Obs. The Shetland Nudibranchs and Cephalopods have not been sufficiently investigated. Lovén's 'Index' and a further list of Swedish Nudibranchs which he lately sent me contain 60 species of that order, out of which 22 only have been identified as Zetlandic. He also gives 9 species of Cephalopods, of which 3 only are Zetlandic. The southern distribution of our Nudibranchs is very little known. For the preparation of the present list of Nudibranchs I am in a great measure indebted to the late Mr. Alder and to Mr. Norman. Forty-five species of mollusca (marked †) have been discovered in the Shetland seas since the publication of Forbes & Hanley's 'History of British Mollusca and their Shells.'

MISCELLANEOUS.

On a new Class of Echinodermata.

By C. SEMPER.

M. SEMPER has made an anatomical investigation of the genus Rhopalodina of Gray, which has led him to rather remarkable results. The animal had been classed by Dr. Gray, because of the form of its body, among the Holothuriae. This body is formed of an anterior part having the form of a cylindrical peduncle, and of a spherical posterior part or abdomen. In this hinder region, at the point opposed to the insertion of the peduncle, are seen ten ambulacra, to which correspond in the interior, as in the Holothuriae, ten radiating muscles, ten aquiferous canals with their ampullae, and ten nerves. These ten rays of the abdomen, moreover, are prolonged into the peduncle, but without bearing any feet.

At the free extremity of the peduncle are the mouth and the anus, side by side. The margin of the mouth is entire; that of the anus is formed by a circle of ten papillae. The tentacular crown of the pharynx is formed of ten pennated tentacles, which, in the two individuals studied by M. Semper, were hidden in the buccal cavity. The pharynx and the terminal part of the intestine consequently pass side by side in the interior of the peduncle. At the point where the peduncle enlarges to form the spherical abdomen, the anal intestine bears four long ceca, like the lungs of the Holothuriae. At the corresponding point of the pharynx, between that organ and the intestine, appears a little swelling, serving as the point of attachment of a crowd of little blind tubes. These are the generative organs, constructed on the type of those of the Holothuriae. The stomach forms in the abdomen a spiral with numerous turns and a double loop.

Of the ten rays above mentioned, five correspond with the pharynx and five with the intestine. The five radial muscles of the pharynx are attached, as in the Holothuriae, to five radial pieces of the calcareous pharyngeal ring, which is formed of ten pieces in all. In this place there ought to exist a circular aquiferous vessel, as follows from the existence of two vesicles of Poli. Round the anus,
immediately below the crown of anal papillae, there is also a calca-
reous ring composed of ten pieces, of very regular form; and the
five radiate muscles of the intestine are attached to the five radial
pieces. The calcareous ring of the pharynx is placed a little deeper
in the peduncle than that of the intestine; therefore a section of the
peduncle at the level of the root of the buccal tentacles shows
plainly the five radiate muscles of the intestine, but not those of the
pharynx. The small dimensions of the object have not, unfortun-
ately, allowed it to be ascertained how the aquiferous vessels of the
rays behave in the neighbourhood of the calcareous rings. The
existence of a double calcareous ring and the division of the rays
into five intestinal and five pharyngeal rays might lead us to suppose
that there exist two circular vessels. If, however, we admit, de-
spite this arrangement, a single nervous ring and a single circular
aquiferous vessel, it is still no less impossible to refer this singular
animal to the typical form of the Holothuriae, notwithstanding the
incontestable affinities that have been indicated in the internal
organs. We might, it is true, suppose the \textit{Rhopalodinae} to have
resulted from a \textit{Psolus} or \textit{Colochirus} whose buccal and anal cones
had been much elongated and soldered to one another; but although
that transformation might produce a form analogous to \textit{Rhopalodina},
the rays could not be arranged as in these animals. The two dorsal
rays should, on the contrary, disappear entirely, and we ought to
find on the peduncle two groups of three rays becoming continued
one into the other at the extremity of the abdomen.

In all living Echinoderms the anus is placed either opposite to the
mouth in the centre of the radiate arrangement or in an inter-
radium. In some fossil Crinoids alone (the \textit{Crinoidea tessellata})
there exist more than five rays placed round a single central aper-
ture. These are in reality the only Echinoderms in which we could
suppose an arrangement of the pharynx and intestine in relation to
the rays like that which M. Semper has described in \textit{Rhopalodina}.
Yet these latter could not be united with the Crinoids, because of
the totally different structure of their ambulacra, leaving out of
consideration that their internal organs approximate them much
more to the Holothuriae.

The author does not see any other way of getting out of the diffi-
culty than to create for these singular animals a new class, under
the name of \textit{Echinodermes diplostomes}. He promises us a detailed
description of the genus \textit{Rhopalodina} in a supplement to his great
work on the Holothuriae. — \textit{Verhandl. phys.-med. Gesellsch. in
pp. 326–328.}

\textit{Coccoliths and Coccospheres.} By G. C. Wallich.

September 7, 1868.

In a lecture "On a Piece of Chalk," delivered by Prof. Huxley
to working men during the recent meeting of the British Association,
and published with the author's initials in the September number of
\textit{Ann. & Mag. N. Hist.} Ser. 4. \textit{Vol. ii.} 22