

Cyclinea and *Corystoidea* (part) Dana, U. S. Expl. Exp. Crust. pt. I. pp. 294 and 296; Miers, Challenger Braachyura, pp. 208 and 209.

Cancerini (exc. *Oarcinus*) and *Xanthini* (*Thiidae* only) Ortmann, Zool. Jahrb. Syst. VII. 1893-94, pp. 421 and 428.

Carapace moderately convex, either broadly transversely-oval (as in the *Cancerinæ*) or elongate-oval or subcircular or (rarely) somewhat hexagonal, the regions rarely strongly defined and rarely areolated.

Front not very broad, commonly cut into 3 teeth, which are sometimes prominent: [sometimes (*Thiinae*) the front is subentire or bilobed; in *Acanthocyclus* it is triangular and pointed.]

The antennules always fold longitudinally.

Antennal flagella usually long, coarse, and setaceous [absent in *Acanthocyclus*, short and slender in *Kraussia*].

Epistome usually sunken, always more or less overlapped by the external maxillipeds which are often somewhat elongate.

Legs gressorial.

Sternum narrow.

I propose to divide the *Canceridæ* into the following five subfamilies:—

Subfamily I. *Cancerinæ*. Carapace broadly transverse, oval, the antero-lateral borders cut into many teeth or puckers, the regions either not defined or fairly well defined and areolated. Front cut into 3 teeth. Buccal orifice about square. Epistome but slightly sunken and slightly overlapped by the external maxillipeds, which completely close the mouth and have the merus not elongate. Basal antenna-joint fixed.

Constituent genera:—

1. **Cancer*, Lamk., Leach, A. Milne Edwards Nouv. Archiv. du Mus. I. 1865, p. 185.

2. *Metacarcinus*, A. Milne Edwards, Nouv. Archiv. du Mus. I. 1865, p. 201.

3. *Trichocarcinus*, Miers, P.Z.S. 1879, p. 34 (= *Trichocera*, De Huan, Faun. Japon. Crust. p. 16).

Subfamily II. *Pirimelinæ*. Carapace somewhat hexagonal, not transverse, regions very well defined and areolated, antero-lateral borders cut into 5 teeth. Front cut into 3 teeth. Buccal orifice moderately elongate. Epistome a good deal sunken and much overlapped by the external maxillipeds which completely close the mouth. Basal antenna-joint fixed.

Includes a single genus, namely

* *Pirimela*, Leach, Milne Edwards, Hist. Nat. Crust. I. 423.

Subfamily III. *Thiinae*. Carapace subcircular the regions not defined, antero-lateral borders entire or denticulate. Front entire, or cut into two lobes which may again be subdivided into two lobules. Buccal orifice moderately elongate, the external maxillipeds, which completely cover the mouth, encroach somewhat on the very short epistome. Basal antenna-joint fixed.

Constituent genera :—

1. *Thia*, Leach: Milne Edwards, Hist. Nat. Crust. II. 143.
2. **Kraussia*, Dana.

Subfamily IV. *Atelecyclinæ*. Carapace subcircular, often a little longer than broad, the regions usually fairly or well defined, not much areolated, antero-lateral borders usually with teeth. Front usually cut into 3 (sometimes 2 or 4) teeth which are often prominent. Buccal orifice elongate, not completely covered by the external maxillipeds which are elongate—especially as to their merus—and overlap or completely conceal the sunken epistome. Basal antenna-joint either fixed or slightly movable.

Constituent genera :—

1. **Atelecyclus*, Milne Edwards, Hist. Nat. Crust. II. 141.
2. *Erimacrus*, Benedict Proc. U. S. Nat. Mus. XV. 1892, p. 229 (= *Podacanthus*, Brandt, Bull. Phys. Math. Acad. Petersb. VII. 1849, p. 180).
3. **Hypopeltarium*, Miers, Challenger Brachyura, p. 210 (= *Peltarion*, Lucas in Jacquinot's Voy. Astrolabe au Pol. Sud., Zool. III. Crust. p. 80).
4. *Pliosoma*, Stimpson, Ann. Lyc. Nat. Hist. New York, VII. 1862, p. 227.
5. **Telmessus*, White Ann. Mag. Nat. Hist. XVII. 1846, p. 497 and Samarang Crust. p. 14 (= *Platycorystes*, Brandt, Bull. Phys. Math. Acad. Petersb. VII. 1848, p. 179 : = *Oheiragonus*, Latr.).
6. **Trachycarcinus*, Faxon.
7. **Trichopeltarium*, A. Milne Edwards.

Subfamily V. *Acanthocyclinæ*, carapace subcircular. Front ending in a triangular point. Epistome short sunken, completely concealed by the external maxillipeds which also completely cover the buccal orifice. Antennal flagella absent. For the single genus

Acanthocyclus, Milne Edwards and Lucas, Voy. Amer. Merid. Crust. p. 29.

[? Subfamily *Trichiinæ* for *Trichia* De Haan, Faun. Japon. Crust. p. 109, which may however be the type of a distinct family.]

In the foregoing lists the genera known to me by autopsy are marked with an asterisk and Indian genera are printed in Roman type. I have made no attempt to split the Subfamilies into "alliances" as I have not sufficient material at my disposal for such a purpose.

Subfamily THILNÆ.

KRAUSSIA, Dana.

Kraussia, Dana, Silliman's Amer. Journ. Sci. and Arts. XIII. 1853, p. 120, and U. S. Expl. Exp. Crust. pt. I. p. 300.

Carapace not much broader than long, not concealing the first three abdominal terga even in the male, subcircular but with the antero-lateral borders much longer than the postero-lateral, and the latter rather strongly convergent and slightly concave: the regions not defined.

Front well separated from and prominent beyond the inner supra-orbital angles, almost horizontal, cut into two lobes which may, or may not, be again divided into two lobules.

The antennules fold alongside their basal joint, much nearer the longitudinal than the transverse.

The basal antenna-joint touches the front and occupies all the space between the antennular pits and the orbit: the flagellum, which is short and slender, stands in the orbital hiatus.

Buccal cavern squarish, a little elongate: the external maxillipeds—of which the merus is not elongate—slightly overlap the epistome, which though short and sunken is well enough defined. No ridges on the palate to define the efferent branchial channels.

Chelipeds massive, short and stumpy with particularly stumpy fingers.

Legs short and stout, ending in blade-like dactyli.

The abdomen of the male consists of 5 segments, the 3rd-5th terga being fused.

Sternum narrow.

Key to the Indian species of Kraussia.

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|---|---------------------|
| I. Carapace somewhat broad, its frontal and antero-lateral borders conspicuously dentate: front bilobed | <i>K. integra</i> . |
| II. Carapace somewhat elongate, its frontal and antero-lateral borders minutely denticulate: front four lobed | <i>K. nitida</i> . |

1. *Kraussia integra* (De Haan).

Cancer (Xantho) integer, De Haan, Faun. Japon. Crust. p. 66, pl. xviii. fig. 6.

? *Kraussia rastripes*, F. Müller, Verh. Ges. Basel. VIII. 1886, pp. 475, 480, pl. iv. fig. 5.

Carapace about four-fifths as long as broad, little convex, smooth to the naked eye, but with fine transverse subsquamiform pitting under the lens.

Frontal, orbital, and antero-lateral borders elegantly uniformly and conspicuously denticulate, and fringed (except the infra-orbital border) with long stiff silky hairs. Similar hairs fringe the legs, the arm and the inner angle of the wrist, and the anterior edge of the external maxillipeds.

Front cut into two broad lobes, each of which shows a very slight tendency to be divided into two lobules. Dorsal surface of roof of orbit without any marked grooves.

Chelipeds about as long as the carapace, the hand the most massive joint: the fingers are very short and stumpy, the dactylus closing very obliquely on a short straight immobile finger that is little better than a tubercle. On the outer surface of the hand is some fine subsquamiform sculpture: on the upper surface of the finger are some bluntly-dentiform granules in rows, and there are some granules near the inner angle of the wrist.

Legs stontish, slightly shorter and much less massive than the chelipeds: the dorsal surfaces of the propodites and dactyli—as of the carpopodites also in their distal end—are abundantly and elegantly denticulate. All the dactyli are blade-like.

In the Indian Museum are two specimens from the Andamans.

2. *Kraussia nitida*, Stimpson.

Kraussia nitida, Stimpson. Proc. Ac. Nat. Sol. Philad. 1858, p. 40: Miers, Zool. H. M. S. Alert, pp. 184, 235: J. E. Henderson, Trans. Linn. Soc., Zool., (2) V. 1893, p. 379, pl. xxxviii. fig. 9.

Differs from *K. integra* in the following particulars:—

(1) The length of the carapace is more than four-fifths the breadth, and the carapace is more convex from side to side:

(2) The frontal, orbital, and antero-lateral borders are minutely, instead of conspicuously, denticulate, and the hairs that fringe them are more scanty:

(3) The front is more prominent and is cut into 2 lobes each of which is deeply cut into 2 lobules:

(4) There are two distinct though fine grooves in the roof of the orbit, one of which passes far back on to the carapace and imitates a cervical groove:

(5) The chelipeds are quite smooth except for a few granules at the inner angle of the wrist:

(6) The dactyli of the legs are more broadly blade-like, and the last three joints of the legs are without any denticulations or have only a trace of them on the propodite.

In the Indian Museum are two specimens one from the Andamans, 20 fms., the other from off the Ganjam coast, 9 fms.

Subfamily ATHLECYOLINÆ.

TRICHOPELTARIUM, A. M. Edw.

Trichopeltarium, A. Milne Edwards, Bull. Mus. Comp. Zool. VIII. 1880, p. 19.

Carapace oval or subcircular, as long as or longer than broad, strongly convex, its borders spinate.

Front prominent, not very broad, cut into 3 sharp teeth or spines.

Orbits shallow, defined by spines with considerable gaps between them: inner suborbital angle spiniform. Eye-stalks slender.

The antennules fold longitudinally. The basal antenna-joint is short and subcylindrical; the flagellum coarse, stout, setaceous.

Epistome of fair length, fairly well defined, sunken, and overlapped by the external maxillipeds. Buccal orifice square-cut, longer than broad, not completely covered by the external maxillipeds, which are somewhat elongate and have the merus a little narrower than the ischium. Efferent branchial regions defined by ridges which do not reach up to the epistome.

Chelipeds massive and unequal in the male.

Legs stout, hairy, more or less spiny, ending in stout styliform dactyli: they are longer and are not much less massive than the female chelipeds.

3. ? *Trichopeltarium ovale*, Anderson.

? *Trichopeltarium ovale*, Anderson, J.A.S.B. Vol. LXV. pt. 2. 1896, p. 103; Ill. Zool. Investigator, Crust. pl. xxv. figs. 4-4a; Alcock, Investigator Deep Sea Brachyura, p. 57.

Carapace egg-shaped, covered with spines which on its dorsal surface are bifid or multifid, and with short stiff but not very conspicuous hairs. The regions are well defined by coarse grooves: the gastric is divided into three sub-regions, and the cardiac into two, and on either side of the cardiac region a semilunar area is marked off on the branchial region.

The front, which is cut into three prongs, is about one-seventh the greatest breadth of the carapace, and is separated from the orbit by a deep notch.

The orbits are very incomplete: they are formed by a prominent

preocular tooth (parallel with, but less prominent than, the front), below which at the inner suborbital angle is an almost equally prominent coarse spine: there are also two other teeth—one at the external orbital angle, and the other between this and the preocular tooth—hardly distinguishable from the ordinary spines of the carapace. The eyestalks which are slender, tapering, and of good length, do not nearly fill the shallow orbital cavity.

The antennules fold longitudinally in fossæ, beneath the front: their basal joint is large. The antennæ arise almost in the same transverse line with the antennules: their basal joint forms a large part of the floor of the orbit.

The epistome is sunk below (i.e. is really arched much above) the plane of the external maxillipeds. The efferent branchial channels are defined by an incomplete ridge, and are patulous. The external maxillipeds are slender, and leave the mandibles exposed between them: the merus is obovate and narrower than the ischium, the palp is coarse.

The chelipeds and legs are spiny and bristly, the spines in the case of the legs being well pronounced only on the dorsal surface of the meropodites.

In the female the chelipeds are shorter and not much stouter than the legs and are about as long as the carapace.

The legs are little unequal in length, the first pair which are slightly the longest being hardly half as long again as the carapace: they all end in long, stout, cylindrical, sharply styliform dactyli.

The abdomen of the female is seven-jointed and covered with coarse hairs: the first two segments are broader, and on them the spines decrease in size to the seventh segment which is smooth.

The colour in life is recorded by Dr. A. R. Anderson as pale bluish yellow.

Length of carapace and rostrum 64 millim., breadth 55.5 millim., depth 35 millim.

A single female from off the west coast of Ceylon 180–217 fms., on a foul bottom of broken coral.

TRACHYCARCINUS, FAXON.

Trachycarcinus, Faxon, Bull. Mus. Comp. Zool. XXIV. 1893, p. 156, and Mem. Mus. Comp. Zool. XVIII. 1895, p. 25: Alcock, Investigator Deep Sea Brachyura, p. 58.

“Carapace pentagonal, moderately convex, lateral margins long, nearly straight, toothed. Front narrow, produced, three-toothed. Orbits large with forward aspect, imperfect, with two hiatuses above

one below, and one at the inner angle; lower wall formed chiefly by the carapace. Anterior margin of buccal cavity not distinctly defined, epistome short, ridges of the endostome developed. Sternum long and rather narrow. Abdomen of male narrow and five-jointed, the third, fourth, and fifth segments consolidated. Eye-stalks very small, retractile within the orbits. Antennules longitudinally folded. The antennæ lie in the inner hiatus of the orbit; their basal segment is but slightly enlarged, not filling the hiatus at the inner angle of the orbit nor attaining to the front, subcylindrical, unarmed, imperfectly fused with the carapace; the second segment is longer and slenderer than the first, the third segment about equal to the second in length, but slenderer; all these segments are furnished with long and coarse setæ; the whole antenna is less than one-half as long as the carapace. The ischium of the outer maxillipeds is produced at its antero-internal angle; the merus of the same appendages is rounded at the antero-external angle, obliquely truncated but not emarginated at the antero-internal angle, where it articulates with the following segment. Legs of moderate length. Right and left chelipeds very unequally developed in the male. Dactyli of ambulatory legs styliform, straight slender, longer than the penultimate segments."

4. *Trachycarcinus glaucus*, Alcock and Anderson,

Trachycarcinus glaucus, Alcock and Anderson, Ann. Mag. Nat. Hist. Jan. 1899, p. 8; Alcock, Investigator Deep Sea Brachyura, p. 59, pl. ii. fig. 2.

Carapace irregularly pentagonal, its surface coated with short stiff club-shaped hairs; the regions well defined, rather tumid, much subdivided into tumid lobules, of which the convexities are capped by clusters of large conical granules and the general surface also is studded especially in the young with similar granules.

Front narrow, horizontal, prominent, deeply cleft into three prongs of nearly equal size.

Antero-lateral borders half as long again as the postero-lateral, armed with three stout pinnulate spines not including the outer orbital angle: postero-lateral borders entire, posterior border finely beaded.

Upper orbital wall deeply cleft into three pinnulate teeth, lower orbital border deeply concave, its inner angle strongly spiniform. Eye-stalks slender, rather long: the eyes, which are more ventral than terminal, are dull and faintly pigmented (as in many species of *Munidopsis*), and are non-facetted.

Antennal flagella short, extremely slender, not hairy.

Chelipeds remarkably unequal in the male, equal in the female.

The smaller cheliped of the male and both chelipeds of the female

are about as long as the carapace, and are coated, almost to the fingertips, with stiff club-shaped hairs, which are short except along the upper border of the wrist and hand and of the basal part of the finger, where they are long: beneath the hairs are some scattered granules, and along the upper border of the arm, wrist and hand are some denticles: the inner angle of the wrist is strongly spiniform, and the far end of the upper border of the hand is dentiform.

The larger cheliped of the male is about twice the length of the carapace, about half its length being formed by the hand and fingers: the greatest breadth of the hand is about half the length of the carapace. It is almost smooth, the upper border of the arm and hand, and the inner border and upper and outer surfaces of the wrist, alone being furnished with denticles and hairs: the inner angle of the wrist is spiniform.

The legs are covered with short stiff club-shaped hairs which are rather more thick-set on the anterior borders and on the dactyli than elsewhere. The second and third pair, which are rather longer than the first and last pair are somewhat less than $1\frac{1}{2}$ times the length of the carapace. All the dactyli end in a little claw.

The abdomen of the male consists of seven distinct segments, but the 3rd, 4th and 5th move together.

In life the animal is covered with a coat of mud held together by the hairs above described, the only bare parts being the hand and fingers and part of the arm of the larger cheliped of the male.

The colours in life are described by Dr. A. R. Anderson, as "white with a bluish tinge, eyes with a slight reddish opalescence." In spirit the bluish tinge is fainter, the eyes are a pale milky yellow-ochre, and the large hand is ivory-white.

The dimensions of the largest male are as follows:—

Length of carapace ...	...	...	...	18.5 millim.
Breadth of carapace ...	...	...	...	14.5 "
Combined length of hand and fingers, along lower border...				14.75 "
Combined length of basal joints, arm and wrist, along upper border ...	...	...	...	15 "

Fifteen specimens were dredged off the Travancore coast at a depth of 430 fms. The bottom consisted chiefly of coral (living and dead).

Several of the specimens were egg-laden females. The eggs are comparatively few in number and are large, their diameter being about 1.3 millim.

This species is very like *Trachycarcinus corallinus*, Faxon, which was dredged by the "Albatross" off Panama and the Pacific coast of Mexico, at depths of 546-695 fathoms.

It differs from that species in the following particulars :—

The carapace is more granular, and its lobules are capped by blunt conical spinules, *not* smooth tubercles ; and its posterior border is finely and irregularly beaded, *not* dentate.

The front is deeply cut into 3 spines or prongs of almost equal size, *not* into 3 teeth of which the middle one is larger than the others.

The eyes, though very pale, are distinctly pigmented, *not* devoid of pigment.

The inner angle of the wrist of the smaller cheliped is very strongly spiniform, *not* unarmed.

As Mr. Faxon says, *Trachycarcinus* is very closely related to *Trichopeltarium* ; in fact, the relation is so close as to make the separation of the two forms almost doubtful.

Family CORYSTIDÆ.

Corystiens (part) Milne Edwards, Hist. Nat. Crust. II. 189.

Corystoidea-Corystidæ (part) Dana, U. S. Expl. Exp. Crust. pt. I, p. 298.

Corystoidea (part) Miers, Challenger Brachyura, p. 210.

Majoidea-Corystoidea, Ortmann, Zool. Jahrb., Syst., VII. 1898, pp. 26, 28.

Ozryhyncha-Corystidæ, Ortmann, in Bronn's Thier Reich. V. ii. (Arthropoda), p. 1166.

Carapace much longer than broad, oval, convex from side to side, the regions sometimes fairly well defined, sometimes not, never areolated.

Front fairly prominent, cut into 2 or 3 teeth.

The antennules are small and fold longitudinally.

The antennæ, when present and perfect, usually have the flagellum long coarse and setaceous.

There is no epistome, and the external maxillipeds, which are elongate and sometimes have a slight pediform cast, extend almost up to the antennules. The buccal orifice is elongate and is square cut with the anterior angles rounded and slightly convergent.

Legs either all gressorial or the last pair modified for swimming.

The following genera compose this family :—

I. *Genera in which the legs are not natatory* :—

1. *Bellia*, Milne Edwards, Ann. Sci. Nat. (3) IX. 1848, p. 192.

2. **Corystes*, Latr., Milne Edwards, Hist. Nat. Crust. II. 146.

3. *Corystoides*, Edwards and Lucas, Voy. Amer. Merid., Crust. p. 31.

4. *Gomesa*, Gray, Zool. Miscell. p. 39, Miers, Challenger Brachyura, p. 212 (= *Oeidia*, De Haan, Faun. Japon. Crust. p. 15).

5. *Podocatactes*, Ortmann, Zool. Jahrb., Syst., VII. 1898, p. 29.

II. *Genera in which the legs are more or less natatory* :—

6. **Nautilocorystes*, Milne Edwards, Hist. Nat. Crust. II. 149

(= *Dicera*, De Haan, Faun. Japon. Crust. p. 14).

7. *Pseudocorystes*, Milne Edwards, Hist. Nat. Crust. II. 149.

NAUTILOCORYSTES, Edw.

Nautilocorystes, Milne Edwards, Hist. Nat. Crust. II. 149.

Dicera, De Haan, Faun. Japon. Crust. p. 14.

Carapace elongate-obovate, slightly convex from side to side, smooth without distinction of regions, the antero-lateral borders longer than the postero-lateral and armed with five teeth.

Front moderately broad, horizontal, moderately prominent, cut into 2 or 3 teeth.

The antennules fold longitudinally. Antennæ coarse, setaceous, the basal joint occupying the orbital hiatus, the flagellum about half as long as the carapace.

Buccal orifice elongate subquadrate, not defined anteriorly: external maxillipeds elongate, the merns narrower than the ischium and bearing the flagellum at its summit. Even in repose the external maxillipeds partly conceal the antennules.

Chelipeds short, much more massive than the legs.

Legs compressed, the first 3 pair end in a lanceolate dactylus the last pair end in a blade-like swimming dactylus.

1. *Nautilocorystes investigatoris*, n. sp.

Carapace elongate-obovate covered with a multitude of fine brown longitudinal lines, smooth.

Front about a third the greatest breadth of the carapace, slightly prominent beyond the orbits, cut into 3 teeth.

Antero-lateral borders cut into 5 irregularly disposed teeth including the outer orbital angle.

Inner angle of lower border of orbit acutely dentiform, prominent beyond the level of the front.

Chelipeds equal, about as long as the carapace: a spine at the inner angle of the wrist and two spines on the upper surface of the hand—one being in front of the apex of the wrist-joint the other behind the finger-joint.

Legs compressed, much slenderer but not much shorter than the chelipeds, hairy: the dactylus of the last pair is broadly blade-shaped as in *N. ocellatus*.

In the Indian Museum are 2 females—one with eggs—from the Vizagapatam coast 15–17 fms. The carapace is 6.25 millim. long and 5.5 millim. broad.

This species differs from *N. ocellatus* in the following particulars:—the front is 3-spined, the inner suborbital angle is extremely prominent and spiniform, there are two spines on the hand, and the colour-markings are fine longitudinal lines.