ*, Cat. Brit. Crust. Brit. Mus., 1850. We deem it better to derive the family name from the older generic name, Oniscus.

†† Præter hos tres articulos, flagellum articulis minutis 1-3 inconspicuis ad extremitatem confectum, ultimo styliforme et apice setigero.

‡‡ *Itea*, Koch.

Subfam. 2. SCYPHACINÆ.—Maxillipedes 2-articulati, articulo 2do lamellato. Antennæ externæ ad articulationem 5tam non geniculatæ. Styli caudales ac in *Oniscinis*. Basis appendicum caudalium aut brevis aut oblongus, ramo interno interdum omnino aperto.

G. 1. SCYPHAX, *Dana*.—Flagellum antennarum 1-3-articulatum.

G. 2. STYLONISCUS, *Dana*.—Flagellum antennarum tenue, multi-articulatum.

Subfam. 3. LYGINÆ.—Maxillipedes 4-articulati, elongati. Antennæ externæ ad articulationem 5tam non bene geniculatæ. Styli caudales longi, basi longè exserto, ramis setiformibus, subæquis et æque apertis.

G. 1. LYGIA, *Fabr.*—Basis appendicum caudalium apice simplex, ramosque duos simul gerens.

G. 2. LYGIDIUM, *Brandt.**—Basis appendicum caudalium apice furcatus, brachio utroque ramum setiformem gerente.

Fam. 3. ASELLIDÆ.

Corpus sæpius plus depressum et laxè articulatum. Abdomen 6-articulatum, segmento ultimo grandi, scutellato. Appendices caudales styliformes, interdum brevissimæ. Mandibulæ palpigeræ. Antennæ internæ conspicuæ.

Subfam. 1. LIMNORINÆ.—Abdomen 5-6-articulatum.

G. 1. LIMNORIA.—Segmenta abdominis duo postica grandia, simul sumta scutellata.

Subfam. 2. ASELLINÆ.—Abdomen 1-2-articulatum.

1. *Pedes thoracici subæqui.*

G. 1. JÆRA, *Leach*.—Appendices caudales perbreves; branchiales laminâ impari tectæ.

G. 2. JÆRIDINA, *Edw.*—Appendices caudales perbreves; branchiales apertæ.

G. 3. ASELLUS, *Geoffroy*.—Appendices caudales elongatæ. Pedes antichi subchelati.

G. 4. JANIRA, *Leach.†*—*Asello* affinis. Pedes toti unguiculati, ungue bifido.

G. 5. HENOPOMUS, *Kröyer.‡*—Pedes lmi subchelati, digito 2-articulato; reliqui ambulatorii, articulo 6to sub-rudimentario. Appendices branchiales laminâ unicâ permagnâ tectæ. Thoracis segmenta latere incisa et dentata.

2. *Pedes posteriores valde elongati.*

G. 6. MUNNA, *Kröyer.§*—Appendices caudales rudimentariæ. Pedes antichi crassiores, subchelati; posteriores corpore multo longiores.

Subtribus III. CYMOTHOIDEA.

[The Cymothoidea correspond nearly to the *Isopodes nageurs* of Edwards.¶ The subtribe thus embraces along with Edwards's "Cymothoadiens" (Serolis excluded) his "Spheromiens." The *Cymothoa*, *Æga* and *Spheroma* sections are closely related, and constitute a single natural group. The first (*Cymothoidæ*) has the antennæ attached to the under surface of the head somewhat remote from the front margin, and the caudal stylets are free; the second (*Ægidæ*) has the antennæ

* *Zia*, Koch.

† *Oniscoda*, Latreille.

‡ Nat. Tidsskr., [2], ii, 1847.

§ Ibid. ii, 1838, 1839, p. 612 and [2], ii, 1847.

¶ The exceptions consist in our removal of his *Pranisiens*, and the genus *Serolis*, to the Anisopoda.

attached to the front of the head, with the caudal stylets free; the *third* (*Spheromidæ*) has the antennæ attached to the front of the head, with the inner lamina of the caudal stylets united to the abdomen. In the Cymothoidæ, the legs are all ancoral and the caudal stylets and branchiæ are not ciliated; in the *Ægidæ* and *Spheromidæ*, only the two or three anterior pairs of legs are ancoral, if any, and the caudal stylets and branchiæ are commonly ciliated. A single genus of the Cymothoidæ (*Ægathoa*) has the habit of *Æga* and ciliated caudal stylets, with the antennæ and ancoral legs of Cymothoa. This ciliation of the lamellar abdominal appendages appears to be a mark of degradation in the species, and is strikingly characteristic of the abdominal natatory feet of the Amphipoda. The family *Ægidæ* contains two groups, distinct in habit; one (*Ægina*) often parasitic, having the 6 anterior legs ancoral, the other (*Cirolaninæ*) not parasitic, and with none of the legs ancoral.]

Fam. I. CYMOTHOIDÆ.*

Maxillipedes breves, 3-4-articulati, operculiformes, articulis terminalibus angustis brevibus. Appendices caudales liberæ, marginibus rarissimè ciliatæ. Antennæ sub capite infixæ. Abdomen 4-6-articulatum, segmentis anterioribus raro connatis. Pedes toti ancorales. Branchiæ sæpissime non ciliatæ. Epimeræ conspicuæ.

Subfam. 1. CYMOTHOINÆ.—Lamellæ caudales nudæ. Abdomen multiarticulatum, segmentis liberis.

G. 1. CYMOTHOA, *Fabr.*—Femora lata, posteriora latissima. Segmenta thoracis 2 3ve postica multo breviora nunquam latere acutè producta. Segmentum caudale sæpissimè valde transversum. Antennæ graciles; 1mæ ad basin paulo remotæ.

G. 2. CERATOTHOA, † *Dana.*—*Cymothoe* affinis. Antennæ 1mæ crassæ basi conjunctæ. Caput postice latum, fronte productum et sæpe angustum.

G. 3. LIVONECA, *Leach.*—Femora latiuscula, 6ta vel 7ma 5tis vix latiora, non angustiora. Segmenta thoracis 3tium 4tum 5tum 6tumque fere æqua, 7mum paulo brevius. Abdomen thorace subito vix angustius. Caput parvulum. Frons non involutus et in processum inter-antennalem conspicue non productus. Segmentum caudale vix transversum. [Corpus sæpe oblique distortum.]

G. 4. ANILOORA, *Leach.*—Femora angusta, posteriora angustiora. Segmentum thoracis 2dum 3tium 4tumve 5to 6to 7move multo brevius. Abdomen thorace subito angustius, segmentis processu laterali spiniformi infra non instructis, ultimo vix transverso.

Subgen. 1. ANILOORA.—Rami appendicis caudalis multo inæqui.

Subgen. 2. CANOLIRA, *Leach.*—Rami appendicis caudalis subæqui.

G. 5. NEROCILA, *Leach.*—Femora et segmenta thoracis ac in *Anilocra*. Abdomen thorace subito angustius, segmentis processu laterali spiniformi infra instructis, ultimo vix transverso.

G. 6. OLENCIRA, *Leach.*—Femora latitudine mediocria. Segmenta thoracis 3 postica anterioribus non longiora. Abdomen thorace subito multo angustius, segmentis cum processibus spiniformibus infra non instructis, ultimo non transverso.

Subfam. 2. OROZEUKTINÆ.—Segmentum abdominis posticum ac in *Cymothoa*; segmenta alia coalita et non libera.

G. 2. OROZEUKTES, *Edw.*

* *Cymothoadiens Parasites*, Edw. Crust., iii, 228, 247.

† *Cymothoa Gaudichaudii* et *C. parallela* hic pertinent.

Subfam. 3. *ÆGATHOINÆ*.—Lamellæ caudales ciliatæ. Abdomen multiarticulatum, segmentis liberis.

G. 1. *ÆGATHOA*, Dana.—Abdomen thoracis subito non angustius, segmentis subæquis. Caput subtriangulatum, latum, thorace parce angustius. Oculi grandes,

Fam. II. *ÆGIDÆ*.*

Maxillipedes elongati, 4–6-articulati, articulis totis lamellatis, terminalibus latis et brevibus. Appendices caudales liberæ, marginibus ciliatæ. Antennæ ad frontis marginem capitis affixæ, apertæ. Abdomen 4–6-articulatum. Pedes 6 antici interdum ancorales aut prehensiles, sæpius simpliciter unguiculati, 8 postici unguiculati et nunquam ancorales. Branchiæ ciliatæ. Epimeræ conspicuæ.

Subfam. 1. *ÆGINÆ*.—Pedes 6 antici ancorales, unguibus validis; reliqui unguibus parvulis confecti.

G. 1. *ÆGA*, Leach.—Pedes 6 antici æque ancorales. Antennæ 1mæ basi contiguæ, 2dæ per epistomatis processum sejunctæ. Frons capitis non saliens.

Subgen. 1. *ÆGA*.—Oculi remoti. Antennæ 1mæ basi complanatæ.

Subgen. 2. *CONILERA*, Leach.—Oculi remoti. Antennæ 1mæ basi subcylindricæ.

Subgen. 3. *ROCINELA*, Leach.—Oculi grandiores, inter se contiguæ. Antennæ 1mæ basi complanatæ.

G. 2. *ACHERUSIA*, Lucas.†—*Ægæ* affinis. Antennæ 2dæ per processum non sejunctæ. Frons capitis saliens.

G. 3. *PTERELAS*, Guérin.—*Ægæ* affinis. Pedes 2di 3tii sæpeque 1mi subdidactyli, processu e articulo penultimo instar digiti immobilis, processu sive acuminato sive acie instructo.

Subfam. 2. *CIROLANINÆ*.—Pedes nulli ancorales.

G. 1. *CIROLANA*, Leach.†—Segmenta thoracis subæqua. Pedes unguibus parvulis confecti. Antennæ 2dæ per processum epistomatis tenuem sejunctæ. Abdomen 6-articulatum.

G. 2. *CORALLANA*, Dana.—Segmenta thoracis subæqua. Pedes unguibus parvulis confecti. Antennæ 2dæ epistomate transverso latissimè sejunctæ et partim tectæ, epistomate antennisque 1mis latè conniventibus.

G. 3. *ALITEOPUS*, Edw.—Segmenta thoracis 3 postica anterioribus longiora, ac in *Nerocila*. Pedes unguibus crassiusculis confecti.

Fam. III. *SPHEROMIDÆ*.§

Maxillipedes elongati 5–6-articulati et palpiformes. Appendices caudales margini abdominis laterali conjunctæ. Antennæ ad frontis marginem capitis affixæ, apertæ. Abdomen 1–2-articulatum. Pedes non ancorales (raro 4 antici ancorales). Branchiæ ciliatæ. Epimeræ non distinguendæ.

* *Cymothodiens errans*, Edw. Crust., iii, 233.—*Ægidæ*, Cat. Brit. Crust. Brit. Mus., 1850, p. 78.

† Expl. de l'Algiers, pl. 8, f. 3.
‡ Genera *Eurydice* et *Nelocira*, Leach, inclusa cum *Cirolanâ*. *Eurydice* discrepat abdomine 5-articulato tantum.

§ *Spheromiens onguiculés*, Edw. Crust., iii, 199.—*Spheromidæ*, Cat. Brit. Crust. Brit. Mus., 1850, p. 75.

Subfam. 1. SPHEROMINÆ.—Lamella appendicis caudalis externa sub internâ se latens.

1. *Corpus in globum contractile.*

G. 1. SPHEROMA, *Latr.*—Lamellæ appendicis caudalis subæquæ.

2. *Corpus in globum non contractile.*

G. 2. CYMODOCEA, *Leach, Edw.**—Caput valde transversum, multo convexum. Lamellæ appendicis caudalis subæquæ.

G. 3. CERCEIS, *Edw.*—Caput parce transversum, subtriangulatum, vix convexum. Antennæ 1mæ quoad basin capite tectæ, processu non sejunctæ.

G. 4. CASSIDINA, *Edw.*—Corpus latum; caput valde transversum. Lamellæ appendicis caudalis angustæ, valde inæquæ, externâ parvulâ. Antennæ 1mæ quoad basin processu frontis sejunctæ.

G. 5. AMPHOROIDEUM, *Edw.*—Antennæ quoad basin lamellate portentose productæ ultra capitis frontem.

Subfam. 2. NESÆINÆ.—Lamella appendicis caudalis externa saliens, sub internâ se non latens, usquam aperta. Pedes nulli ancorales.

G. 1. NESÆA, *Leach, Edw.†*—Lamella caudalis externa recta.

G. 2. CAMPECOPEA, *Leach.* Lamella caudalis externa arcuata.

Subfam. 3. ANCININÆ.—Pedes 4 antici ancorales.

G. 1. ANCINUS, *Edw.*—Appendices caudales unâ lamellâ oblongâ saliente basique brevissimo instructæ.—An tribus Anisopodorum est genus Ancinus?

TRIBUS II.

ANISOPODA.

Subtribus I. SEROLIDEA, vel ANISOPODA CYMOTHOICA.

Fam. I. SEROLIDÆ.

Appendices abdominales sex anticæ liberæ, subnatatoriæ, quatuor sequentes branchiales, bene lamellatæ, ultimæ ac in *Cymothoadis*. Antennæ 1mæ sub capite insitæ.

G. 1. SEROLIS, *Leach.*

Fam. II. PRANIZIDÆ.‡

Appendices abdominales totæ ac in *Ægidis*. Antennæ 1mæ sub capite insitæ. Pedes thoracis numero decem, paribus duobus anticis rudimentariis. Thoracis segmenta numero quinque non superantia.

Subfam. 1. PRANIZINÆ.—Caput parvum. Mandibulæ vix salientes.

G. 1. PRANIZA, *Leach.*

Subfam. 2. ANCEINÆ.—Caput grande. Mandibulæ ultra caput longè exsertæ.

G. 1. ANCEUS, *Risso.*

Subtribus II. ARCTURIDEA, vel ANISOPODA IDOTÆICA.

Fam. I. ARCTURIDÆ.

Subfam. 1. ARCTURINÆ.—Opercula abdominis ad ventrem stricte appressa.

* Genus *Dynamena*, *Leach*, is included.

† Genus *Cilicæa*, *Leach*, is included.

‡ *Pranisiens*, *Edw. Crust. iii, 92.*

G. 1. *ARCTURUS*, Latr.—Segmenta thoracis subæqua. Antennæ 2dæ flagello longo confectæ.

G. 2. *LEACHIA*, Johnston.—Segmentum thoracis 4tum prælongum. Antennæ 2dæ longæ, ungue 1-3-articulato confectæ. Pedes 8 antici ciliati, non unguiculati.

Subfam. 2. *ANTHURINÆ*.—Opercula abdominis ad ventrem non bene appressa, sed libera et latera abdominis partim tegentia.

G. 1. *ANTHURA*, Leach.—Antennæ breves, 4-8-articulatæ. Pedes antici subchelati.

Subtribus III. *TANAIDEA*, vel *ANISOPODA ONISCICA*.

Fam. 1. *TANAIDÆ*.

Pedes 1mi 2dive subchelati, sequentes non ancorales. Abdomen paribus 5 appendicum subnatatoriis unoque postico stylorum instructum.

Subfam. 1. *TANAINÆ*.—Corpus lineare, segmento thoracis 1mo sæpe oblongo capiteque parvulo. Styli caudales longo.

G. 1. *TANAIS*, Edw.*—Antennæ 1mæ flagello non confectæ. Pedes antici breves, crassè chelati, reliqui unguiculati. Styli caudales sat longi, 3-7-articulati, simplices.

G. 2. *PARATANAIS*, Dana.—*Tanai* similis. Styli caudales biramei, ramis inæquis, articulis uno vel pluribus instructis. Pedes antici breves.

G. 3. *LEPTOCHELIA*, Dana.†—Antennæ 1mæ longæ, flagello confectæ. Pedes antici longi, digitis hiantibus; reliqui unguiculati. Styli caudales sat longi, articulati, ramo laterali instructi.

G. 4. *APSEUDES*, Leach.—Antennæ 1mæ 2dæque flagello unico confectæ. Pedes antici breves, crassè chelati, 2di extremitate laminati, non unguiculati.

G. 5. *RHÆA*,‡ Edw.—Antennæ 1mæ 2dæque flagello confectæ, 1mis quoque flagello appendiculari. Pedes 1mi 2dique crassi, 1mis chelatis, 2dis unguiculatis.

Subfam. 2. *LIRIOPINÆ*.—Corpus antice latius, postice sensim angustans, segmento thoracis 1mo reliquis vix longiore, capite sat grandi. Appendices abdominales numero decem elongatæ.

G. 1. *LIRIOPE*, Rathke.§—Pedes 4 antici subprehensiles, 5ti 6tique unguiculati, 7mi abbreviati, articuloque styliformi confecti. Antennæ 1mæ perbreves [setarum scopulâ ornata].

C. 2. *CRYPTOTHIR*, Dana.—*Liriopi* affinis. Pedes 7mi non abbreviati, unguiculati.

Subfam. 3. *CROSSURINÆ*.—Corpus antice latius, postice sensim angustatum, segmento thoracis 1mo vix longiore, capite sat grandi. Appendices abdominales inferiores numero sex, ciliatæ.

G. 1. *CROSSURUS*, Rathke.||—Pedes antici chelati, robusti, reliquis unguiculatis. "Abdomen duabus tæniis semicircularibus e magno pilorum erectorum numero compositis fimbriasque duas exhibentibus cinctum."

Fam. II. *BOPYRIDÆ*.¶

Pedes toti plerumque aliquo modo subprehensiles vel ancorales. *Maris*, corpus angustum, abdomen 1-6-articulatum, appendicibus subnatatoriis stylisque duobus sæpe instructum, interdum totis appendicibus obsoletis; *feminæ*, corpus latum et obesum, oculis carens, et quoad pedes sæpe partim obsoletum.

* Genus *Zeuxo*, Templeton, (Trans. Ent. Soc., ii, 203,) is included.

† Amer. J. Sci. [2], iii, 425, 1849. Here falls *Tanais Edwardsii*, Kr. (Tids. iv, 1842.)

‡ Genus *Triura*, Tellkampf (Archiv. f. Nat., 1844, p. 321) Rhææ forsan affinis. Styli caudales longissimi et setiformes. Speciei descriptio et icon non bonæ.

§ Faun. Norw., 60, pl. 1, f. 8-12.

|| Ibid. 35, pl. 1, f. 1-7.

¶ *Epicarides*, Latr.; *Isopodes sedentaires*, Edw. Crust., iii, 277.

Subfam. 1. BOPYRINÆ.—Thorax appendicibus branchialibus carens.

G. 1. BOPYRUS, *Latr.*—Pedes thoracis *feminae* manu imperfectâ confecti. Appendices abdominis branchiales laminatæ, laminâ unicâ compositæ et abdomine tectæ.

G. 2. PHRYXUS, *Rathke.**—Pedes thoracis *maris* ancorales, *feminae* manu imperfectâ confecti. Appendices abdominis *feminae* branchiales magnæ, laminis duabus inæquis nudis compositæ, una vel ambæ laminæ laterales; *maris* rudimentariæ.

G. 3. CEPON, *Duvernoy.†*—Pedes thoracis *feminae* non unguiculati, per pulvillum terminalem ancorales. Appendices abdominis *feminae* branchiales numero duodecim, elongatè lamellatæ et bene ciliatæ.

G. 4. DAJUS, *Kröyer.‡*—*Maris* abdomen 6-articulatum, segmento ultimo prælongo; pedes thoracis bene unguiculati; appendices abdominis numero decem, oblongæ, ciliatæ, aliis duabus terminalibus minutis. *Feminae* appendices abdominis laterales, duæ posticæ caudales breves, exsertæ.

Subfam. 2. IONINÆ.—Pedes thoracis ad basin appendices simplices branchiales gerentes.

G. 1. IONE, *Latr.*—Pedes thoracis manu imperfectâ confecti. Appendices abdominales laterales, *maris* tenuiter cylindricæ, *feminae* ramosæ præter duas ultimas simplices.

G. 2. ARGEIA, *Dana.*—Pedes thoracis manu imperfectâ confecti. Appendices *feminae* abdominales laterales, birameæ, ramis simplicissimis, nudis; *maris* nullis, abdomine non articulato, nudo.

TRIBUS III.

AMPHIPODA.

Subtribus I. CAPRELLIDEA.

Fam. I. CAPRELLIDÆ.

Corpus longum et fere filiforme. Antennæ 2dæ longitudine mediores. [Species non parasiticæ.]

1. *Pedes thoracis numero 14.*

G. 1. PROTO, § *Leach.*—Mandibulæ palpigeræ. Branchiæ segmentis 2do 3tio 4toque affixæ. Pedes thoracis toti articulis normales.

G. 2. PROTELLA, *Dana.*—Mandibulæ palpigeræ. Branchiæ segmentis 3tio 4toque affixæ. Pedes 3tii 4tique obsoleti articulo 1mo styliformi excepto.

2. *Pedes thoracis 3tii 4tique omnino obsoleti.*

G. 3. CAPRELLA, *Lamk.*—Mandibulæ non palpigeræ. Branchiæ segmentis thoracis 3tio 4toque affixæ. Abdomen brevissimum, 1-2-articulatum.

G. 4. ÆGINA, *Kröyer.¶*—Mandibulæ palpigeræ, palpis 3-articulatis. Branchiæ ac in *Caprellâ*. Abdomen brevissimum, 1-2-articulatum.

G. 5. CERCOPS, *Kröyer.¶¶*—Mandibulæ palpigeræ. Branchiæ segmentis 2do 3tio 4toque affixæ. Abdomen 5-articulatum, appendicibus 4 elongatis 3-articulatis.

3. *Pedes 3tii 4ti 5tique obsoleti.*

G. 6. PODALIRIUS, *Kröyer.***—Branchiæ segmentis 3tio 4toque affixæ.

Fam. 2. CYAMIDÆ.

Corpus latum, depressum. Antennæ 2dæ obsoletæ. [Species parasiticæ.]

G. 1. CYAMUS.

* Fauna Norwegens, p. 40.

† Voy. Scand., etc., Crust. tab. 28, 29.

¶ Tids. iv, 1842.

** Voy. Scand., pl. 25, and Tids. [2], i, 283.

† Annales des Sci. Nat. [2], xv, 110, pl. 4.

§ *Leptomera*, Latreille.

¶¶ Ibid.

Subtribus II. GAMMARIDEA.

[Among the Gammaridea, the author finds that the posterior caudal stylets offer important characters for distinguishing natural groups or genera, and upon this ground, some new genera have been recognized among the Corophidæ and Gammaridæ, and others *that have been rejected* are sustained. Thus *Iphimedia* is distinct from *Amphithoe*, *Mæra* and *Dercythoe* from *Gammarus*, etc.]

Fam. I. DULICHIDÆ.

Gressoriæ, habitu Caprelloideæ. Corpus lineare, epimeris obsoletis. Pedes posteriores longi, subprehensiles. Abdomen 5-articulatum.

G. 1. *DULICHIA*, Kröyer.*—Pedes 5ti 6ti 7mique, subæqui, 2di manu confecti. Antennæ quatuor longæ, superiores prælongi.

Fam. II. CHELURIDÆ.

Corpus fere cylindricum, epimeris mediocribus. Abdomen segmentis 4to 5toque coalitis et oblongis, stylis inter se valde dissimilibus.

G. 1. *CHELURA*, Philippi.†

Fam. III. COROPHIDÆ.

Gressoriæ, pedibus partim lateraliter porrectis. Corpus plus minusve depressum, sæpe latum, epimeris perbrevibus, interdum obsoletis. Abdomen formâ appendicibusque normale. Antennæ sæpe pediformes.

Subfam. 1. CLYDONINÆ.—Styli caudales sex simplices, subulati.

G. 1. *CLYDONIA*, Dana.‡—Pedes filiformes, 5ti 6ti 7mique, longitudine increscentes, 1mi 2di non prehensiles. Antennæ duæ longæ, crassæ, rigidæ.

Subfam. 2. COROPHINÆ.—Antennæ plus minusve pediformes. Styli caudales 1mi 2dique biramei.

A. DIGITUS NULLUS 2-ARTICULATUS.

1. *Styli caudales 3tii minuti, simplices, 2di 1mique ramo externo cultriformi.*

G. 1. *COROPHIUM*, Latr.—Antennæ inferiores longiores et crassiores, flagello carentes. Pedes 2di non prehensiles, 1mis crassiores, articulo 4to latiore quam 5tus.

G. 2. *SIPHONGECETES*, Kröyer.§—Antennæ inferiores longiores, flagello carentes. Pedes 1mi 2dique subchelati. [Pedes 3tii 4tique articulo 4to latè obcordato. Tubum lapillis fragmentisque concharum formatum inhabitat.]

* Tids. [2], i, 512, 1845.

† Arch. f. Nat. 1839; and G. J. Allman, Ann. and Mag. N. H. xix, 361, June, 1847.

‡ Amer. J. Sci. [2], viii, 140; *Leilius*, D., on same page.

§ Voy. Scand., etc., 1838–1840, pl. 20, f. 1; Tidsskr. [2], i, 481, 1845. Kröyer in his description says:—

“Pedes thoracici primi et 2di paris validissimi, manu instructi subcheliformi. Pedes 3tii et 4ti paris articulo primo latissimo, laminari; articulo quarto obcordato, laminari, manum præbente, cujus unguis efficitur articulo quinto subconico articuloque sexto aciculari. Pedes 5ti 6tique paris minutissimi, sed robusti, recurvati, articulo primo clavato, ungue furcato. Pedes 7mi paris graciles, recurvati, articulo primo laminari, ungue minutissimo, furcato. Pedes abdominales 1mi, 2di et 3tii paris natatorii breves validissimi, parte basali latissima, rhomboidali; pedes 4ti, 5tique paris saltatorii pes abdominalis sexti paris natatorius unica instructus lamina terminali.”

2. *Styli caudales 3tii minuti, vix exserti, simplices, 2di 1mique ramis extus non præcipue spinosis nec cultriformibus, interdum nudis.*

G. 3. *PLATOPHIUM, Dana.*—Corpus superne visum subellipticum, abdomine bene inflexo. Antennæ flagello brevi sæpe instructæ, inferiores longiores, superiores appendiculatæ. Pedes 1mi 2dique subchelati, 2dis validioribus. Pedes 10 postici mediocres.

G. 4. *CYRTOPHIUM, Dana.*—*Platophio* similis. Antennæ superiores non appendiculatæ.

3. *Styli caudales 3tii parvuli, biramei, ramo externo non uncinato, 2di 1mique ramis extus non præcipue spinosis nec cultriformibus.*

G. 5. *UNCIOLA, Say.**—Pedes 1mi 2dique manu confecti, 1mis validioribus. Antennæ flagellis confectæ, subpediformes, validæ, superiores paulo longiores, appendiculatæ.

4. *Styli caudales 3tii paulo elongati, biramei, ramo externo uncinato.*

G. 6. *PODOCERUS, Leach.†*—Pedes 1mi 2dique subchelati, 2dis validioribus. Antennæ superiores breviores, non appendiculatæ. [An maris digitus 2dus interdum 2-articulatus Krøyerō teste.]

G. 7. *CRATOPHIUM, Dana.*—Pedes 1mi 2dique subchelati, 2dis validioribus. Antennæ superiores breviores, appendiculatæ.

B. DIGITUS 2DUS 2-ARTICULATUS.

G. 8. *CERAPUS, Say.*—Antennæ pediformes, subæquæ, flagellis carentes. Pedes 1mi 2dique prehensiles, 1mis parvulis, 2dis manu bene confectis. *Styli caudales 3tii biramei, ramis subæquis, longiusculis.* [Tubum membranaceum inhabitat.]

G. 9. *CERAPODINA, Edw. (Cerapus, Templeton).* Antennæ totæ flagellis confectæ. Pedes 4ti 5ti 6tique obsoleti(?) [Tubum papyraceum inhabitat.]

G. 10. *ERICHTHONIUS, Edw.‡*—Antennæ flagellis confectæ. Pedes 10 postici mediocres. Epimeræ anteriores obsoletæ. [An *styli caudales 3tii simplicissimi?*]

Subfam. 3. *ICILINÆ.*—Antennæ non pediformes nec subpediformes, flagellis sat longis basique sat brevi instructæ. *Styli caudales ac in Corophinis.*

G. 1. *ICILIUS, Dana.*—Pedes toti unguiculati et tenues, 4 antici longi, non prehensiles, ciliati, 10 postici fere similes. Antennæ superiores breviores non appendiculatæ.

G. 2. *PTERYGOCERA, Latr.*—Pedes posteriores sublamellati. Antennæ superiores breviores, appendiculatæ, inferiores basi dilatatæ.

* Jour. Acad. Nat. Sci. Philad., i, 388.

Glaucome of Krøyer has the hands and antennæ and apparently the other characters of *Unciola*. Say describes the hands of the 2nd pair in *Unciola* as *adactyle*; but they still are probably like those of *Glaucome*. The following is Krøyer's description:—

"Antennæ subpediformes; superiores flagello ornatæ appendiculari perparvo. Oculi minuti, parum distincti. *Maudibulæ* apex in duos fissus ramos qui dentibus sunt armati conicis; tuberculus molaris dentibus confertissimis instructus. *Labium superius* breve, depressum latissimum, margine anteriori medio inciso; *labium inferius* quatuor compositum laminis setosis. *Laminæ maxillares* pedum maxillarum dentibus armatæ validis; unguis palpi apice setosus. *Pes primi paris* robustissimus, manu subcheliformi; *pes secundi paris* gracilior, manu carens subcheliformi, pedes 3tii, 4tique paris pergraciles; pedes 5ti, 6ti, 7mique paris graciles femoribus parum dilatatis. Pedes abdominales 1mi 2di et 3tii paris natatorii, breves sed robustissimi; 4ti, 5tique paris saltatorii, validi; 6ti paris fere rudimentares, natatorii. Epimera minima fere evanescentia."

† *Jassa* of Leach may without inconvenience be united to *Podocerus*, as there is no essential generic difference between them.

‡ The author obtained three species in the cruise of the Expedition having the hands and many other characters of *Erichthonius*, but with the epimerals of the anterior thoracic segments of considerable size; and moreover no gressorial habits were observed. They are therefore with some hesitation arranged in a genus named *Pycilus*, among the Gammaridæ, subfamily Gammarinæ.

Fam. IV. ORCHESTIDÆ.*

Saltatoriæ, pedibus nullis lateraliter porrectis. Corpus compressum, epimeris magnis. Abdomen appendicibus normale. Antennæ non bene pediformes. Styli caudales 1mi 2dique biramei; 3tii simplices, brevissimi et ultra 2dos non prolongati. Mandibulæ non palpigeræ. Maxillæ 1mæ palpo sive parvulo et 1-articulato sive obsoleto instructæ.

G. 1. ORCHESTIA.—Maxillipedes non unguiculati. Antennæ 1mæ basi 2darum breviores. Epimeræ 5tæ 4tis parce breviores.

Subgen. 1. TALITRUS.—Pedes 1mi *maris feminae* manu non instructi.

Subgen. 2. TALORCHESTIA, *D.*—Pedes 1mi *maris* ac in *Talitro*, *feminae* manu parvulâ instructi.

Subgen. 3. ORCHESTIA.—Pedes 1mi *maris feminaeque* manu plus minusve instructi.

G. 2. ALLORCHESTES, *Dana.*—Maxillipedes unguiculati. Antennæ 1mæ minores, basi 2darum longiores. Epimeræ 5tæ 4tis sæpius multo breviores.

Fam. V. GAMMARIDÆ.

Saltatoriæ vel natatoriæ, pedibus nullis lateraliter porrectis. Corpus sæpius compressum, raro subdepressum, epimeris sive magnis sive parvis. Styli caudales laxiores, duobus ultimis oblongis sæpiusque ultra 2dos prolongatis, raro simplicibus. Mandibulæ sæpissimè palpigeræ. Maxillæ 1mæ palpo 2-3-articulato (rarissimè 1-articulato) instructæ.

I. PEDES 10 POSTICI NON PREHENSILES.

Subfam. 1. STEGOCEPHALINÆ.—Antennæ breves, superiores basi crassæ. Mandibulæ acie denticulatâ instructæ, palpo brevi uniarticulato intus dentato. Epimeræ permagnæ.

G. 1. STEGOCEPHALUS, *Kröyer*.†—Epimeræ 4tæ maximæ, 5tis parvis. Antennæ superiores appendiculatæ. Pedes 1mi 2di manubus carentes. [Pedes 5ti 3tii 4tique directione similes.]

Subfam. 2. LYSIANASSINÆ.—Antennæ breves, superiores basi crassæ. Mandibulæ apice parce dentatæ, acie vix instructæ, palpo 2-3-articulato. Maxillipedes lamellis internis grandibus. Epimeræ permagnæ.

1. *Pedes 1mi 2dique non subchelati, 2dis parvulis interdum exceptis.*

G. 1. LYSIANASSA, *Edw.*—Antennæ superiores appendiculatæ.

G. 2. PHILIAS, *Guerin.*—Antennæ superiores non appendiculatæ.

2. *Pedes 1mi subchelati, 2dis non subchelatis.*

G. 3. OPIS, *Kr.*‡—Antennæ superiores appendiculatæ. Pedes 1mi crassè chelati, 2di debiles.

* The author gives a different arrangement of the species of Orchestidæ from that published in this Journal, [2], viii, 135 and ix, 295, and rejects the genus Talitronus there instituted. He follows Fr. Müller (Archiv f. Nat., 1848, 53) in considering the Talitri and Orchestæ as forming a single genus, his recent investigations confirming this view. The Gammaridæ also are rearranged.

† Kröyer's Nat. Tids. iv, 150, 1842. "Caput oculis ut videtur destitutum."

‡ Tids. iv, 149. "Pedes 1mi paris chelis armati portentosæ magnitudinis. Reliqua cum genere Anonyce ferme conveniunt."

G. 4. URISTES, *Dana*.—Antennæ superiores non appendiculatæ. Pedes 1mi subchelati, 2di articulo styliformi confecti.

3. Pedes 1mi 2dique plus minusve subchelati.

G. 5. ANONYX, *Kr.*†—Epimeræ permagnæ. Antennæ superiores appendiculatæ, basi breves. Maxillipedes lamellis internis grandibus. Styli caudales postici biramei, ramis subulatis.

G. 6. UROTHOE, *Dana*.—Epimeræ permagnæ, 5tis parvis. Antennæ 1mæ breviores, appendiculatæ, basi sat elongato. Styli caudales postici longi, biramei, ramis foliaceis, ciliatis. Mandibulæ palpo 3-articulato.

Subfam. 3. LEUCOTHOINÆ.—Antennæ superiores basi plus minusve graciles. Maxillipedes elongati, angusti, articulo longo unguiformi confecti, lamellis internis perbrevibus. Mandibulæ sive palpigeræ sive non palpigeræ, processu molari carentes. [An semper?] Epimeræ magnæ.

G. 1. STENOTHOE, *Dana*.—Epimeræ permagnæ, 4tæ maximæ, 5tæ parvulæ. Pedes 4 antici subchelati, 2dis validioribus. Antennæ superiores longiores, non appendiculatæ. Mandibulæ non palpigeræ, processu molari carentes. Styli caudales 1mi 2dique ramis bene subulati, 3tii simplicissimi, subulati, spinâ crassâ confecti.

G. 2. LEUCOTHOE, *Leach*.†—Epimeræ magnæ, 5tæ parvulæ. Pedes 4 antici subchelati, 2dis validioribus. Antennæ superiores longiores, non appendiculatæ. Mandibulæ palpigeræ. Styli caudales toti biramei, ramis subulatis.

[Cujus sedis est *Microcheles*, Krøyer, § *Amphithoe* affinis, cui mandibulæ processu molari carentes: quoque *Amphithoe Marionis*, Edw., cui mandibulæ non palpigeræ.]

Subfam. 4. GAMMARINÆ.—Antennæ 1mæ basi graciles. Maxillipedes sat lati, lamellis internis sat elongatis. Mandibulæ acie denticulatâ instructæ et alterâ accessoriâ quoque processu molari et palpo 3-articulato. Pedes 10 postici non subprehensiles.

A. FRONS PRODUCTUS ET INFRA ANTENNIGERUS NON EST, ANTENNIS 1MIS INFERIORIBUS NON ANTERIORIBUS.

1. Styli caudales postici biramei, ramis subæquis.

A. PEDES 2DI NON SUBCHELATI.

G. 1. ACANTHONOTUS, *Owen*.—Antennæ quatuor subæquæ, 1mæ non appendiculatæ. Epimeræ magnæ. Pedes 2di filiformes, manu omnino carentes, 1mi manu vix confecti.

G. 2. ALIBROTUS, *Edw.*—Antennæ 1mæ breves, appendiculatæ. Epimeræ magnæ. Pedes 1mi validi non subchelati.

* Amer. J. Sci. [2], viii, 135. The genus *Stenia* is rejected.

† Tids. ii, 256, and iv, 164.

The genus *Ephippiphora* of White (Ann. and Mag. N. Hist. [2], i, 226, 1848) has been but briefly described, and we cannot pronounce upon its exact relation to either of the genera of Lysianassinae. The habit is like that of *Anonyx*, the epimerals in large, the superior antennæ appendiculate, the posterior caudal stylets elongate as in *Anonyx* and not short like the *Orchestidæ*. But the character of the termination of the 4 anterior legs is not stated, neither are they in view in the figure of the species on plate 5 of the Zool. of the Erebus and Terror. This figure represents the 5th and 6th pair of legs as rudimentary, or the basal joints twice as long as the following part, and the basal joint of the 6th smaller than that of the 5th or 7th.

† Krøyer states that the *bi-articulate* finger of *Leucothoe* is not a true generic characteristic, and adds* two species to the genus, one of which has this character imperfectly and the other not at all. (Nat. Tids. iv, 141, 1842, and [2], i, p. 539, 1845). This character of the hand depends mainly on the prolongation of the inferior apex of the antepenult joint, which prolongation is variously developed in species of allied genera. They agree with *Leucothoe* in their peculiar slender maxillipeds; in the very small epimerals to the 1st segment, large 4th, and small 5th, 6th and 7th; in the caudal stylets; the very short 3d joint of the superior antennæ, and other characters.

§ Tids. N. R. ii, 5.

G. 3. *LEPTOCHIRUS*, Zaddach.*—Antennæ 1mæ appendiculatæ. Pedes 1mi bene subchelatæ, 2di manu carentes.

B. PEDES 2DI IMIQUE SUBCHELATI.

* Antennæ 1mæ non appendiculatæ.

G. 4. *IPHIMEDIA*, Rathke,† *D.*—Epimeræ magnæ, 4tæ maximæ, 5tis multo brevioribus et vix bilobatis. Styli caudales postici ramis duobus oblongis consimilibus apice setigeris et non uncinatis instructi. Antennæ 1mæ sæpius breviores.

G. 5. *ÆDICERUS*, Krøyer.‡—*Iphimedia* affinis. Pedes 7mi longissimi, fere filiformes. Antennæ 1mæ breviores.

G. 6. *AMPHITHOE*, Leach, *D.*§—Epimeræ magnæ, 5tæ maximæ, vix bilobatæ lobo posteriore minimo. Styli caudales postici ramis duobus brevibus dissimilibus instructi, ramo externo apice recurvatim bi-uncinato, interno compresso apice non spinuloso sed pilis parce ciliato. Antennæ 1mæ sæpissime longiores.

** Antennæ 1mæ appendiculatæ.

G. 7. *GAMMARUS*, Fabr., *D.*||—Epimeræ sive mediocres sive breves. Styli caudales postici 2dis non similes, ramis sæpe longis cum pilis raro spinulis ornatis, apice non uncinatis. Antennæ superiores sæpius longiores.

2. *Styli caudales postici sive ramo uno longo altero parvulo instructi, sive simplicissimi et apice non paulo reflexi.*

* Antennæ 1mæ non appendiculatæ.

G. 8. *PHOTIS*, Krøyer.¶—Epimeræ magnæ, 5tæ 4tis non breviores et postice profundius excisæ. Styli caudales ramo interno rudimentario.

* The genus *Leptochirus*, (Syn. Crust. Borus. Prodrumus, 1844) is described by Zaddach as having no appendicular branch to the superior antennæ. But Fr. Muller states (Archiv für Naturgeschichte, 1848, xiv, 62) that there is a small one-jointed appendage in the *Leptochirus pilosus*. The legs of the 2nd pair are described as having no proper hand, but terminating as in the genus *Talitrus*. May the form be female only?

† Beit. zur Fauna Norwegens, p. 85, Act. Leop. xx. *Dexamine* of Leach, may perhaps be included here.

The genus *Hyale* of H. Rathke (Fauna der Krym, Mem. Acad. Imp. St. Petersburg, iii, 1837, p. 378, pl. 5) contains no characters in its description by this author which do not apply equally well to species of *Iphimedia*. The description is as follows:—"Corpus elongatum, compressum. Antennæ inferiores superioribus aliquantulum longiores; earum quælibet e tribus articulis atque flagello composita. Oculi disciformes. Pedes 14: duo eorum paria antica chelis monodactylis complanatis, 2di paris multo majoribus. Stylorum abdominalium paria tria. Abdominis appendicula terminalis simplex, erecta, verruciformis." The posterior stylets are 2-branched though short; and the species (*H. pontica*) is thus distinct from the *Allorchestes*.

‡ Tids. iv, 155, 1842. "Frons in rostrum producta, plus minus acutum obtusumve, semper vero nodo pellucenti, ovali, flavo-rubescente turgidum. Oculi nulli?" "Pedes 3tii 4tique paris validi, ungue instructi lato laminari, quod quoque usu venit 5to 6toque pari, quorum articulus 1mus dilatatus non est."

§ Includes *Pherusa* of Leach.

|| *Amathia*, Rathke (Fauna der Krym, Mem. Acad. Imp. St. Petersburg, iii, 1837, p. 291, and Beit. zur Faun. Norw. Act. Leop. xx) includes those *Gammari* that have the superior antennæ the shorter—not a proper basis for a genus. The eye is described as reniform.

The genus *Eusirus* of Krøyer is very near *Gammarus*, and it is doubtful whether it should be separated. Its habit however is somewhat different. The hands of the 2 anterior pairs of legs are large and equal, and the carpus is articulated with the upper margin of the hand near its middle. The eye is reniform. The superior antennæ have a short appendicular branch, consisting of a minute joint. "Mandibula parva, apice bifurca, dentata, flabello setarum marginis interioris, tuberculo molari transverso-elliptico dentibus minutissimis confectis formato; palpus triarticulatus duplam fere æquat mandibulæ longitudinem. Sex branchiarum paria in maribus (annuli thoracici 2di-7mi), 4 laminarum in feminis paria (annuli 2di-5ti)."—Tids. [2], i, 501.

¶ Tids. iv, 155, 1842, "Pes 5ti paris recurvatus, inversus, ungue rudimentari. Epimera permagna, 5 paria anteriora ad marginem inferiorem setis sat longis instructa, 5tum eadem est ac 4tum altitudine, postice profundius excisum. Lamina terminalis interior pedis saltatorii 3tii paris rudimentaris."

The *inversion* of the 5th pair of legs is not a generic character.

G. 9. MELITA, *Leach, D.*—Epimeræ 5tæ 4tis multo breviores (sic an semper?) Styli caudales uno ramo longo, sive subcylindrico sive foliaceo, altero brevi vel obsoleto. [Digitus in manus latus sæpe claudens.] Antennæ 1mæ sæpius longiores.

** Antennæ 1mæ appendiculatæ.

G. 10. MÆRA, *Leach, D.*—Epimeræ et styli caudales postici ac in *Melita*.

3. *Styli caudales postici simplicissimi, ramo uno brevi et nudo, apice paulo reflexo et spinas duas perbreves paulo exsertas gerente.*

G. 11. DERCOTHOE, *Dana.*—Epimeræ mediocres, 5tæ bene bilobatæ, 4tis sæpius vix breviores. Pedes 1mi 2dique digito uni-articulato confecti.

G. 12. PYCtilUS, *Dana, (Erichthonius, Edw.?)*—Epimeræ mediocres vel breves corpore lineari, subdepresso. Antennæ longæ, flagellis sat longis. Manus 1mæ articulis 4to 5toque sæpe instructæ, digito uni-articulato; 2dæ digito 2-articulato.

G. 13. (An hujus sedis?) PARDALISCA, *Kröyer.**—Epimeræ breves. Pedes 1mi 2dique digito 2-articulato manuque 1-articulatâ instructi. Antennæ tenues, 1mæ appendiculatæ.

B. FRONS PRODUCTUS ANTENNASQUE 1MAS VERSUS EXTREMITATEM GERENS.

[AN SPECIES COROPHIDIS AFFINIORES.]

G. 14. ATYLUS, *Leach.*—*Iphimedia* paulo affinis. Antennæ subpediformes, breviores, non appendiculatæ. Digiti 1mi 2dique uni-articulati.

G. 15. ISCHYROCERUS, *Kröyer.†*—*Gammare* paulo affinis. Antennæ pediformes, 1mæ appendiculatæ. Palpus mandibularis longus, articulo ultimo obovato. Pedes 2di maris manu validissimâ instructi. Digiti uni-articulati. Epimeræ mediocres.

II. PEDES 10 POSTICI PARTIM PREHENSILES.

Subfam. 5. PONTOPORINÆ.—Pedes 3tii 4tique plus minusve prehensiles; 6 postici non prehensiles.

1. Antennæ 2dæ inferiores et non posteriores.

G. 1. LEPIDACTYLIS, *Say.‡*—Epimeræ magnæ. Antennæ superiores appendiculatæ, inferiores basi infra valde dilatatæ et partim dolabriformes. Pedes 4 antici filiiformes; 3ti 4tique manu compressâ digitoque laminato instructâ; 5ti 6ti 7mique valde compressi, 7mis longioribus, articulis superne valde productis.

G. 2. PONTIPOREIA, *Kr.§*—Epimeræ magnæ. Antennæ superiores appendiculatæ. Pedes 1mi 2dique perbreves, robusti, 1mi manu latâ ungue brevi confecti, 2di manu carentes; 3tii 4tique validi, manu articulo 4to dilatato instructâ, ungue conico aculeato; 7mi ungue vel articulo 6to rudimentario.

G. 3. AMPELISCA, *Kr.¶*—Epimeræ magnæ. Antennæ graciles. Pedes 1mi 2dique manu nullâ subcheliformi; 3tii 4tique manu articulo 3tio instructâ, digito articulis 3 sequentibus formato, articulo ultimo vel ungue longissimo et gracillimo; 5ti 6tique 5-articulati, ungue rudimentario recurvo, immobili (vel parum mobili). Styli caudales postici natatorii.

G. 4. PROTOMEDEIA, *Kr.¶¶*—Corpus subdepressum, epimeris sat brevibus. Antennæ superiores appendiculatæ, inferiores pediformes, basi prælongo. Manus 3tiæ 4tæque articulis 3tio 4toque instructæ et digiti longi articulis sequentibus coalitis. Pedes 2di parvi, manu subcheliformi non instructi.

* Tids. iv, 153, 1842. "Caput crassiusculum." "Mandibula apice dilatata, quadridentata, palpo 3-articulato." "Pedes 3tii 4tique paris ungue sublaminari postice subtiliter serrulato." "Pedes spurii [abdominales] 2di et 3tii paris natatorii, reliqui saltatorii."

‡ Tids. iv, "Pedes spurii 4ti 5ti 6tique paris saltatorii; articulus basalis 6ti paris articulis terminalibus triplo vel quadruplo longior."

‡ Jour. Acad. Nat. Sci. Philad., i, 379. Here falls *Bellia* of C. Spence Bate (Ann. and Mag. N. Hist. 1851, [2], vii, 318.)

§ Tids. iv, 152. "Pedes 5ti et 6ti paris recurvi, articulo 1mo parum modo dilatato ungue armati pusillo."

¶ Tids. iv, 154. "Oculi simplices?" "Sextum pedum abdominalium par natatorium."

¶¶ Tids. iv, 154.

G. 5. AORA, Kr.*—Corpus subdepressum, epimeris sat parvis. Antennæ superiores longæ, appendiculatæ, inferiores subpediformes. Pedes 1mi 2dique manu subcheliformi, 1mis maximis, articulo 3tio posticè in apicem longissimum producto, manu angustâ, ungue fere lamellari. Manus 3tiæ 4tæque articulo 4to ovali instructæ digitis articulis 5to 6toque. Styli caudales saltatorii, 6tis 7mis setis non aculeis apice instructis.

2. Antennæ 2dæ multo posteriores, fronte in rostrum producto.

G. 6. PHOXUS, Kr.†—Epimeræ permagnæ. Pedes 1mi 2dique manu subcheliformi validâ instructi. Manus 3tiæ 4tæque articulo 3tio 4toque junctis instructæ, digitis 5to 6toque. Pedes 6ti multo longiores. Caput longum, triangulare, antice productum et acuminatum. Antennæ anteriores perbreves (capite breviores), elongate appendiculatæ; posteriores paulo longiores. Mandibulæ palpo longissimo. Segmentum caudale laminis constans duâbus.

Subfam. 6. ISÆINÆ.‡—Pedes quatuor vel sex postici subprehensiles.

G. 1. ISÆA, Edw.—*Gammaro* similis. Pedes 10 postici similes, articulo 5to apice dilatato et truncato, ungue in articuli 5ti extremitatem latiusculam claudente. Pedes 2di manu grandi confecti. Antennæ superiores appendiculatæ.

G. 2. ANISOPUS, Templeton.—Pedes 4 postici ac in *Isæâ*, validiores, articulo 5to apice inferiore dentato, ungue magno. Pedes 1mi tenues et breves; 2di manu angustâ; 3tii manu grandiore; 4ti 5ti 1mis similes.

Subtribus III. HYPERIDEA.§

[In the first family of the Hyperidea, (the *Hyperidæ*) neither of the 5 posterior pairs of legs are subchelate, and the antennæ are not folded up beneath the head or thorax. In the second, (the *Phronimidæ*), one or more of the 3 posterior pairs of legs are subchelate or much enlarged, apparently for grasping in coition, and the antennæ are as in the *Hyperidæ*. The third family (the *Typhidæ*) differs from both the preceding in the concealment and folding of the inferior antennæ beneath the head or thorax, and in many of the species, the abdomen closes up against the venter.]

Fam. I. HYPERIDÆ.||

Antennæ 2dæ exsertæ. Abdomen in ventrem se non flectens. Pedes 5ti 6ti 7mique formâ longitudineque mediocres, 5tis 6tisve non percrassis nec prehensilibus.

Subfam. 1. VIBILINÆ.¶—Corpus formâ paulo *Gammaroideum*. Caput oculique mediocres. Maxillipedes palpo parvulo instructi. Palpus mandibularis tenuis.

* Tids. [2], i, 335, 1845.

† Tids. iv, 150.

‡ An genus *Laphystius* (Krøyer, Tids. iv, 156, 1842) *Isæinis* vel *Corophidis* affine. Species in Sturiones Squalosve parasitica! Descriptio sequens:—

Corpus latum, depressum, epimeris mediocribus, 4tis infra acutè productis. Caput transversum, rostratum. Antennæ sat breves, subulatæ, validæ, 1mæ validissimæ, anteriores, 2dæ posteriores. Mandibulæ palpo instructæ. Pedes 1mi gracillimi, manu lineari; 2di breves, manu validâ, ungue sublaminari. Reliqui decem pedes validi, subcheliformes, longitudine subæqui. Styli caudales debiles. Palpus maxillarum 1marum uniarticulatus.

§ *Hyperines* of Edwards, Crust. iii, 70: *Hyperita*, Cat. Brit. Crust. Brit. Mus. 56.

|| Familiae duæ nostræ *Hyperidæ* et *Phronimidæ* sunt Tribus "*Hyperines ordinaires*." Edw. (Crust. iii, 74; et *Phronimidæ* Cat. Brit. Crust. Brit. Mus., p. 56.

¶ *Hyperines Gammaroides*, of Edwards, Crust. iii, 72.

G. 1. VIBILIA, *Edw.*—Antennæ 4 breves, 1mæ obtusæ. Pedes 1mi 2dique subprehensiles.

Subfam. 2. HYPERINÆ.—Caput tumidum. Oculi pergrandes. Palpus mandibularis tenuis.

1. *Antennæ sive 1mæ sive 2dæ flagello longo confectæ.*

G. 1. LESTRIGONUS, *Edw.*—Antennæ 1mæ 2dæque flagello longo confectæ. Pedes 1mi 2dique paulo prehensiles.

G. 2. TYRO, *Edw.*—Antennæ 1mæ flagello longo confectæ; 2dæ perbreves, flagello nudo.

2. *Antennæ totæ breves. Caput oculique pergrandes.*

G. 3. HYPERIA, *Latr.*—Antennæ 1mæ 2dæque conspicuæ, 2dis gracilioribus. Pedes 2di sæpiusque 1mi subprehensiles, manibus multum imperfectis, articulo 4to ad apicem inferiorem paulo producto tantum.

G. 4. METOECUS, *Kröyer.*—*Hyperia* affinis. Pedes 1mi 2dique perbreves, manibus melioribus bene didactylis confecti.

G. 5. TAURIA, *Dana.*—Antennæ ac in *Hyperia*. Pedes 2di non prehensiles, articulo 4to apice inferiore non expanso nec producto.

G. 6. DAIRA, *Edw.*—Antennæ 1mæ non conspicuæ, 2dæ exsertæ. Pedes 1mi 2dique plus minusve prehensiles: tarsi pedum reliquorum breves. Rami stylorum caudalium longi.

G. 7. CYSTISOMA, *Guérin.**—Antennis pedibusque 1mis *Daira* affine. Tarsi prælongi. Styli caudales longi, ramis brevibus.

Subfam. 2. SYNOPINÆ.—Corpus gracilius. Palpus mandibularis sat brevis, latissimus. Oculi grandes.

G. 1. SYNOPIA, *Dana.*—Caput subtriangulatum, non oblongum. Pigmentum oculorum unicum. Pedes 1mi parvuli, prehensiles; 2di setis longiusculis confecti; 4ti subprehensiles; 5ti 6ti 7mique subæqui.

Fam. II. PHRONIMIDÆ.

Antennæ 2dæ exsertæ. Abdomen in ventrem se non flectens. Pedes 5ti 6tive sive crassi sive elongati, sæpius prehensiles, quoque 3tii 4tique sæpe prehensiles.

Subfam. 1. PHRONIMINÆ.—Abdomen versus basin sat gracile. Pedes 5ti magnâ manu didactylâ vel monodactylâ confecti; 3tii 4ti extremitate graciles, non prehensiles. Antennæ breves.

G. 1. PHRONIMA, *Latr.*—Manus pedis 5ti didactylæ. Segmentum thoracis 1mum oblongum.

G. 2. PRIMNO, *Guérin.*—Manus pedis 5ti monodactylæ. Segmentum thoracis 1mum non oblongum.

Subfam. 2. PHROSININÆ.—Abdomen versus basin sat crassum. Pedes 5ti prehensiles, monodactyli; quoque 3tii 4tique prehensiles. [Antennæ sat breves.]

1. *Manus pedis 5ti latæ, digito arcuato.*

G. 1. ANCHYLOMERA, *Edw.†*—Manus pedis 5ti latè et crassè subtriangulatæ. Pedes 6ti non prehensiles.

G. 2. PHROSINA, *Risso.†*—Manus pedis 5ti latæ, oblongæ. Pedes 6ti prehensiles, 5tis fere similes, minores. Mandibulæ non palpigeræ.

* *Guérin*, Rev. Zool., i, (1842) p. 214. Species *C. neptunus* portentosæ magnitudinis ($3\frac{1}{2}$ ''.)

† *Hieraconyx*, *Guérin*.

‡ *Dactylocera*, *Latreille*.



Dana, James Dwight. 1852. "On the classification of the Crustacea Choristopoda or Tetradecapoda." *The American journal of science and arts* 14(41), 297–316.

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