Two species have been recorded from Spitsbergen which Mr. Elton did not meet; these are :—

Leptyphantes hyperboreus, Strand (10).—An adult male and an immature female.

Micryphantes fuscipalpis, C. L. K.—One female.

This is an extremely critical genus, and the identification is very doubtful. It is far more likely to be *M. nigripes*, Sim., or some other form. It is absolutely necessary to have males in order to be sure of the species.

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XIV.—*Note on the Genus* Tragosia, *Gray*. *By* Arthur Dendy, D.Sc., F.R.S., Professor of Zoology in the University of London (King's College).

The genus *Tragosia* was proposed by Gray [1867] with *T. infundibuliformis* as its type-species. This species is the *Isodictya infundibuliformis* of Bowerbank [1866, 1874] and the *Halichondria infundibuliformis* of Fleming [1828] and Johnston [1842]. Perhaps this is as far as it is safe to go in tracing back the synonymy, but Johnston expresses

the confident opinion that his sponge is identical with the *Spongia infundibuliformis* of Linnæus.

The shortly-stalked, thin-walled, widely funnel-shaped form of the sponge is highly characteristic when taken in conjunction with the skeleton arrangement and spiculation. The species seems to occur abundantly in the neighbourhood of the Shetland Islands and Hebrides. Bowerbank records it from as far south as Guernsey.

Gray saw quite correctly that this species could not rightly be included in Bowerbank's genus *Isodictya*, nor yet in the older genus *Halichondria*, but he was very unfortunate in the diagnosis of his new genus *Tragosia*, which is quite inadequate. It runs as follows :—

"Sponge funnel-shaped or fan-shaped, branches anastomosing, minutely hispid. Skeleton regularly netted.

" 'The spicula of the primary lines of the skeleton are needle-shaped, with their apices directed inwards; those of the secondary lines are fusiform.' "

I do not know why the second paragraph of this diagnosis is placed in inverted commas by Gray, but it contains a singular error, for the apices of the styli are, of course, not directed inwards, but, as usual, outwards. The character which seems especially to have impressed Dr. Gray in founding his genus is the presence of the two kinds of megascleres, stylote and oxeote, the former in the primary and the latter in the secondary lines of the skeleton. As this feature also occurs in Bowerbank's *Isodictya dissimilis*, Gray includes that species in his *Tragosia*. It was Dr. Bowerbank, however, who first pointed out the similarity of the two species in this respect, although they are very different as regards external form.

The genus *Tragosia* has been accepted by Vosmaer, Hanitsch and Topsent. The former, in Bronn's 'Klassen und Ordnungen des Thierreichs' [1887], reproduces a figure of the external form from Bowerbank, but he does little, if anything, to improve the diagnosis. I cannot, moreover, agree with him in considering Schmidt's genus *Cribrochalina* [1870] as a synonym of *Tragosia*. Schmidt's description leaves very little doubt that the type of his genus at any rate—*C. infundibulum*—is a true Chalinine sponge. Nor has the suggestion that Carter's *Semisuberites* [1877] may be another synonym been justified by subsequent events.

Hanitsch [1894] adds nothing to our knowledge of the genus, but his diagnosis is interesting because he expressly states that there are no microscleres. Topsent also, although

he has made use of the name *Tragosia* on several occasions, has not, so far as I am aware, done anything to extend our knowledge in this direction. We may safely say that hitherto the genus *Tragosia* has remained very badly characterized, and one can hardly be surprised that Carter [1876] completely ignored it and referred Bowerbank's *Isodictya infundibuliformis* to *Phakellia*; indeed, he seems to have actually confused the species with *Phakellia ventilabrum*.

We come now to the chief object of this note, which is to call attention to a hitherto-unnoticed element in the spiculation of *Tragosia infundibuliformis*, by the aid of which the confusion between *Tragosia* and *Phakellia* can at once be avoided and the genus placed upon a more satisfactory footing.

Some years ago I received from Sir W. A. Herdman three beautiful specimens of *Tragosia infundibuliformis* collected in the Minch and preserved in alcohol. The external form of these specimens is thoroughly typical and, taken in conjunction with the locality, left little doubt as to the identification. In order to make quite sure, however, I recently examined the spiculation of one of the specimens, and was much surprised to find numerous microscleres in the form of trichodragmata.

Before coming to the conclusion that trichodragmata really form a normal constituent of the spiculation, it was necessary to make a re-examination of specimens actually referred to the species in question by the older writers. In the first place, I found in Mr. Carter's cabinet a slide labelled "*Halichondria infundibuliformis*. Johnst. B. M. Shetland", which is evidently a preparation of *Tragosia infundibuliformis*, and which contains trichodragmata quite unmistakably. Unfortunately the same slide is also labelled, at the other end, "Type specimen *Phakellia robusta*, Bk." Two other slides, both labelled "*Phakellia infundibularis*" and "Deep Sea," are evidently from the 'Porcupine' collection, but they represent two distinct species. The one has trichodragmata and may be safely identified as *Tragosia infundibuliformis*; the other has no trichodragmata (so far as I can see) and much larger megascleres, and is probably referable to *Phakellia ventilabrum*. It is evident from what Mr. Carter says about these species in his paper on the 'Porcupine' Sponges [1876, pp. 239, 240], taken in conjunction with his preparations, that he failed to distinguish the one from the other.

There are in the Natural History Department of the British Museum a number of dry specimens undoubtedly

referable to *Tragosia infundibuliformis*. Two of these I examined microscopically. The first was labelled, in Bowerbank's writing, "*Halichondria infundibuliformis* Johnst.", to which had been added, apparently in Carter's writing, "T. S." and "*Isodictya inf.* Bk.," suggesting that Mr. Carter regarded this as the type-specimen of the species as accepted by Johnston and Bowerbank. The second was labelled "*Isodictya infundibuliformis* Bk." and "*Halichondria infundibuliformis* Sowerby." Both of these specimens had the typical external form, and both contained trichodragmata. There can be no doubt that they are specifically identical with the specimens obtained by Professor Herdman from the Minch.

I think we may now state confidently that the common British species upon which Gray's genus *Tragosia* was founded contains trichodragmata as constant and characteristic constituents of its spiculation, and may thereby be distinguished much more sharply from *Phakellia* than was formerly possible. The fact that these spicules have been completely overlooked by previous observers may probably be accounted for by their having examined only dry specimens, in which the shrinkage of the soft tissues makes it much more difficult to recognize them.

I have already, on more than one occasion [1916, 1921 A], called attention to the curiously sporadic distribution of this type of microsclere amongst the Tetraxonid Sponges, and suggested that it has probably arisen again and again in the course of evolution through parallel mutation. I have also doubted its value for purposes of generic distinction, and been, I fear, somewhat inconsistent in this respect. Thus I have refrained [1921 B] from separating *Cinachyra eurystoma*, which possesses trichodragmata, from the remaining nineteen species of the genus, which possesses none, while, in the same memoir, I refused to admit into the genus *Axinella* a species ("*Thinacophora*" *durissima*) which possesses trichodragmata, and also suggested that the presence of these spicules may be used as a means of distinguishing the genus *Mycale* from *Ægagropila* and *Esperella*. I have suggested, in short, that each case should be treated on its merits, without attempting to lay down a general rule. Where a generic diagnosis is quite inadequate, as in the case of *Tragosia*, the presence or absence of trichodragmata may well be taken into consideration.

Hallmann [1916–17], a few years ago, published a revision of the genera of so-called Axinellidæ containing microscleres, in which he mentions a considerable number

of species containing trichodragmata and makes extensive use of this form of spicule as a guide to classification. It is not necessary to criticize his conclusions in this place, except in so far as they concern the genus *Tragosia*. He did not, of course, know that *Tragosia infundibuliformis* contains trichodragmata, or he must have realized that his new genus *Axidragma* was not required.

The diagnosis of *Axidragma* may be quoted in full; it runs as follows :—"Axinellidæ typically of thin lamellar habit, stipitate, with even surface. Skeleton composed of primary lines of stylote megascleres, traversing the sponge in the direction of its growth, and of secondary lines (connecting-fibres?) formed of oxea; there is no special dermal skeleton. The megascleres are of the two forms mentioned, which are quite distinct in kind. The microscleres are trichodragmata accompanied or not by single trichites." This genus is proposed for Topsent's *Axinella padina* [1896], from the Gulf of Lyons, a species which is shown by the discovery of trichodragmata in *Tragosia infundibuliformis* to be closely related to, if not identical with, the latter.

It is quite clear that Hallmann's genus *Axidragma* should be abandoned in favour of *Tragosia*. The synonymy of the other Axinelline genera with trichodragmata is too difficult and complex a problem to be discussed in this place, but the study of these forms will probably be found to afford strong support to the view that the "Axinellidæ" are merely a heterogeneous assemblage of lipochelous Desmacidonidæ [*cf.* Dendy, 1921 A, B].

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XV.—*Three new Races of* Cephalophus monticola.

By Gilbert Blaine.

Cephalophus monticola ludlami, subsp. n.

A duiker of the *monticola* group from the Kafue River, N.W. Rhodesia, of which seven flat headless skins and two skulls have recently been added to the B.M. Collection.

They all come from the same locality, viz., the junction of the Lunga with the Kafue River, N.W. of the Victoria Falls, and are thus far removed from their eastern and southern relatives, *nyasæ* and *monticola*. The skins are very alike in general character, though some are rather more rufous than others.

The two skulls, from which the frontals are missing, are those of females. The largest of the two is the size of the type-specimen of *lugens*, Thos., although not yet fully mature. This duiker may therefore be considered a large representative of the group.

Description.—Skin. Texture of hair hard and shining like *lugens*. Colour: neck and shoulders mouse-grey, paler below. Dorsal surface umber-brown, darkening towards the rump to dark sepia on either side of the tail. Flanks pale greyish rufous, changing to bright rufous on the hams, and sharply contrasting with the sepia at the rump. Throat and underline of body dusky white. Legs bright rufous. Tail dark sepia above, white beneath.

The flat skin gives the general impression of being lighter and greyer in front, and darker and redder behind.

Skull. Breadth 63 mm.; occiput to nasals 83; upper tooth-row 31.