gastropod, *Naticopsis arctica*, showing different colour-patterns, and a slightly different type again was seen in the holotype of that species figured in 1930. There are yet other patterns, but the great majority of the specimens of this form collected in Greenland are secondarily discoloured. While there is no doubt that conchologists would make different species of such shells with different colour-patterns, palæontologists will not often be in a position to separate species on that basis; but, as Schindewolf pointed out, the complaint that palæontologists go too far in the creation of species is scarcely justified with molluscan shells nearly always deprived of their colour.

As spiral lineation is so frequent in Ammonoidea it is possible that it was generally connected with colour-bands, perhaps also in striate Nautili. The peculiar zigzag patterns found in Palæozoic "*Orthoceras*" and "*Cyrtoceras*," however *, and the irregular flame-like markings in the recent *Nautilus* shell, indicate that in Ammonites also, and particularly in smooth sphærocones, quite new colour-patterns may yet be discovered. They seem to be preserved chiefly in clay formations; but in the Gault of Folkestone, where the iridescent Ammonite shells are usually in an extremely good state of preservation, I have never come across an Ammonite showing recognizable colour-bands.

EXPLANATION OF PLATE XVIII.

Fig. 1. Colour-bands in *Androgynoceras* from the Lower Lias of Napton, Warwickshire (B.M. no. C. 23494).

Fig. 2. Colour-bands in *Amaltheus* from the Middle Lias of Eype, Dorset (B.M. no. C. 36397).

XXXVII.—*A Note on the Validity of* Proagonistes athletes *Speiser* (*Diptera*, *Family* Asilidæ).

By S. W. Bromley, Ph.D., M.Sc., Dudley, Massachusetts, U.S.A.

In the 'Annals of the Transvaal Museum,' vol. xiv. pt. iv. (1932) p. 254, Dr. E. O. Engel synonymizes *Proagonistes athletes* Speiser with *Proagonistes rufibarbis* (Fabricius), on the basis that a male from German East Africa answering to the description of *rufibarbis* was identified as *athletes* by Dr. Speiser himself. In examining *Proagonistes* material for my Review of this genus ('Annals and Magazine of Natural History,' ser. 10, vol. vi. pp. 209–224, July 1930) I had no difficulty in separating the two species on the basis of the coloration of the hind femora (p. 214), which for the specimens I examined held true for both males and females. The genitalia, as Dr. Engel observes, are of practically no value in differentiating species of this genus. I therefore propose that the name *Proagonistes athletes* Speiser stand for the form described until such time as it can be conclusively proven that the two forms are varieties of the same species.

* See, *e. g.*, in Spath, "Evolution of the Cephalopoda," Biol. Reviews, vol. viii. 1933, text-fig. 5, p. 429, fig. 13, p. 452.

XXXVIII.—*The Family* Plocamiidæ, *with Descriptions of Four new Genera of Sponges*.

By Maurice Burton, M.Sc., Department of Zoology, British Museum (Natural History).

The family Plocamiidæ (Topsent, 1928, p. 303) (=section Plocamieæ, family Desmacidonidæ, Dendy, 1921, p. 76) is obviously polyphyletic. In it we have grouped a number of species having in common the possession of acanthostrongyla (or amphitylostyli or acanthotylostrongyla); but the spicules comprising the remainder of the skeleton differ considerably, as does their arrangement within the skeleton. To maintain the family Plocamiidæ implies the acceptance of the presence of acanthostrongyla as a generic character of first class importance; whereas, in my opinion, these have no more than the significance attaching to the Lithistid desma (*cf.* Burton, 1929 *). In fact, the views expressed by me on the polyphyletic character of the Lithistida are equally applicable to the Plocamiidæ, and the two groups furnish parallel examples of convergent evolution.

* "The Lithistidæ, with a Critical Survey of the Desma-forming Sponges." Special Report No. 7. Fisheries and Marine Biological Survey, Pretoria, 1929, 12 pp., 2 pls.

How little significance can be attributed to the acanthostrongyla, strongyla, and tylostrongyla of the Plocamiidæ, spicules comprehensively grouped under the heading of "dumb-bell spicules," may be estimated by the following examples:—(1) in both the Haplosceridæ and Axinellidæ it is not unusual to find species in which (*a*) the spicules are always strongyla (e. g., *Strongylophora durissima*, *Reniera cratera*) or (*b*) the spicules may frequently become strongylote as a fluctuating variation of the normal oxeote; (2) species of Myxilleæ may have (*a*) the spicules consistently acanthostrongylote (e. g., *Myxilla grata* Thiele) or (*b*) acanthostrongylote as a fluctuating variation of the normal acanthostyle (e. g., *Myxilla anhelans* (see Babić, 1922, p. 254, fig. Z)); (3) There is at least one species of Clathrieæ, *Isociona lithophenix* (de Laubenfels), possessing acanthostrongyla; (4) there is a collection of some 20 specimens of *Suberites* sp. from South Africa, in the British Museum, most of which have the spiculation normal to the genus, but in two the tylostyli of the interior have been replaced by amphitylostyli (*i.e.*, dumb-bell spicules). Had these two specimens been examined alone they would almost certainly have been referred to a new genus of Plocamiidæ. It appears, therefore, that the formation of "dumb-bell spicules" may take place either as a fluctuating variation or as a normal feature in all groups of the Monaxonida.

In a critical analysis of the known species of Plocamiidæ we find that *Plocamia gaussiana* Hentschel and *P. massalis* are in reality species of *Lissodendoryx* readily comparable with *L.* (*Myxilla*) *grata* (Thiele). The remaining species may be divided into two groups, the one having obvious affinities to the Myxilleæ and the other to the Clathricæ. To the first belong *Plocamia ambigua* (Bowerbank) and *Plocamionancora denticulata* Topsent. All the rest belong to the second group. Further, in addition to the six genera known, it will be necessary to create three new genera in order to classify the species satisfactorily.

The distribution of the species of Plocamiidæ will then be as follows:—

(*a*) Genera with Affinities to the Myxilleæ.

(1) *Plocamionida* Topsent.

Diagnosis.—Skeleton composed of a basal layer of acanthostrongyla, with long smooth styli and short acanthostyli rising vertically from it; dermal spicules tornata; microscleres chelæ arcuatæ.

Species.—*P. ambigua* (Bowerbank) (genotype); *P. ambigua* var. *achelata* (Topsent); *P. lundbecki* (Breitfuss).

(2) *Plocamionancora* Topsent.

Diagnosis.—Skeleton composed of a basal layer of acanthostrongyla, with long basally-spined styli and short acanthostyli rising vertically from it; dermal spicules tornota; microscleres polydentate chelæ.

Species.—*P. denticulata* Topsent.

(3) *Plocamissa*, gen. nov.*.

Diagnosis.—Skeleton composed of plumose columns, with axially-arranged amphitylota echinated by basally-spined styli; dermal spicules tornota; microscleres chelæ spatuliferæ.

Species.—*P. igzo* (de Laubenfels).

(*b*) Genera showing Affinities to the Clathrieæ.

(4) *Plocamia* Schmidt.

Diagnosis.—Skeleton composed of a basal layer of amphitylota, microspined at the ends, with plumose columns of basally spined tylostyli, echinated by small basally-spined styli rising vertically from it; dermal spicules subtylostyli; microscleres chelæ palmatæ and toxa.

Species.—*P. gymnazusa* Schmidt (genotype); *P. plena* Sollas.

* The diagnosis of this genus is based on re-examination of the type, for which I am indebted to Dr. M. W. de Laubenfels. The chelæ were originally described as arcuatæ, but, though admittedly small and difficult to define, I would regard them as spatuliferæ. The dermal spicules, originally described as subtylostyli, are tornata with one end pointed and the other inflated, a condition not unknown among the tornota of more typical Myxilleæ.

(5) *Placamione* Topsent.

Diagnosis.—Skeleton composed of a basal layer of acanthostrongyla, with long smooth styli, each surrounded at the base by a divergent brush of styli and small acanthostyli rising vertically from it; dermal spicules subtylostyli; no microscleres.

Species.—*P. dirrhopalina* Topsent.

(6) *Raspeloplocamia*, gen. nov.

Diagnosis.—Skeleton composed of a basal layer of acanthostrongyla, with long smooth styli, surrounded at the base by a divergent brush of subtylostyli rising vertically from it; no dermal spicules; no microscleres.

Species.—*P. clopetaria* (Schmidt) (genotype); *P. carteri* (Duncan); *P. hystrix* (Duncan).

(7) *Placamiopsis* Topsent.

Diagnosis.—Skeleton composed of a basal layer of acanthostrongyla, with long basally-spined and short entirely-spined acanthostyli rising vertically from it; dermal spicules subtylostyli; microscleres anisochelæ and toxa.

Species.—*P. signata* Topsent.

(8) *Axoplocamia*, gen. nov.

Diagnosis.—Skeleton composed of a basal layer of acanthostrongyla, with long smooth styli and short acanthostyli rising vertically from it; no dermal spicules; no microscleres.

Species.—*A.* (*Bubaris*) *ornata* (Dendy).

(9) *Plocamilla* Topsent.

Diagnosis.—Skeleton composed of an isodictyal reticulation of acanthostrongyla and acanthostyli, with long smooth styli echinating the main skeleton and grouped in brushes in the dermis; dermal spicules subtylostyli; microscleres chelæ palmatæ and toxa.

Species.—*P. coriacea* (Bowerbank) (genotype); *P. elegans* (Ridley & Dendy); *P. erecta* (Ferrer); *P. inconstans* (Topsent); *P. manaarensis* (Dendy); *P. novizelanicum* (Ridley).

(10) *Heteroclathria* Topsent.

Diagnosis.—Skeleton composed of an isodictyal reticulation of acanthostrongyla and acanthostyli; dermal spicules subtylostyli; microscleres chelæ palmatæ and toxa.

Species.—*H. hallezi* Topsent (genotype); *H. karykinos* (de Laubenfels); *H. lambei*, sp. n. (for *Plocamia manaarensis* Lambe, nec Carter).

(11) *Lithoplocamia* Dendy.

Diagnosis.—Skeleton composed of a dense isodictyal reticulation of acanthostrongyla, with smooth stout subtylostyli loosely echinating it; no dermal spicules; no microscleres.

Species.—*L. lithistioides* Dendy.

(c) Other Genera.

In addition to the foregoing the genus *Damiria*, usually assigned to the Haploscleridæ, and its allied genera must be considered in their relation to the Plocamiidæ. There is no real justification for the inclusion of this genus in the Haploscleridæ in view of the presence of dermal tornota, for, although these dermal spicules are similar to those of the main skeleton and differ mainly in size, there can be little doubt that they correspond to the normal spicules found in the dermal skeleton of the Myxilleæ generally. At the same time, *Damiria* and its related genera cannot be placed in Plocamiidæ, even if that family is retained in its present heterogeneous state as a matter of convenience, as the only resemblance rests in the "dumb-bell spicules," and these are of a slightly different type to those found in the rest of the Plocamiidæ. The only course, therefore, seems to be to regard them as very aberrant members of the Myxilleæ.

The three genera in question are:—

(1) *Damiria* Keller.

Diagnosis.—Skeleton an isodictyal reticulation of amphitylota with spined ends; dermal spicules tornota; no microscleres.

Species.—*D. simplex* Keller; *D. simplex* var. *fistulata* Hentschel, *D. testis* Topsent.

(Other species have been assigned to the genus *Damiria*, and these may be distributed as follows :—*D. australiensis* Ridley = *Dendoricella schmidti* (Ridley) ; *D. cavernosa* Topsent = *Damiriella* (gen. nov.) *cavernosa* (Topsent) ; *D. prouhoi* Topsent = *Myxilla prouhoi* (Topsent).)

(2) *Damiriella*, gen. nov.

Diagnosis.—Skeleton a reticulation of smooth strongyla ; dermal spicules tornota ; microscleres chelæ unguiferæ (or polydentate chelæ ?).

Species.—*D. cavernosa* (Topsent).

(3) *Damiriopsis* Burton.

Diagnosis.—Skeleton an isodictyal reticulation of strongyla with microspined ends ; dermal spicules tornota ; microscleres chelæ spatuliferæ and chelæ palmatæ.

Species.—*D. brondstedi* Burton.

XXXIX.—*On a new Species of* Charybdis, *belonging to the Subgenus* Gonioneptunus, *from South Africa*.

By Chia Jui Shen, Ph.D., Research Fellow of the China Foundation, Peiping, China. (From the Department of Zoology, British Museum (Natural History).)

Ortmann * established the genus *Gonioneptunus* for the species *Gonioneptunus subornata*, and Alcock † transferred it to the rank of a subgenus of *Charybdis* with sufficient reason.

Of the four species described hitherto, only two—namely, *Charybdis* (*Gonioneptunus*) *subornata* (Ortmann) and *Charybdis* (*Gonioneptunus*) *bimaculata* (Miers)—appear actually to belong to this subgenus. The other two species—one of which is *Charybdis* (*Gonioneptunus*) *investigatoris* described by Alcock ‡ and the other *Charybdis* (*Gonioneptunus*) *peichihliensis* described by Shen §—are, in my opinion, likely to prove young forms of some other species, perhaps belonging to the subgenus *Goniosoma* not *Gonioneptunus*. Because (1) their description is based upon very small and few specimens which are probably immature ; (2) there is no distal spine on the posterior margin of the merus of the cheliped ; (3) the lobule of the basal antennal joint does not touch the front—a characteristic of very young specimens of *Goniosoma*.

Recently I examined a number of incomplete specimens obtained from Great Fish Point (three miles off the shore) and Tugela River estuary in South Africa. After careful comparison with *G. subornata* and *G. bimaculata*, this African species is considered as a new member of this subgenus. Therefore it is worth while to describe it and illustrate it in this paper.

* Ortmann, A., 1893–4, Zool. Jahrb. Syst. Bd. vii. p. 79.

† Alcock, A., 1899, Journ. Asiat. Soc. Beng. vol. lxviii. p. 67.

‡ Alcock, A., 1899, Journ. Asiat. Soc. Beng. vol. lxviii. p. 70 ; 1900, Illustr. Zool. 'Investigator,' pl. xlvi. fig. 4.

§ Shen, C. J., 1932, Zool. Sinica, ser. A, vol. ix. fasc. 1, p. 78, text-figs. 44, 45, pl. iv. fig. 4.

Genus Charybdis de Haan.

Subgenus Gonioneptunus Ortmann.

Key to the Subgenus Gonioneptunus.

I. Sixth antero-lateral tooth considerably more prominent than the preceding teeth.	
a. Carapace flattish, length to breadth about 5/7. The first antero-lateral tooth broadly triangular. The frontal teeth broader, but less prominent. Terminal segments of male abdomen as in fig. 2, *b*.	*bimaculata* (Miers).
b. Carapace moderately convex, length to breadth about 2/3. The first antero-lateral tooth narrowly triangular. The frontal teeth narrower, but more prominent. Terminal segments of male abdomen as in fig. 2, *c*.	*subornata* (Ortmann).
II. Sixth antero-lateral tooth not more prominent than the preceding teeth. Carapace flattish, length to breadth about 5/7, outline as represented in fig. 1. Terminal segments of male abdomen as in fig. 2, *d*.	*africana*, sp. n.

Charybdis (*Gonioneptunus*) *africana*, sp. n.

Materials.—A. 614, 1 ♂ (type), 1 ♀, Stebbing collection, registered no. 1928.12.1, 97–98 (in British Museum, N.H.) ; A. 613, 2 ♂♂, 2 ♀♀, all juv., 63 fms., off Tugela River mouth, South Africa ; A. 615, 3 ♂♂, 1 ♀, all juv., 30 fms., 2½ miles off the Great Fish Point, South Africa.

Type-locality. Great Fish Point, South Africa.