

NOTE.

During the passage of this paper through the press I received a small consignment of Arachnida from Mr. Richard Crawshay, who collected them in Basutoland. Amongst them were two examples of a new species of *Palystes* which may be diagnosed as follows:—

Palystes Crawshayi, sp. n.

♀.—Colour of dorsal surface a fairly uniform greyish brown, obscurely mottled like the back of tarsi; pale clypeal band on base and two superior external pale bands on mandible; sternum yellow, with two black bands; coxæ yellow; femora greyish black below, conspicuously spotted with yellowish grey; epigastric area yellow; a transverse black band behind the epigastric fold, the rest of the lower surface dark red variegated with white spots.

Vulva with a deep and wide excavation, which is almost as wide as long, with its lateral margins converging and almost meeting in the posterior middle line; the anterior half of the space occupied by a skeletal piece, which is irregularly transversely oblong in shape and attached by a narrow "stalk" running from the middle of its anterior border to the adjacent anterior rim of the excavation, and laterally by a membranous piece to the anterior part of the lateral rim.

Total length 25 millim.; length of carapace 11.

Loc. Maseru, in Basutoland.

Closely allied in colouring &c. to *P. lunatus*, *perornatus*, and *Leppanæ* (see p. 23, *antea*), but differing in the form of the median sclerite of the vulva, which has its posterior border transverse and not produced. It resembles *lunatus* in the presence of two sternal bands and the other two in the spotting of the femora.

III.—Notes on some Recent Publications concerning Diatoms.

By P. T. CLEVE and C. MERESCHKOWSKY.

1. G. KARSTEN. "Die Diatomeen der Kieler Bucht." Wissenschaftliche Meeresuntersuchungen herausgegeben von der Kommission in Kiel: 1889, 4to.

This in many respects important publication will no doubt be for a long time a *vade mecum* for all students of living diatoms. The observations of the author concerning the formation of auxospores cannot be overestimated, and the

number of interesting and, in the great majority of cases, correctly described facts concerning the cell-contents of the diatoms surpasses all that has been done before.

It is the recognition of the great value of this work and the desire to render it still more valuable and useful, not for finding errors, that has induced us to undertake the publication of the following critical remarks. Mistakes are inevitable in a work of such great extent and on a subject so delicate and so full of difficulties. We believe therefore that our criticism, undertaken in a friendly spirit and for the sake of truth only, will by no means wound the feelings of the author.

One of us (Cleve) will endeavour to correct as far as possible the errors in the determination of species, the other will deal more particularly with the cell-contents.

February 5, 1902.

A. Notes by P. T. CLEVE.

Asterionella Bleakeleyi (p. 28) is a tropical species. The specimens figured agree with *Diatoma tenue*, Ag., a common freshwater form frequently occurring in slightly brackish water.

Navicula retusa (p. 47).—The figure shows that the median striæ are alternately longer and shorter, a characteristic that does not belong to the named species. Doubtless *Navicula digito-radiata* (var. *cyprinus*).

Navicula subtilis (p. 53) does not represent Gregory's species, but rather *Navicula cincta*.

Navicula ammophila var. *lata* (p. 54) is too large to be a form of *N. ammophila*.

Navicula neglecta (p. 57) is said to be akin to *N. formosa*, but I have never met with so coarsely striate a form (striæ 6-7 in 0.01 mm.).

Navicula latissima var. *constricta* (p. 57) is a form of *N. humerosa*.

Navicula pygmæa (p. 59) = *N. forcipata*, Grev.

Navicula Græffii (p. 60) seems to represent a form of *Diploneis fusca*. Grunow's *N. Græffii* occurs in tropical seas only.

Navicula interrupta (p. 61) probably represents a form of *Diploneis splendida* or *D. bombus*. *D. interrupta* has no striæ

or only faint ones in the central part, and has besides a different outline.

Navicula musca (p. 61) does not represent Gregory's species, which is altogether different, but *Diploneis didyma*, Ehb.

Navicula aucklandica (p. 66): doubtless not Grunow's species; indeterminable.

Navicula forcipata, Grev., var.? (p. 67), seems not to differ from *N. abrupta*, Greg.

Navicula H (p. 68) is nothing but a form of *N. lyra*, Ehb.

Trachyneis velata, A. S., var.? (p. 70). As this species has been noted from the Southern Hemisphere only (Cape of Good Hope, Cape Horn, Ascension), its occurrence in "Kieler Bucht" seems to be very doubtful. Probably *T. aspera*, var. *pulchella*.

Pleurosigma marinum (p. 78) does not represent Donkin's species, which has an altogether different median line. The outline reminds one of *P. Normanii*, Ralfs, but the central striation and, according to M. Mereschkowsky, the chromatophores are different.

Pleurosigma compactum (p. 86): probably *Gyrosigma arcticum*, Cl.

Donkinia baltica (pp. 85, 86): probably *Gyrosigma compactum*.

Amphiprora incisa (p. 90) = *A. duplex*, Greg.

Mastogloia Smithii (p. 92).—The right figure does not represent the species of Thwaites, but rather *M. lanceolata*. The striæ are, however, radiate throughout, in which characteristic it resembles *M. elliptica*, Ag.; but the median striæ of the latter species are different.

Cocconeis placentula (p. 94) seems to be a small form of *C. scutellum*.

Cocconeis apiculata (p. 94) seems not to agree sufficiently with A. Schmidt's figure (from Cape of Good Hope). [I have once found in plankton from Skagen a diatom the lower valve of which agreed with fig. 117, but the upper valve was identical with Grunow's *Schizostauron Reichardtianum*, which thus belongs to *Achnanthes*, s. l. Another species, hitherto regarded as a *Navicula*, viz. *Stauroneis obliqua*, has also

dissimilar valves, and is most akin to *Cocconeis flexella*, Kütz., = *Achnanthidium flexellum*.]

Amphora alpha (p. 106) is doubtful; possibly a form of *A. quadrata* (Greg.?), Perag.

Amphora beta (p. 107): doubtful; possibly *A. sulcata* (Bréb.?), Perag.

Amphora gamma (p. 108) = "*Hantzschia*" *marina* (Donk.).

Amphora delta (p. 108) seems to be akin to *A. alata*, Perag.

Amphora zeta (p. 109): doubtful; perhaps *A. laevis*, var. *minuta*, Cl.

Amphora ostrearia (p. 111) certainly does not represent this well-known species, but possibly *A. commutata*, Grun.

Auricula punctata (p. 115) can scarcely be specifically distinct from *A. insecta*.

Auricula staurophora (p. 117) is no doubt the same form as *Amphora quadrata* (Bréb.), Cl.

Nitzschia dubia (p. 122): too coarsely striate (striae 12-13 in 0.01 mm.) to be the species of W. Smith (striae about 23 in 0.01 mm.).

Nitzschia valida (p. 127): probably *N. sigma*. The true *N. valida* occurs in warmer seas only.

Campylodiscus parvulus (p. 132) = *C. Thureti*, Bréb. There can scarcely be any doubt that *C. parvulus*, W. Sm. = *C. Thureti*, Bréb., and that *C. parvulus*, Van Heurck, Syn. (lxxvii. 2), represents another species akin to *C. Lorenzianus*, Grun.

B. Notes by C. MERESCHKOWSKY.

Fragilaria striatula, Lyngb. (p. 23),

has, according to Karsten, a single plate (he expresses, however, some doubt about it). The var. *californica*, Grun., has four plates; it seems most probable that the type also possesses the same number of chromatophores. Also *F. hyalina* has four plates. I doubt whether *F. crotonensis* (A. M.-Edw.), Kitt. p. 24, has only one plate.

Synedra sp. (*Hennedyana*?) (p. 27)

is doubtless nothing but *Cylindrotheca gracilis* (Bréb.), Grun. See C. Mereschowsky, "A List of Californian

Diatoms," Ann. & Mag. Nat. Hist. 1901, vol. vii. pl. iv. fig. 21.

Achnanthes brevipes and **A. subsessilis** (p. 43).

All true *Achnanthidia* have four plates united into pairs by a common pyrenoid. This is also correctly represented in Karsten's figures of both species, and in the description given in the general part (p. 161) he mentions four plates; but when on p. 42 he says "Zwei Chromatophoren beiderseits des centralen Kern," this can easily be misunderstood. We differ, however, in one respect; according to Karsten the two opposite plates are united by a transverse band of endochrome, while in my figures (Et. sur l'Endochrome des Diat. pl. vi. figs. 20, 22) no such band exists, the two plates being united by a colourless body. I have been criticized by Karsten for calling it (as well as similar bodies in *Okedenia inflexa* and *O. pontica*) a pyrenoid. Indeed, a colourless pyrenoid seems to be a contradiction in itself, as, according to the generally accepted opinion, a pyrenoid is a body colourless by itself, but being enclosed in the very substance of the endochrome has therefore necessarily a coloured appearance. This, however, is not quite correct. The pyrenoid can emerge from the chromatophore either partly (*Mastogloia*, *Achnanthidium*) or even entirely. We find all three cases occurring sometimes in the same genus: coloured common pyrenoids [*Achnanthidium* (*Cymbosira*) *Agardhii* (Kütz.)], partly out of the endochrome (*A.* sp.), and completely free (*A. glabratum*). To this latter type also *A. brevipes*, at least its var. *intermedia*, seems to belong. I intend to return to this interesting subject in a special note.

Navicula dicephala, W. Sm. (p. 51),

cannot be this species, as *N. dicephala* has the same endochrome as *Cymbella* (one plate), and therefore does not belong even to the family Naviculaceæ.

Navicula mollis (W. S.), Cl. (p. 55, fig. 51).

The third figure (next to the margin) is most probably a *Libellus*.

Navicula humerosa, Bréb. (p. 56).

Fig. 55 represents either a stage of division or else it is an error, this species having normally two plates along the valves (see Et. s. l'End. d. Diat. pl. ii. fig. 6); this is exactly reproduced in fig. 56, representing, according to Cleve, a form of *N. humerosa*. In a letter Karsten expresses his opinion that the diatoms which we have both studied, although very

similar in their general appearance, may belong to two quite different species. This may indeed be the case, and we see a beautiful example of it in *N. scopulorum*; but in the present instance such a supposition seems to be very improbable.

Navicula didyma, Ehr. (*N. bombus*, Ehr.) (p. 62, fig. 66).

All the four figures belong to *Diploneis didyma*, but fig. 67, *a* 1, is certainly not this species. The cell-contents differ somewhat from what I have observed in California; the margins of the plates do not join so closely, leaving a broad space in the middle part of the valve; they are more finely and regularly indented. Four central plæoplasts of a very peculiar appearance and two libroplasts* are, of course, not mentioned, as Karsten seems to attribute to them no importance whatever.

Navicula scopulorum, Bréb. (pp. 63, 64).

The descriptions of the endochrome of this species given by Karsten and myself differ in every respect. There can be no doubt as to the correctness of Karsten's observations, the more so as they fully agree with those of Paul Petit and Brébisson; neither can my observations be doubted, as they are corroborated by the var. *fasciculata*, Gr., which has the same endochrome†. The only possible conclusion is this: there exist two very different diatoms, belonging to two widely separated families (Naviculaceæ and Okedeniæ), which are identical as regards the structure of their frustules and valves (see also *Nitzschia angularis*).

Navicula (Libellus) constricta, W. Sm. (p. 65).

Is not the type species, but the var. *linearis*, Mer.‡ Does certainly not belong to the genus *Navicula*, but represents rather a new genus (*Stauronella*).

Pleurosigma fasciola, W. Sm. (p. 74).

I have observed hundreds of living specimens of this species in the Mediterranean, in the Pacific Ocean, and in fresh water (California), and I never saw a single individual with four plates. There are always two plates, as in all species of the genus *Gyrosigma*, s. s.

Pleurosigma tenuissimum, W. Sm. (pp. 75, 76).

The above remark applies to this species also: there

* See for these terms my paper "On *Sellaphora*," Ann. & Mag. Nat. Hist., Mar. 1902, p. 187.

† C. Mereschkowsky, "On *Okedenia*," Ann. & Mag. Nat. Hist. 1901, vol. viii. pl. vii. figs. 7, 8.

‡ C. Mereschkowsky, "On *Stauronella*, a new Genus of Diatoms," Ann. & Mag. Nat. Hist. 1901, vol. viii. p. 424.

are invariably only two plates, which are *always* disposed very asymmetrically—that is to say, if the left plate is nearer to the upper end of the frustule, the right one is nearer to the lower end. This is a very characteristic and constant feature of *Gyrosigma tenuissimum*.

Pleurosigma nubecula, W. Sm. (p. 77, fig. 88).

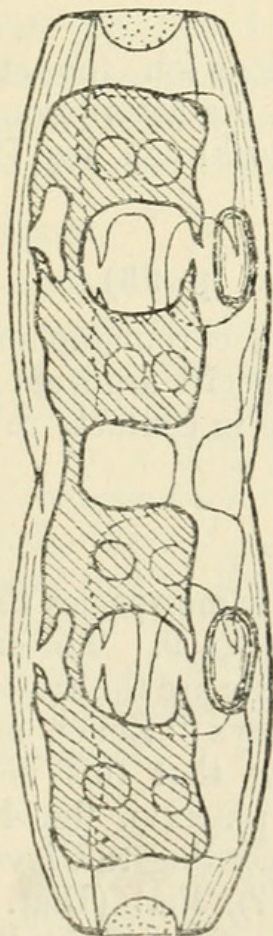
The left figure is too sigmoidal to belong to this species; it seems rather to represent a small individual of *P. delicatulum*, of which it has the endochrome. The right figure might be *P. nubecula* but for the endochrome, which, according to my observations, is of the same type as in *P. Normanii* (Et. s. l'End. d. D. pl. iv. figs. 1–5).

Scoliopleura latestriata, Grun. (p. 84) [its right name is *Scoliotropis latestriata* (Bréb.), Cl.].

In the var. *amphora* the two opposite plates are united by a common pyrenoid. It is very likely to be the same in the type species also. Karsten represents them as being separated.

Tropidoneis maxima, Greg., var. ? (p. 88).

Represents two species; the second figure (from the left)



Tropidoneis vitrea, W. Sm., with cell-contents. $\frac{900}{1}$.

is probably *T. tetraplasta*, a new species, characterized by the presence of four libroplasts instead of two, as is usually the case. The third figure is doubtless the *T. vitrea*, but the description of the endochrome is erroneous; there are two plates, it is true, but they extend all along the connectives, being composed of an upper and a lower part, uniting in the middle by a very narrow band. As the same error has been committed by Pfitzer, I give here a figure (p. 33) of the endochrome of this species. The two elongated bodies on the right side represent the two libroplasts, so characteristic for the whole genus.

Mastogloia Smithii, Thor. (p. 92).

Here, again, the description of Karsten can easily mislead the reader, as was the case in regard to *Achnantheidium brevipes*. When he says "Zwei Chromatophoren sind vorhanden," this is certainly not correct. In a letter Professor Karsten explains that he means two pairs of chromatophores united by a common pyrenoid—which is correct, and agrees pretty well with the figures. But the species, as Cleve points out, is not *M. Smithii*, and cannot be the same on account of the position of the plates along the connecting-zones, a position very different from what Cleve and I have observed in *M. Smithii*.

My recent observations on the structure of the genus *Mastogloia* have shown the descriptions and figures given in my 'Études sur l'Endochrome des Diatomées' to be very exact.

Cocconeis scutellum, Ehr. (p. 93).

The foramina in the chromatophore-plate are not real. The margins in this species are sometimes deeply indented and the lobes may come in contact, thus producing a kind of pseudo-foramina.

Amphora beta (p. 107).

This is no doubt the same species that I have described in *Études s. l'End.* pl. v. fig. 9. The endochrome is the same, the outlines of the frustule are the same, and as to the divisions of the zone Karsten says "Zonen mit punktirten Linien." I have but little doubt that this is the *A. composita* Jan figured in *A. S. Atlas*, pl. xxvi. fig. 44, which I believe to be a good species. According to Cleve, *A. beta* might represent *A. sulcata* (Bréb.?), *Per.* (*Diat. mar. d. Fr.* pl. xlvii. fig. 7), but the outlines of the frustules in both species are a little different and the size of the latter is smaller.

Amphora ehta (p. 109).

This is the same form that is figured in my *Etudes sur l'End.* pl. v. figs. 4, 5, representing most probably Gregory's *A. excisa*. I must have overlooked the pyrenoids.

Amphora ostrearia, Bréb. (p. 110).

I have the same doubt as Cleve concerning the correctness of the determination of this species; its endochrome, although of the same type as in *A. ostrearia*, has a different habitus from that of the latter species (see *A. teta*).

Amphora epsilon (p. 111).

A form with which I am well acquainted. It is *A. acuta*, var. *arcuata*, A. S., the same as in *Etudes s. l'End. d. D.* pl. vi. fig. 1. I can fully confirm the correctness of this determination.

Amphora teta (p. 112).

This is the genuine *A. ostrearia*; figure 149 represents the endochrome exactly as I have recently observed it in California, where this species is very common; the plates are large, with undulated and broadly indented margins.

Auricula punctata, Karst. (pp. 115, 116).

Is the same as *Auricula quadrangulata*, Mer. (*Et. s. l'End.* pl. vi. fig. 18). Seems to differ from *A. insecta*, to which it is nearly related, in the presence of puncta.

Auricula staurophora, Karst.

Same as the form described and figured in *Et. s. l'End.* pl. vi. fig. 14, under the name of *Amphora quadrata*, a name which seems to have lost all meaning because of the many and various forms to which it has been applied (see, for instance, Perag. D. mar. d. Fr. p. 220, pl. xlix. fig. 19). I do not believe, however, *A. staurophora* to be sufficiently distinct from *Auricula stauroneis*, Mer. (*l. c.* pl. vi. figs. 15, 16), to constitute a good species; one of these should be considered merely a variety of the other. The granules are represented in my paper as being elliptical, which is to be attributed to the material not being in a sufficiently fresh condition. I also failed to describe the pyrenoids.

Nitzschia angularis, W. Sm. (p. 120).

Very different from the form I have described under this name (*Et. s. l'End.* pl. vii. figs. 1, 2). In California I have observed quite a number of forms which could hardly be separated from *N. distans*; at the same time their cell-contents

are so different that they no doubt represent very distinct species. This would explain the difference in the present case, which is analogous to that of *Navicula scopulorum*.

But when Karsten describes the endochrome as being composed of a single plate he is certainly wrong. I have carefully studied over fifty species and varieties of *Nitzschia*, and I can positively affirm that there is not a single species of this genus which has less than two plates. All the statements to the contrary are positively erroneous. This error, introduced by Pfitzer, has since been frequently repeated with a remarkable persistency by Paul Petit, Van Heurck ('A Treat. on the Diat.' p. 382), &c., and now again by Karsten. There is no such thing as a single plate in the genus *Nitzschia*.

That is the reason why I do not believe the *Hantzschia marina*, which, according to Karsten (see *Amphora gamma*, p. 108), possesses a single plate, to be a *Hantzschia* or to belong to the *Nitzschieæ* at all. It is, in my opinion, nothing but an *Epithemia*, and therefore belongs to the *Archaeidæ**, which are usually characterized by a single plate (*Auricula*, *Amphiprora*). Its name should be changed into *Epithemia marina*.

Karsten also erroneously attributes one plate to *Nitzschia punctata*, var. *elongata* (p. 121), *N. litoralis* (p. 121), and *N. constricta* (p. 122).

Nitzschia lanceolata, W. Sm. (p. 129).

We somewhat disagree in regard to this species. One of us must have made an error in the determination, but I could not say positively whether it is Karsten or myself.

Surirella gemma, Ehr. (p. 131).

The figure is correct, but it is not quite exact to say that there are two plates. There is only a single plate, bent at the lower end, and it is only before the division of the frustule that the plate becomes divided.

2. C. MERESCHKOWSKY. "Etudes sur l'Endochrome des Diatomées." I^e Partie. Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg, 1901, vol. xi. n. 6.

This paper contains a number of erroneous determinations,

* See my paper "On *Stauronella*," Ann. & Mag. Nat. Hist. vol. viii. p. 429.

which would all have been corrected had I received the proofs. The most important are the following:—

Instead of	Read
<i>Diploneis suborbicularis</i> , Greg. (p. 5).	<i>Diploneis papula</i> , A. S. ?
<i>Caloneis formosa</i> , var. <i>quadrilineata</i> , Gr. (p. 6).	<i>Caloneis liber</i> , var. <i>excentrica</i> , Grun.
<i>Navicula</i> (<i>Libellus</i>) <i>species prima</i> (p. 14).	<i>Libellus reticulatus</i> , Mer.
L'exactitude de la figure (p. 15, line 11 from top).	L'exactitude de la figure 22 b.
N. 33. <i>Navicula species</i> ? (p. 15).	<i>Neidium affine</i> , var. <i>amphirhynchus</i> (Ehr.).
<i>Amphipleura micans</i> , Lyngb. (p. 17).	<i>Navicula</i> (<i>Dickieia</i>) <i>oblita</i> , Mer.
<i>Pleurosigma elongatum</i> , W. Sm. (p. 20).	<i>Pleurosigma delicatulum</i> , W. Sm.
<i>Amphora acutiuscula</i> , var. <i>subconstricta</i> , Gr. ? (p. 26).	<i>Amphora angularis</i> , Greg.
<i>Amphora angularis</i> , Greg. (p. 26).	<i>Amphora alata</i> , var. <i>delta</i> , Karst.
<i>Amphora Arcus</i> , Greg. ? (p. 26).	<i>Amphora composita</i> , Jan.
<i>Amphora lineolata</i> , Ehr. ? (p. 27).	<i>Amphora species</i> ?
<i>Amphora ocellata</i> , Donk. (p. 28).	<i>A. quadrangulata</i> , Mer.
<i>Nitzschia Acus</i> , Cl. (p. 35).	<i>Nitzschia seriata</i> , Cl.
<i>Nitzschiella tenuirostris</i> , var. <i>genuina</i> , Mer. (p. 37).	<i>Nitzschiella tenuirostris</i> , var. <i>hamulifera</i> , Mer.

3. HEIDEN-ROSTOCK. "Diatomeen des Conventer Sees bei Doberan." Mitth. a. d. Meckb. Geol. Landesanstalt, x. num. 21. Rostock, 1900. 4to.

Amphora Geinitzi (fig. 1) = *A. arenicola*, Grun., var. *major*, Cl. Syn. Nav. D.

Mastogloia stauroneiformis, sp. n. (fig. 5) = *M. Smithii*, var. *lacustris*, Grun.

Mastogloia varieloculata, sp. n. (fig. 7): agrees with *M. Braunii*, Grun., but the striæ are stated to be 32 in 0.01 mm. (perhaps a misprint for 23).

Navicula alluviana, sp. n. (fig. 8) = *Pinnularia rectangularata*, Greg. ?

Navicula conventus, sp. n. (fig. 9) = *N. directa*, var. *subtilis*, Greg. (in Cl. Syn. Navic. Diat. ii. p. 27, the length is given as 0.012 instead of 0.12 mm.).

Cocconeis lanceolata, sp. n. (fig. 17) = *C. quarnerensis*, Grun.

Nitzschia variepunctata, sp. n. (fig. 22) = *N. navicularis* (Bréb.), Grun. P. T. C.

4. E. SCHÜTT. "Centrifugale und simultane Membranverdünnungen." Jahrb. f. wiss. Bot. xxxv. 3, 1900.

Guinardia baltica (figs. 11, 12) = *G. flaccida* (Castr.).

Leptocylindrus danicus (fig. 33) = *Rhizosolenia delicatula*, Cl. (K. Sv. Vet.-Akad. Handl. vol. xxxii. n. 8, 1900).

Rhizosolenia setigera (fig. 34) = *R. semispina*, Hensen.

Rhizosolenia Hensenii = *R. setigera*, Btw. P. T. C.

5. SCHRÖDER. "Das Phytoplankton des Golfes von Neapel." Mitth. aus der zool. Stat. zu Neapel, vol. xiv.

Asteromphalus Ralfsianus (fig. 7) seems to be a small form of *A. Hookeri*, but the fig. is not sufficient. It cannot represent *A. Ralfsianus* = *A. heptactis*, the central space being much too large.

Euodia arcuata, sp. n. (fig. 8) = *Hemidiscus cuneiformis*.
P. T. C.

IV.—On the Genus *Latrodectus*, Walck.

By FREDERICK PICKARD CAMBRIDGE, B.A., F.Z.S.

IN February 1902 a paper on this genus was read before the Zoological Society of London, and a table giving differential characters for the various species and subspecies was added.

While executing the plates for that paper it has become clear that certain characters, based on the clothing of the abdomen, are of greater importance than I had considered at the time to be the case, and I therefore publish the following table as affording a better key to the characters of the different species than that included in my paper read before the Zoological Society. These characters will all be found illustrated on the plates accompanying my paper in the 'Proceedings of the Zoological Society.'

Females.

- A. Integument of abdomen, at any rate on the lateral area, clothed with minute acanthoid spines, with or without longer bristles or spines.
i. Abdomen clothed on the lateral area with



Cleve, P. T. and
Merezhkovskii

, K. S. 1902. "III.—Notes on some recent publications concerning diatoms."
The Annals and magazine of natural history; zoology, botany, and geology 10,
27–38. <https://doi.org/10.1080/00222930208678628>.

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