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### LX.—British Isopoda of the Families Ægidæ Cirolanidæ, Idoteidæ, and Arcturidæ

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small, scarcely extending beyond the basal segment of the abdomen; tegmina and wings hyaline, a little opaque at base.

Type, *O. boliviana*, Dist. (*Cicada*).

*Cryptotympana varicolor*, sp. n.

♀. Body brownish ochraceous; pronotum with two inwardly curved obconical black spots and two more obsolete black oblique spots on each lateral area between the incisures, but not extending to the posterior margin; mesonotum with a large pale greenish discal spot, its base truncate and resting on the cruciform elevation, anteriorly divided into three angular prolongations which about reach the anterior margin; lateral areas of the sternum somewhat pale greenish. Tegmina and wings hyaline, bases of both brownish ochraceous; the tegmina with the costal membrane and area, the basal cell, the greater part of the venation, and the margins of the transverse veins at bases of second and third apical areas brownish ochraceous.

Length of head about half the width between eyes, and including eyes considerably broader than base of mesonotum; rostrum passing the intermediate coxæ; body beneath finely pilose; anterior femora armed with two long spines beneath.

Long., excl. tegm., ♀ 31 mm.; exp. tegm. 102 mm.

*Hab.* Sumbawa Island (Paris Mus.).

LX.—*British Isopoda of the Families Ægidæ, Cirolanidæ, Idoteidæ, and Arcturidæ.* By Canon A. M. NORMAN, M.A., D.C.L., LL.D., F.R.S., &c.

[Plates XII. & XIII.]

THE purpose of this paper is to bring up our knowledge of the Crustacea of the above-named families to the present time. Most of the additions to our fauna are here first made known. In Bate and Westwood's 'Sessile-eyed Crustacea' the numbers of species described were:—*Ægidæ* 5, *Cirolanidæ* 4, *Idoteidæ* 7, *Arcturidæ* 3 (of these, *Arcturus gracilis* was the male of *A. longicornis*). The following notes record—*Ægidæ* 10 (one of these, *Æ. rosacea*, a doubtful British species), *Cirolanidæ* 9, *Idoteidæ* 11, *Arcturidæ* 6.

Besides the British Isopods there have been added such species as have been taken by dredging-expeditions of the

British Government in the Mediterranean and North Atlantic. These non-British forms are indicated by the bracket, [ , which precedes the name.

In order to obviate frequent full references, the following works and papers will be quoted as "l. c.":—

- BATE and WESTWOOD. 'British Sessile-eyed Crustacea' [pp. 209-400, which contain the species here referred to, were published in 1867].
- DOLLFUS (A.). "Les Idoteidæ des côtes de France," Feuille des jeunes Naturalistes, Feb. 1895\*.
- HANSEN (H. J.). 'Cirrolanidæ et familiæ nonnullæ propinquæ Musci Hauniensis,' 1890.
- HARDEN (OSCAR). "Report on the Marine Isopoda of New England and adjacent Waters," Rep. U.S. Commiss. Fish and Fisheries, pt. vi., for 1878, published 1880.
- LÜTKE (C. H.). "Nogle Bemærkninger om de nordiske Æga-arter samt om Æga-slægtens rette Begrænsning," Naturhist. Forening Vidensk. Meddelelser, 1858, and Supplement, 1860 (separate copies).
- SARS (G. O.). "Prodromus descriptionis Crustaceorum et Pycnogonidarum expeditione Norvegica anno 1875," Archiv Math. og Naturvid. 1876.
- "Oversigt af Norges Crustaceer med foreløbige Bemærkninger over de nye eller mindre bekendte Arter: I. Podophthalmata, Cumacea, Isopoda, Amphipoda," Christ. Vidensk. Selsk. Forhandl. 1882.
- "Norwegian North-Atlantic Expedition, Crustacea," 1885.
- "Account of the Crustacea of Norway," vol. ii. Isopoda (part referred to published 1897).
- SCHÜBDE and MEINERT. 'Symbole ad Monographiam Cymotho-  
arum Crustaceorum Isopodum Familiæ: I. Ægidie,' 1879.

I have confined the references given at the head of the species to such works and papers as contain the best illustrations or descriptions of the species, or are in some other way of value, and the localities given are restricted to those from which I have personally identified the species; but an exception is made in order to render what is due to those who have been the first to add any new species to our fauna since the publication of Bate and Westwood's work.

I am indebted to my friend Rev. T. R. R. Stebbing for the use of the illustrations. They were prepared at the time when we jointly published a paper upon some Isopoda †. That paper was intended to be only the first part of a report on the whole order; but so many of the new forms which we

\* A shorter paper with the same title was published in the same work in November 1894.

† Norman and Stebbing, "Crustacea Isopoda of the 'Lightning,' 'Porcupine,' and 'Valorous' Expeditions: Part I. Apseudidæ, Tanaidæ, and Anthuridæ," Trans. Zool. Soc. vol. xii. 1886, p. 78.

had at our disposal were just at that time fully described and beautifully illustrated in Professor Sars's great work on the Crustacea of the Norwegian North-Atlantic Expedition, that further publication of our papers was discontinued. As *Æga megaleps*, sp. n., was one of the forms then under our notice, Mr. Stebbing's name is associated with my own as author of the species.

## Fam. Ægidæ.

## Genus 1. ÆGA, Leach.

1. *Æga psora* (Linn.).

1836-49. *Æga emarginata* (Leach), II. Milne-Edwards, Cuvier's Règne Animal, Crustacés, pl. lxxvii. figs. 1-1 h.

1858. *Æga psora*, Lütken, l. c. p. 1.

1867. *Æga psora*, Bate & Westwood, l. c. vol. ii. p. 233.

1879. *Æga psora*, Schiödte & Meinert, l. c. p. 357, pl. viii. figs. 5, 6 (the young).

1890. *Æga psora*, II. J. Hansen, l. c. p. 294, pl. ix. figs. 4, 4 i.

1897. *Æga psora*, G. O. Sars, l. c. p. 59, pl. xxiv.

North of Scotland (*A. Hancock*); lat. 60° 14' N., long. 4° 30' W., 290 fathoms, and lat. 60° 6', long. 5° 8' N., 352 fathoms ('Porcupine,' 1869, Stats. 78 and 82, both within the British Area); Kors Fiord, near Bergen, 1878 (*A. M. N.*): all in Mus. Nor.

2. *Æga ventrosa*, M. Sars. (Pl. XII. figs. 5-8; Pl. XIII. figs. 8, 9.)

1858. *Æga ventrosa*, M. Sars, "Oversigt norske-arctiske Region forekommende Krybsdyr," Videns. Selskab. Forhandl. p. 35 (separate copy).

1879. *Æga ventrosa*, Schiödte & Meinert, l. c. p. 375, pl. ix. figs. 7-10.

1885. *Ægiochus Nordenskiöldi*, Bovallius, "New Isopod from Swedish Arctic Exped.," Svenska Vet.-Akad. Handl. vol. x. p. 5, pls. i. & ii. (separate copy).

1886. *Æga Lütkeni*, Bovallius, "New or imperfectly known Isopoda," Svenska Vet.-Akad. Handl. vol. xi. p. 3, pl. i. figs. 1-10 (separate copy).

1886. *Ægiochus ventrosus*, id. ibid. p. 8.

1897. *Æga ventrosa*, G. O. Sars, l. c. p. 64, pl. xxvi. fig. 9.

This species was added to the British fauna in 1869 by the 'Porcupine,' Stats. 74, 75, 78, stations which are all to the west of Shetland, in depths of 203-312 fathoms. I have taken it in Norway in 250-300 fathoms in the Trondhjem and Hardanger Fiords.

3. *Æga tridens*, Leach.

1860. *Æga tridens*, Lütken, *l. c.* p. 2 (separate copy).  
 1867. *Æga tridens*, Bate & Westwood, *l. c.* vol. ii. p. 281.  
 1879. *Æga tridens*, Schiödte & Meinert, *l. c.* p. 340, pl. vii. figs. 1, 2.  
 1895. *Æga tridens*, G. O. Sars, *l. c.* p. 60, pl. xxv. fig. 1.

Off Isle of Cumbrae, Firth of Clyde (*D. Robertson*, in Mus. Nor.).

4. *Æga Strömii*, Lütken.

1834. *Æga menophthalma*, var., Johnston, *Loudon's Mag. Nat. Hist.* vol. vii. p. 233, fig. 43 c.  
 1843. *Æga bicarinata*, H. Rathke (nec Leach), "Beiträge zur Fauna Norwegens," *Acta Acad. Cæs. Leop.-Car. Nat. Cur.* vol. xx. p. 25, pl. vi. figs. 1-18.  
 1853. *Æga Strömii*, Lütken, *l. c.* p. 4, pl. i. figs. 6-8.  
 1879. *Æga Strömii*, Schiödte & Meinert, *l. c.* p. 349, pl. vii. figs. 10-15.  
 1897. *Æga Strömii*, G. O. Sars, *l. c.* p. 60, pl. xxv. fig. 2.

On fish taken off Whitburn, Co. Durham (*A. Hancock*, in Mus. Nor.); a specimen taken lat. 60° 39' N., long. 3° 9' W., *i. e.* west of the Shetland Isles, in 203 fathoms ('Porcupine,' 1869, Stat. 74); a co-type specimen from Faroe Islands given me by Dr. Lütken is also in my collection.

This is the British species which has been confused with the next, under which see observations.

5. *Æga rosacea*, Risso.

1810. *Æga rosacea*, Risso, *Hist. Crust. Nice*, p. 140, pl. iii. fig. 0.  
 1818. *Æga bicarinata*, Leach, *Diction. Sci. Nat.* vol. xii. p. 349.  
 1836-49. *Æga bicarinata*, H. Milne-Edwards, *Cuv. Rég. Anim.* pl. lxxvii. fig. 2.  
 1867. *Æga bicarinata*, Bate & Westwood, *l. c.* vol. ii. p. 278.  
 1879. *Æga rosacea*, Schiödte & Meinert, *l. c.* p. 351, pl. x. figs. 5-7.

The most marked distinction between this species and the last consists in the size and position of the eyes, which in *Æ. Strömii* are very large and touch or all but meet each other, while in *Æ. rosacea* they are very small for the genus and are widely separated. *Æga rosacea* is a well-known Mediterranean species, and further evidence is, I think, required before it can be safely acknowledged as a member of our fauna. The type specimen of Leach, which is figured by Bate and Westwood, was from an unknown locality. Those authors undoubtedly confused two species, since my Durham specimen, which was sent to them for their use, was referred to *Æga bicarinata*, while it is undoubtedly *Æ. Strömii*. This throws doubt upon the other localities which they give, though, of course, they may refer to Leach's

species (see also Schiödte and Meinert for remarks on this subject).

6. *Æga monophthalma*, Johnston.

1834. *Æga monophthalma*, Johnston, Loudon's Mag. Nat. Hist. vol. vii. p. 232, fig. 43, a, b.  
 1867. *Æga monophthalma*, Bate & Westwood, l. c. vol. ii. p. 286.  
 1879. *Æga monophthalma*, Schiödte & Meinert, l. c. p. 365.  
 1897. *Æga monophthalma*, G. O. Sars, l. c. p. 62, pl. xxvi. fig. 1.

Mr. Thomas Edward sent me many years ago a specimen to determine from the Moray Firth. I have taken it at Shetland, and received from the late Mr. A. Hancock a fine example procured by him from the fishing-boats at Whitburn, Co. Durham.

7. *Æga crenulata*, Lütken.

1858. *Æga crenulata*, Lütken, l. c. p. 6, fig. 4.  
 1879. *Æga crenulata*, Schiödte & Meinert, l. c. p. 343, pl. vii. figs. 0-9.  
 1897. *Æga crenulata*, G. O. Sars, l. c. p. 61, pl. xxv. fig. 3.

A specimen of this species was sent to me for determination by Mr. J. Duncan Matthews. It had been taken in October 1886 from a large shark caught entangled in lines about 8 miles off Stonehaven, Scotland (see Mr. Matthews's record of it, Ann. & Mag. Nat. Hist. ser. 5, vol. xx. 1887, p. 444). A co-type specimen from Greenland, given me by Dr. Lütken, is in my collection.

[*Æga Deshayesiuna* (H. Milne-Edwards). (Pl. XII. figs. 1-4; Pl. XIII. figs. 10, 11.)

1840. *Rocinela Deshayesiuna*, H. Milne-Edwards, Hist. Nat. Crust. vol. iii. p. 243.  
 1866. *Æga Deshayesiana*, Heller, Carcinol. Beit. z. Fauna des adriatischen Meeres, p. 22.  
 1879. *Æga Deshayesiana*, Schiödte & Meinert, l. c. p. 360, pl. viii. figs. 7-9.  
 1885. *Æga Schiödteana*, Bovallius, "New and imperfectly known Isopoda, I," K. Vet.-Akad. Handl. vol. x. p. 5, pl. i. figs. 1-10.

A specimen of *Æ. Deshayesiana* was taken in the Mediterranean by the 'Porcupine,' 1870, in Bona Bay, N. Africa, in 25-55 fathoms. Only three specimens were known to Schiödte and Meinert.

[*Æga megalops*, Norman and Stebbing, sp. n. (Pl. XIII. figs. 1-7.)

Eyes extremely large, united across the greater part of the head, which they almost entirely occupy, so that very little

besides is to be seen, only a small triangular portion at the back and a little piece at the rostrum (see fig. 2). Moreover, the eye so overhangs the front that this rostral portion is hidden when the *Æga* is viewed from above. The entire surface of the body is closely microscopically punctated, presenting under the microscope a shagreened appearance, besides which there are scattered punctuations of much larger size. The hind margins of the segments of the metasome are beaded (as in *Æga monophthalma*); the terminal segment is well rounded at the extremity, its margin serrated and ciliated, its surface covered with minute spinules. The superior antennæ have the joints of the peduncle cylindrical. The coxal plates of the first segment of the mesosome are absent; those of the three following segments are oblong in form and abruptly truncated at their extremity; those of the following segments are more produced, their extremities blunt; nor are the epimera of the metasome sharply pointed. The three anterior pairs of legs (see fig. 5) are almost entirely devoid of spiny armature. The inner uropods are very broad, widely truncated distally, with the outer corner slightly produced, and are without any emargination of the outer side; both pairs of uropoda are serrated.

Length 13 mm.

A single female taken by the 'Porcupine,' 1870, 8 miles N.W. of Cape Sagres, Portugal, in 45 fathoms.

## Genus 2. ROCINELA, Leach.

= *Acherusia*, Lucas.

### 1. *Rocinela danmoniensis*, Leach.

1851. *Æga rotundicauda*, Lilljeborg, "Norges Crustaceer," *Østvers. K. Vet.-Akad. Forhandl.* p. 23.

1867. *Rocinela danmoniensis*, Bate & Westwood, *l. c.* vol. ii. p. 291.

1873. *Æga nasuta*, Norman, in Wyville Thomson's 'Depths of the Sea,' p. 127, woodcut.

1870. *Rocinela danmoniensis*, Schiödte & Meinert, *l. c.* p. 383, pl. xi. figs. 1-16.

1890. *Rocinela danmoniensis*, H. J. Hansen, *l. c.* p. 298, pl. x. figs. 1-1 n.

1897. *Rocinela danmoniensis*, G. O. Sars, *l. c.* p. 65, pl. xxvii.

Lat. 60° 39' N., long. 3° 9' W., 203 fathoms, and lat. 60° 45' N., long. 3° 6' W., 250 fathoms, *i. e.* west of the Shetland Isles ('Porcupine,' 1869, *Stats.* 74, 75). I have taken it on the West Norwegian coast in the Bergen and Hardanger Fiords.

The next species is very closely allied to the present; the chief point of difference is that in *R. danmoniensis* the eyes



are closer together and even touch each other, but that there is considerable variation is evidenced even by Schiödte and Meinert's figures of the male and female.

## 2. *Rocinela Dumerilii* (Lucas).

1845. *Acherusia Dumerilii*, Lucas, Anim. Art. d'Algérie, Crustacés, p. 79, pl. viii. fig. 5\*.

1864. *Acherusia complanata*, Grube, Die Insel Lussin und ihre Meeresfauna, p. 76.

1866. *Acherusia Dumerilii*, Heller, Carcinol. Beit. z. Fauna des adriatischen Meeres, p. 22.

1879. *Rocinela Dumerilii*, Schiödte & Meinert, l. c. p. 391, pl. xii. figs. 4-9.

Near the Eddystone Lighthouse (Plymouth Biol. Lab. 1899); Adriatic (Heller, in Mus. Nor.); Naples (*A. M. N.* 1887).

The Plymouth specimen is of full size, 27 mm. long, an adult male. Schiödte and Meinert describe the "frons" thus:—"Frons media excavata, bicarinata, ante tridens, dente medio magno producto"; this relates to "femina ovigera." Lucas in the generic description writes:—"La tête est petite et terminée, dans les mâles, par un front composé de trois tubercules relevés, dont le médian est beaucoup plus prononcé; dans les femelles, la tête est seulement trianguliforme"; and in the specific description "capite in medio fortiter impresso." Schiödte and Meinert say of Lucas's female "sine dubio femina ejus adulta non fuisset, quam ob rem incertum hæret; utrum virginem an marem adolescentem delineaverit." They figure the female, and not the male, and that figure of the female represents the front as "tridens," while their "virgo" has "Frons triangula, apice obtuso, supra æquato." These immature specimens of *Rocinela Dumerilii* may very easily be mistaken for *R. danmoniensis*. The Plymouth adult male has the central area of the head raised considerably above the level of the eyes; this raised part is bounded by elevations which flank the eyes on each side, but the central portion between three lateral elevations is much depressed; in front the rostrum projects forwards and is bent upwards, and on each side of this central point are others of the same form and also bent upwards. This exactly corresponds with the description of Lucas of the same sex †. Bovallius ("New or imperfectly known Isopoda," K. Vet.-Akad. Handl. vol. xi. 1886, p. 9 (separate copy),

\* Such is the reference to plate in the text, but my copy has only six plates.

† I fail to understand Schiödte and Meinert's pl. xii. fig. 5, for there the rostrum is represented as bent downwards.

pl. ii. figs. 11-19) describes and figures what he calls "the adult male" of *Rocinela Dumerilii*. It measured 20 mm., but the front of the head, instead of having the character which has just been described, is simple, as in immature specimens.

Genus 3. *SYSCENUS*, Harger.

= *Harponyx*, G. O. Sars.

*Syscenus infelix*, Harger.

1880. *Syscenus infelix*, Harger, *l. c.* p. 337.

1882. *Harponyx pranzoides*, G. O. Sars, *l. c.* p. 60, pl. ii. fig. 1 (the young).

1883. *Syscenus infelix*, Harger, "Rep. Dredging 'Blake,' 1880, Isopoda," Bull. Mus. Comp. Zool. vol. xi. p. 100, pl. iii. figs. 5, 5 *a*, pl. iv. figs. 3-3 *h*.

1885. *Rocinela Lilljeborgii*, Bovallius, "New Isopod from the Coast of Sweden," K. Svenska Vet.-Akad. Handl. vol. x. p. 1 (separate copy), pls. i. & ii.

1897. *Syscenus infelix*, G. O. Sars, *l. c.* p. 67, pl. xxviii.

A fine specimen of this species, measuring 36 mm. long, dredged by Sir John Murray in the 'Triton' Expedition of 1882, is now before me. It was taken at Stat. 10, lat. 59° 40' N., long. 7° 21' W., in 516 fathoms. This station is in the warm area south of the Wyville-Thomson ridge, and within the British Area. Two other specimens of the species were given me by the describer, Mr. Harger; they were taken off Martha's Vineyard, N.E. America, in 1882, in 640 fathoms.

Fam. *Cirolanidæ*.

Genus 1. *CIROLANA*, Leach.

1. *Cirolana borealis*, Lilljeborg.

1851. *Cirolana borealis*, Lilljeborg, "Norges Crustaceer," *Œfvers. K. Vet.-Akad. Handl.* p. 23.

1867. *Cirolana spinipes*, Bate & Westwood, *l. c.* vol. ii. p. 299.

1890. *Cirolana borealis*, H. J. Hansen, *l. c.* p. 321, pl. i. figs. 1-1 *a*.

1897. *Cirolana borealis*, G. O. Sars, *l. c.* p. 70, pl. xxix.

Specimens are in my collection from the following localities:—Shetland, Isle of Skye, Cumbrac, South Devon, Guernsey; and off West of Ireland (*A. M. N.*), many dredged off S.W. of Ireland down to 808 fathoms ('Porcupine,' 1869); off Magaro, Norway (*G. O. Sars*); Fosse de Cap Breton, Bay of Biscay (*A. M. N.*); off Cadiz, 386 fathoms, and Adventure Bank, Mediterranean ('Porcupine,' 1870); Spain (*Don Pedro Antiga*); Adriatic (*Professor Heller*).

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2. *Cirolana Cranchii*, Leach.

1807. *Cirolana Cranchii*, Bate & Westwood, *l. c.* vol. ii. p. 296.

1890. *Cirolana Cranchii*, H. J. Hansen, *l. c.* p. 341, pl. iii. figs. 3-3 l.

This is also *Nerocila Swainsoni*, Leach, = *Eurydice Swainsoni*, H. M.-Edw.

My specimens are from Torquay (*Stebbing*), Plymouth, Polperro, and Cap Breton, Bay of Biscay (*A. M. N.*).

3. *Cirolana Hanseni*, J. Bonnier.

1882. *Eurydice polydendrica*, Norman & Stebbing, MS. in Norman, "Explor. Faros Channel, 'Knight Errant,'" Proc. Roy. Soc. Edinb. vol. xi. p. 47 (separate copy).

1886. "*Eurydice polydendrica*, Norman & Stebbing," in 'Museum Normanianum, III. Crustacea, no. 428 (nomen nudum).

1896. *Cirolana Hanseni*, J. Bonnier, Résultats Scient. de la Campagne du 'Caudan,' p. 574, pl. xxxii. fig. 1.

This species was taken by the 'Porcupine' Expedition of 1869, N.W. of the Butt of Lewis on the "*Holtentia* ground," Stat. 47, lat. 55° 34' N., long. 7° 18' W., 542 fathoms, and near the same place by the 'Triton,' 1882, Stat. 10, lat. 59° 40', long. 7° 21', in 516 fathoms, and 'Knight Errant,' 1880, Stat. 7, lat. 59° 58', long. 7° 22' W., in 300 fathoms.

[*Cirolana caeca*, A. Dollfus.

1902. *Cirolana caeca*, A. Dollfus, "Note prélim. *Cirolana* de 'l'Hirou-delle et 'Princesse Alice,'" Bull. Soc. Zool. de France, p. 6.

A single specimen of *Cirolana caeca*, Dollfus, which curiously I had long had in my cabinet under the same name as a new species, was taken by the 'Porcupine,' 1869, Stat. 36, lat. 48° 50' N., 11° 9' W., in 725 fathoms. This station is west of the mouth of the English Channel, and as it is only about 35 miles south of the British Area, it will probably be hereafter added to our fauna.

[*Cirolana neglecta*, H. J. Hansen.

1890. *Cirolana neglecta*, H. J. Hansen, *l. c.* p. 327, pl. i. figs. 3, 3 a, pl. ii. figs. 1-1 b.

I have this species of Hansen from Tangier Bay ('Porcupine,' 1870), Adriatic (*Prof. Claus*), and Cap Breton, Bay of Biscay (*A. M. N.*).

Genus 2. CONILERA, Leach.

*Conilera cylindracea* (Montagu).

1867. *Conilera cylindracea*, Bate & Westwood, *l. c.* vol. ii. p. 304.

1890. *Conilera cylindracea*, H. J. Hansen, *l. c.* p. 358, pl. iv. figs. 5-5 c, and pl. v. figs. 1-1 d.

I have this species in my collection from the Minch, Skye, Firth of Clyde, Plymouth, Polperro, Jersey (*A. M. N.*). It extends southwards to the Mediterranean, being recorded by Hansen from Naples. I am not aware of any record of this species having been found on the north-east coast of England or east coast of Scotland, nor is it known in Denmark or Norway. This seems remarkable, as the Isopod feeds on the flesh of living as well as dead fish, and thus would have such a ready means of being transported to great distances.

Genus 3. *EURYDICE*, Leach.

1. *Eurydice pulchra*, Leach.

1867. *Eurydice pulchra*, Bate & Westwood, *l. c.* vol. ii. p. 310.

1890. *Eurydice pulchra*, H. J. Hansen, *l. c.* p. 370, pl. vi. figs. 3-3 i.

1897. *Eurydice pulchra*, G. O. Sars, *l. c.* p. 73, pl. xxx. fig. 2.

It is also *Slabberina agata*, Van Ben., *Slabberina agilis*, G. O. Sars, and *Slabberina gracilis*, Bovallius.

A very active swimmer, usually occurring near the shore in sandy bays, but also in the open sea.

Specimens in my collection are from off the mouth of the Tees (*G. S. Brady*), Banff (*T. Edward*), Arran, Firth of Clyde (*D. Robertson*), Westport, Co. Mayo (*A. M. N.*). I have also taken it at Shetland and off the coasts of Northumberland and Durham.

2. *Eurydice truncata* (Norman).

1863. *Cirolana truncata*, Norman, "Two Isopods, belonging to Genera *Cirolana* and *Anilocra*, new to British Islands," *Ann. & Mag. Nat. Hist. ser. 4*, vol. ii. p. 421, pl. xxiii. figs. 12-15.

1895. *Eurydice truncata*, H. J. Hansen, *Isopoden, Cummaceen, und Stomatopoden der Plankton-Exped.* p. 13, pl. i. figs. 5-5 h.

The type specimen was taken by me in 1867 in St. Magnus Bay, Shetland. Other specimens in my collection are from the 'Knight Errant' dredgings of 1880, Stat. 3, lat. 59° 28' N., long. 6° 33' W., in 178 fathoms; from the slope of the English Channel in 725 fathoms ('Porcupine,' 1869, Stat. 36) off South Devon, and near the mouth of the English Channel (*Dr. Gough*); Naples (*A. M. N.*). The specimen which *Dr. Hansen* described was also taken at Naples.

3. *Eurydice Grimaldii*, Dollfus.

1888. *Eurydice Grimaldii*, Dollfus, "Troisième campagne de 'l'Iron-delle,' 1837, Isopodes du littoral des Açores," *Bull. Soc. Zool. de France*, p. 6, with woodcut.

1890. *Eurydice elegantula*, H. J. Hansen, *l. c.* p. 361, pl. v. figs. 2-2 t.

"Lat. 58°-60° N., long. 5°-14° W." (co-types of *E. elegantula* from Copenhagen Museum); lat. 54° 28' N., long. 11° 44' W., which is 'Porcupine,' 1869, Stat. 17 (*Davison*), and 'Porcupine,' 1870, Stat. 29, off Cadiz, in 227 fathoms: all in Mus. Nor.

4. *Eurydice spinigera*, H. J. Hansen.

1890. *Eurydice spinigera*, H. J. Hansen, *l. c.* p. 367, pl. v. figs. 4-4c, pl. vi. figs. 1-1c.

Jersey (*Sinel*, in Mus. Nor.), Whitsand Bay, Plymouth, 1903 (*A. M. N.*). Rev. T. R. R. Stebbing has previously recorded the species as British, having taken it in the harbour at Ilfracombe (*Ann. & Mag. Nat. Hist. ser. 6*, vol. xv. 1895, p. 24).

5. *Eurydice inermis*, H. J. Hansen.

1890. *Eurydice inermis*, H. J. Hansen, *l. c.* p. 366, pl. v. figs. 3-3f.

A single specimen dredged by me in 1903 near the Eddystone Lighthouse when in the Plymouth Biol. Lab. Steamer (*A. M. N.*). The three type specimens in the Copenhagen Museum on which the species was founded had been taken off "Cap Lizard."

\* \* Dr. Hansen has at the present time a paper of revision of European Cirolanidæ in the hands of the Linnean Soc. for publication. It will contain notes on some of the foregoing species, and, moreover, descriptions of at least one new *Cirolana* and one new *Eurydice* which have been procured so near to the British coasts that they may reasonably be expected hereafter to be added to our fauna.

Fam. Idoteidæ.

Professor Sars has substituted the spelling *Idothea* for that of *Idotea* which has hitherto been generally adopted. The generic name is first found in the 'Index Alphabeticus' of J. C. Fabricius, 1796, p. 86, where he introduces among the names of those genera which he had already published in the 'Entom. Syst.' others which he intended afterwards to describe in his supplement: these are mere "nomina nuda"; all that we find is "*Idothea*, S.," implying that the genus will be described in the supplement. The 'Supplementum Entom. Syst.,' 1798—published two years after the Index just referred to,—contains at p. 302 the description of the

genus; and at the head of this description the name stands *Idotea*, and that this was no accidental error is proved by the same spelling being repeated in a footnote "*Idotea*." But in the 'Index Alphabeticus' of that supplement, published in the following year (1799), we find again the spelling *Idothea*. Thus the Indexes give *Idothea*, but the name with the description is *Idotea*. There seems therefore room for a divergence of opinion as to which spelling should be more properly employed. It appears to me right to retain the spelling *Idotea*—first, because this is the spelling which is used, and intentionally used, with the description; secondly, because it is the spelling which has been almost universally employed for a hundred years; and, thirdly, because *Idotea* is more euphonic than *Idothea*. The name itself appears to be a "nomen proprium" without any derivation.

Genus I. IDOTEA, J. C. Fabricius.

In my paper "A Month on the Trondhjem Fjord" (*Ann. & Mag. Nat. Hist.* ser. 6, vol. xiii. 1894, p. 279) I called attention to several distinct varieties of what was there called *Idotea marina* (= *I. balthica*). These varieties have been elevated by Sars to specific rank, and the Mediterranean form, my "var. *d*," must equally with these be regarded as a species and bear the name *I. Basteri*, Audouin. As long ago as 1777, Pennant regarded two forms on our coast as distinct species and named them *Oniscus marinus* (= *I. granulosa*, Rathke) and *O. entomon* (= *I. balthica*, Pallas).

1. *Idotea balthica* (Pallas).

This is *Idotea tricuspidata*, Desmarest and Bate and Westwood, *I. tridendata*, Rathke, and *I. marina*, Miers and Norman (*l. c.*). On the N.E. American coast it has been known as *I. irrorata* (Say), under which name I have specimens from Vineyard Sound (*Mr. Harger*) and lat. 40° 06' N., long. 68° 01' W. (Smithsonian Institute). Professor Sars considers the *Oniscus marinus*, Linné, to be what we have known as *Iera albifrons* and not an *Idotea*, and has followed Fabricius in applying the specific name to the former species.

*I. balthica* is the species figured by Bate and Westwood under the name *I. tricuspidata* (vol. ii. p. 379). It is found all round our coasts.

2. *Idotea granulosa*, Rathke.

1843. *Idotea granulosa*, Rathke, Beiträge zur Fauna Norwegens, p. 23.

1851. *Idotea entomon*, Dalyell (nec Linné), Powers of the Creator, &c. vol. ii. pl. lxiii. fig. 9.  
 1897. *Idothea granulosa*, G. O. Sars, *l. c.* p. 82, pl. xxxiv. fig. 1.

This form, hitherto confused with the last, has been found by me at Hartley, Northumberland, and occurred among some Crustacea taken at Berhaven, Ireland, and sent to me by Professor Haddon for identification.

3. *Idotea neglecta*, G. O. Sars.

1895. *Idotea marina*, Dollfus, *l. c.* p. 7, fig. 22.  
 1897. *Idothea neglecta*, G. O. Sars, *l. c.* p. 84, pl. xxxv. fig. 1.

I have for many years doubted whether this should be regarded as a variety of *I. balthica* or a distinct species. The following circumstance has satisfied me that Sars is right in separating it:—*I. balthica* and the present form occur at times in great profusion at Plymouth. At my request the Director of the Marine Laboratory sent me a large bottle full of specimens; there were many hundred specimens of each form (*I. balthica* and *I. neglecta*) of all ages, and I was able to separate the specimens of all ages without hesitation as to a single example. I also have specimens from Shetland and Falmouth, and found it in four localities on the Norwegian coast, ranging from Bergen Fiord to Vadsö, Finmark. Dr. Thomas Scott has just recorded its occurrence in the Moray Firth ('Twenty-second Report Fishery Board for Scotland,' 1904, p. 257).

4. *Idotea viridis*, Slabber.

1778. *Oniscus viridis*, Slabber, Naturk. verlistigengen, p. 104, pl. xii. figs. 4, 5.  
 1850. *Idotea phosphorea*, Hoek (nec Harger), Crustacea Neerlandica, ii. (Tijds. Ned. Dierk. Ver. (2) Deel ii.) 1859, p. 7, pl. vii. figs. 2 & 2 r.  
 1895. *Idotea salinarum*, Dollfus, *l. c.* p. 7, fig. 21.  
 1897. *Idothea viridis*, G. O. Sars, *l. c.* p. 83, pl. xxxiv. fig. 2.

This elongated and narrow species is essentially an inhabitant of blackish water. My finest specimens are from Aldeburgh, Suffolk, and I have received it from Mr. W. Bateson, who took it at Southwold on the same coast. I have also found it in Arnold's Pond, Guernsey, and in the Fleet at Weymouth.

5. *Idotea pelagica*, Leach.

1867. *Idotea pelagica*, Bate & Westwood, *l. c.* vol. ii. p. 334.  
 1895. *Idotea pelagica*, A. Dollfus, *l. c.* p. 8, fig. 23.  
 1897. *Idothea pelagica*, G. O. Sars, *l. c.* p. 81, pl. xxxiii.

This appears to be scarce on our coasts. I have it only from the south-west of Ireland; and some specimens given me by Dr. Thos. Scott, which were found at Aberdeen.

6. *Idotea metallica*, Bosc.

1802. *Idotea metallica*, Bosc, Hist. Nat. des Crust. vol. ii. p. 179, pl. xv. fig. 6.  
 1816. *Idotea robusta*, Kröyer, Naturhist. Tidssk. ser. 2, vol. ii. p. 103, Voyage en Scand. &c. pl. xxvi. fig. 3.  
 1830. *Idothea robusta*, Harger, Rep. U.S. Commiss. Fish and Fisheries, p. 319, pl. vi. figs. 30-32.  
 1895. *Idotea metallica*, Dollfus, l. c. p. 8, fig. 24.

Among Crustacea from off S.W. Ireland which Professor Haddon sent me to name some years ago was a single specimen of this free-swimming plankton species. It is thus added to the British fauna. It has a wide range over the Atlantic, and occurs also in the Mediterranean Sea. Specimens in my own collection are from Rhode Island and Vineyard Sound (*S. I. Smith*), lat. 55° 49' N., long. 16° 44' W. ('Valorous,' 1876); Mediterranean ('Porcupine,' 1870).

7. *Idotea emarginata*, Fabricius.

1867. *Idotea emarginata*, Bate & Westwood, l. c. vol. ii. p. 286.  
 1895. *Idotea emarginata*, Dollfus, l. c. p. 6, figs. 17, 18.  
 1897. *Idothea emarginata*, G. O. Sars, l. c. p. 85, pl. xxxv. fig. 2.

This occurs apparently all round our coasts. My own examples are from Skye, Whitby, Plymouth, and Ardbear Bay, Ireland; and I have taken it at other places—for example, the coasts of Durham and Northumberland.

8. *Idotea linearis* (Pennant).

1816. *Idothea sexlineata*, Kröyer, Naturhist. Tidssk. ser. 2, vol. ii. p. 83, Voyage en Scand. &c. pl. xxvi. fig. 1.  
 1867. *Idotea linearis*, Bate & Westwood, l. c. vol. ii. p. 383.  
 1895. *Idotea linearis*, Dollfus, l. c. p. 6, fig. 16.

I have taken this species in the following localities:—Durham coast, the Humber, Exmouth, Plymouth, Fulmouth, Guernsey, Jersey, and Cape Breton, Bay of Biscay; I have also specimens from the Roach River, Essex (*Dr. Baird*), and Valencia, Spain (*Don Pedro Antigu*).

Genus 2. ZENOBIANA, Stebbing, 1895.

= *Zenobia*, Risso.

The name *Zenobia* had been twice used before Risso



instituted his genus. Stebbing supplied *Zenobiana* (Ann. & Mag. Nat. Hist. ser. 6, vol. xv. 1895, p. 24\*).

*Zenobiana prismatica* (Risso).

1820. *Zenobia prismatica*, Risso, Hist. Nat. de l'Europe Mérid. vol. v. p. 110, pl. v. fig. 24.

—? *Idotea chelipes*, O. G. Costa, Fauna del regno di Napoli, *Idotea*, p. 2, pl. xi. fig. 2 a, b, c.

1867. *Idotea parallela*, Bate & Westwood, *l. c.* vol. ii. p. 391.

1895. *Idotea prismatica*, Dollfus, *l. c.* p. 9, fig. 25.

I have procured this species at Falmouth and have received it from Paignton (*Rev. T. R. R. Stebbing*), Jersey (*Sinel*), and the Adriatic (*Prof. Claus*).

Genus 3. *STENOSOMA*, Leach.

1. *Stenosoma lanciferum*, Leach (MSS.).

1867. *Idotea appendiculata*, Bate & Westwood (nec Risso), *l. c.* vol. ii. p. 306.

1895. *Stenosoma lancifer*, Dollfus, *l. c.* p. 5, fig. 13.

Tide-marks, Exmouth (*A. M. N.*); Polperro, Cornwall (*Laughrin*); Ilfracombe (*Rev. T. R. R. Stebbing*): all in Mus. Nor.

2. *Stenosoma acuminatum*, Leach.

1837. *Idotea acuminata*, Bate & Westwood, *l. c.* vol. ii. p. 394.

1895. *Stenosoma acuminatum*, Dollfus, *l. c.* p. 5, fig. 14.

I have never seen this species. It is not *Idotea capito*, Rathke, which Bate and Westwood give as a synonym. *Stenosoma capito* I have from the Adriatic (*Prof. Heller*).

Fam. *Arcturidæ*.

Genus 1. *ARCTURUS*, Latreille.

[*Arcturus baffini* (Sabine)].

1824. *Idotea baffini*, Sabine, Appendix Parry's Voyage, vol. iv. p. 50, pl. i. figs. 4, 5, 6.

1840. *Arcturus baffini*, H. M.-Edwards, Nat. Hist. Crust. vol. iii. p. 123, pl. xxxi. fig. 1.

1836-49. *Arcturus baffini*, H. M.-Edwards, Règne Animal d'après Organ. Cuvier, Crustacés, pl. lxx. fig. 2.

1876. *Arcturus baffini*, Wyville Thomson, The Depths of the Sea, p. 127.

1885. *Arcturus baffini*, G. O. Sars, *l. c.* p. 97, pl. ix. figs. 1-21.

\* The genus occurs in the middle of a paragraph, which is scarcely fair to recorders. It is not therefore noticed in 'Zool. Record.'

This fine species would seem to be subject to an amount of variation which is very unusual, or else there are several closely allied forms. I prefer to regard these forms as varieties. If hereafter writers are of a different opinion, the names here employed can be raised to specific rank.

[Var. 1. *typica*.

It is this form which all the figures above referred to illustrate. It is furnished with highly elevated, conical, spiniform processes, arranged in transverse pairs and developed on all the segments of the body. The figure in 'The Depths of the Sea' is excellent, and illustrates the habit of the genus in carrying its young attached to the antennæ. The specimen which the figure referred to illustrates was taken by the 'Porcupine' Expedition, 1869, Stat. 59, lat. 60° 21' N., long. 5° 41' W., in 580 fathoms—that is, in the cold area of the Faroe Channel. My own collection contains specimens from Baffin's Bay (*Albany Hancock*) and Greenland (*D'Arcy Thompson*).

[Var. 2. *intermedia*.

In this variety the tubercles are greatly reduced in size and elevation on the head and first four segments of mesosome, but on the fifth and succeeding segments they are as well represented as in the typical form. Baffin's Bay (*Albany Hancock*, in Mus. Nor.).

[Var. 3. *tuberosus*, G. O. Sars.

1876. *Arcturus tuberosus*, G. O. Sars, *l. c.* p. 350.

1877. *Arcturus baffini*, var., *Friedeni*, Miers, "Report Crust. Arctic Exped. 1875-1876," *Ann. & Mag. Nat. Hist.* ser. 4, vol. xx. p. 14, pl. iii. fig. 1.

1885. *Arcturus tuberosus*, G. O. Sars, *l. c.* p. 102, pl. ix. fig. 22.

"Without distinctly perceptible hairs and without dorsal spines, but presenting an irregular rugged surface" (*G. O. Sars*). The type of Sars measured 35 mm., but I have seen an example 60 mm. Greenland (*D'Arcy Thompson*, in Mus. Nor.).

[*Arcturus scabrosus*, sp. n.

In general character as *A. baffini*, but somewhat more stoutly built. Dorsal surface entirely devoid of spines or elevated tubercles, but extremely rugged, covered with depressed nodules; the entire surface, including the nodules, covered with granules of considerable size. These granules not only cover

the entire dorsal surface, but are present also on the peduncles of the antennules, the epimera of the last three segments, and the legs. They are especially conspicuous upon the metasome, where the individual granules, lying in one direction (backwards), are more clearly separable than on other parts of the body, and when viewed under the microscope each is seen to bear a minute cilium. The epimera of the last three segments are more widely rounded distally than in var. *tuberosus* of the last species. The peduncles of the antennules are not only covered with granules, but bear setæ which are more developed than is usual in forms of *A. baffini*. Length 35 mm. This form is so markedly distinct from *A. baffini* that it would certainly seem to be a good species. I have seen several specimens which were taken by Sir John Murray on H.M.S. 'Triton' in 1882. It was dredged in the cold area of the Farøe Channel, Stat. 4, lat. 60° 22' N., long. 8° 21' W., in 327 to 430 fathoms (Mus. Nor.).

*Arcturus hystrix*, G. O. Sars.

1876. *Arcturus hystrix*, G. O. Sars, *l. c.* p. 350.

1885. *Arcturus hystrix*, G. O. Sars, *l. c.* p. 104, pl. ix. figs. 23-26.

1901. *Arcturus hystrix*, Ohlin, "Arctic Crustacea, Leptostraca, Isopoda, Cumacea," K. Svenska Vet.-Akad. Handl. vol. xxvi. p. 30, pl. ii. fig. 6a, pl. iii. figs. 6b-k.

'Porcupine,' 1869, Stat. 50, lat. 59° 54' N., long. 7° 52' W., 355 fathoms, and Stat. 59, lat. 60° 21' N., long. 5° 41' W., 580 fathoms. The first of these localities is just within the British Area, the second is in the cold area of the Farøe Channel.

Genus 2. *ARCTURELLA*, G. O. Sars.

1. *Arcturella dilatata*, G. O. Sars.

1882. *Astacilla dilatata*, G. O. Sars, *l. c.* p. 63, pl. ii. fig. 3.

1897. *Arcturella dilatata*, G. O. Sars, *l. c.* p. 92, pl. xxxviii.

My late friend Dr. D. Robertson found this many years ago, as recorded by him in his 'Cat. Amphip. and Isop. of the Clyde,' pt. 2, p. 28, in 20 fathoms off Blackwaterfoot, Isle of Arran, and kindly sent me specimens. Dr. Thomas Scott has given me examples from off Fair Isle, that is between Shetland and Orkney, and from the Copenhagen Museum I have received Danish specimens.

2. *Arcturella damnoniensis* (Stebbing).

1874. *Arcturus damnoniensis*, Stebbing, "A new Species of *Arcturus*," Ann. & Mag. Nat. Hist. ser. 4, vol. xiii. pl. xv.

This would seem to be a southern species. In my collection are co-types from Torbay (*Stebbing*), specimens collected at Exmouth (*C. Parker*), and others taken by myself at Ilfracombe, Plymouth, and Naples.

Genus 3. *ASTACILLA*, Cordiner, 1795.

= *Leacia*, Johnston, 1825.

1. *Astacilla longicornis* (Sowerby).

1867. *Arcturus longicornis*, Bate & Westwood, *l. c.* vol. ii. p. 305, ♀.  
 1867. *Arcturus gracilis* (Goodsir), Bate & Westwood, *l. c.* vol. ii. p. 373, ♂.  
 1897. *Astacilla longicornis*, G. O. Sars, *l. c.* p. 88, pl. xxxvi.

Inhabiting all our coasts, Shetland, the Minch, Forth of Clyde, Firth of Forth, Northumberland coast, South Devon, Guernsey, Valentia, Ireland; also Trondhjem Fiord and Tromso, Norway: all in Mus. Nor.

2. *Astacilla intermedia* (H. Goodsir).

1841. *Leachia intermedia*, H. D. S. Goodsir, *Edinb. New Phil. Journ.* vol. xxxi. p. 309, pl. vi. figs. 1-3.  
 1867. *Arcturus intermedius*, Bate & Westwood, *l. c.* vol. ii. p. 371.  
 1869. *Arcturus affinis*, G. O. Sars, "Nye Dybvandcrustaceer fra Lofoten," *Christ. Vidensk. Selsk. Forhandl.* p. 163.  
 1897. *Astacilla affinis*, G. O. Sars, *l. c.* p. 90, pl. xxxvii. fig. 2.

Notwithstanding some discrepancies in the description, I think that there can be little doubt that Sars's species, which I obtained also in our seas and in Goodsir's locality, is that which was named by H. Goodsir. That author describes and figures the last joint of the antennæ "globose" or, according to the figure, claviform; this appearance may have been caused by the olfactory filaments clinging to the joints and appearing as part of it.

Examples in my collection are from the following sources:—Firth of Forth, *i. e.* Goodsir's locality for his species (*Dr. Henderson*); Durham coast (*A. M. N.*); off S.W. Ireland, 100-200 fathoms ('Porcupine,' 1869); off Fair Island, between Orkney and Shetland (*Dr. Thos. Scott*); Norway (co-types of *A. affinis* from G. O. Sars); Tromsø (*Schneider*).

3. *Astacilla Deshayesii* (Lucas).

1840. *Arcturus Deshayesii*, Lucas, *Anim. Artic. de l'Algérie*, p. 69, pl. v. fig. 7.  
 1874. *Arcturus gracilis*, Stebbing (nec Goodsir), "Sessile-eyed Crustacea of Devon," *Traus. Devon. Assoc. Advanc. Science*, p. 8, figs. 2-4 (separate copy).  
 1878. *Arcturus linearis*, Stebbing, "Notes on Sessile-eyed Crustacea," *Ann. & Mag. Nat. Hist. ser. 5*, vol. i. p. 33.

This species was added to the British fauna by Mr. Stebbing, who at first referred it to *A. gracilis*, but subsequently renamed it *Arcturus linearis*, but in Hist. Crust. 1898, p. 371, drops *A. linearis* and uses *A. Deshayesii*. The female is easily recognized by the single tubercle on the front half of the fourth segment of the mesosome. In the male there is often a slight swelling of the integument in the same position, but at other times the swelling is absent. Specimens in my collection are from Torbay (Stebbing, co-types of his species), Salcombe, Devon, and Plymouth (*A. M. N.*), west of Gibraltar, and from the Adriatic (*Prof. Claus*).

[*Astacilla granulata*, G. O. Sars.

1876. *Leachia granulata*, G. O. Sars, *l. c.* p. 351.  
 1878. *Astacilla americana*, Harger, Amer. Journ. Science & Arts, ser. 3, vol. xv. p. 374.  
 1879. *Astacilla granulata*, Harger, Proc. U.S. Nat. Mus. vol. ii. p. 161.  
 1880. *Astacilla granulata*, Harger, *l. c.* p. 361, pls. viii., ix. figs. 48-52.  
 1885. *Astacilla granulata*, G. O. Sars, *l. c.* p. 107, pl. ix. figs. 27-35.

This very pretty species, which looks as if it was clothed with a garment thickly embroidered with pearls, was dredged by the 'Lightning' Exped. of 1868, Stat. 3, lat. 60° 31' N., long. 9° 18' W., in 229 fathoms; and by the 'Porcupine' in 1869, Stat. 59, lat. 60° 21' N., long. 5° 41' W., in 580 fathoms: both these stations are to the north of the British Area.

EXPLANATION OF THE PLATES.

PLATE XII.

- Fig. 1.* *Æga Deshayesiana*, H. Milne-Edwards.  
*Fig. 2.* Ditto. Head seen from below.  
*Fig. 3.* Ditto. Palp of mandible.  
*Fig. 4.* Ditto. Outer uropod.  
*Fig. 5.* *Æga ventrosa*, M. Sars.  
*Fig. 6.* Ditto. Head seen from below.  
*Fig. 7.* Ditto. Palp of mandible.  
*Fig. 8.* Ditto. Telson and uropods.

PLATE XIII.

- Fig. 1.* *Æga megalops*, Norman and Stebbing.  
*Fig. 2.* Ditto. Head seen from below.  
*Fig. 3.* Ditto. End of palp of mandible.  
*Fig. 4.* Ditto. Maxillipeds.  
*Fig. 5.* Ditto. First foot.  
*Fig. 6.* Ditto. Last foot.  
*Fig. 7.* Ditto. Telson and uropods.  
*Fig. 8.* *Æga ventrosa*, M. Sars. First foot.  
*Fig. 9.* Ditto. Last foot.  
*Fig. 10.* *Æga Deshayesiana*, H. Milne-Edwards. First foot.  
*Fig. 11.* Ditto. Last foot.