

readily give rise to mistakes. Cells of the animal detach themselves from the mass, and remain scattered all round it. Some of these are finally dissolved, but others (or, at least, bodies which cannot be distinguished from them in appearance) begin to emit very delicate transparent filaments, resembling those of *Actinophrys*. Some of these bodies even become encysted in the manner of *Actinophrys* and *Amœba*. From these, four or five monociliated Monads are sometimes seen to issue: these are capable either of creeping in the manner of *Amœba*, or of swimming by the agency of their flagellum. These creatures are sometimes present in such great number, in the interior of dying *Spongillæ*, that one might be led to regard them as masses of sponge-cells. We should then have to recur to Dujardin's notion that the *Spongillæ* were merely masses of *Amœbæ* inhabiting a sort of siliceous polypary. M. Lieberkühn, however, shows that these bodies form no integral part of the *Spongilla*, and that they appear also in great quantities in the ova of fishes and other animals when in course of perishing. But he does not settle the question whether the Monads are the embryos of these kinds of *Amœbæ*, or whether we are to consider them as parasites of these parasites. It is interesting to compare these facts with the observations made by Jæger upon *Hydra*. It has been asserted that these animals are capable of breaking up into little unicellular Amœbiform creatures, which on their part can reproduce the *Hydræ*. Is not this an analogous case of parasitism misinterpreted?—*Müller's Archiv*, 1863, p. 717; *Bibl. Univ.* June 20, 1864, *Bull. Sci.* p. 183.

On the Geographical Distribution of the Annelida.

By A. DE QUATREFAGES.

Having completed a work on the Annelida which will form a portion of Roret's *Suites à Buffon*, M. Quatrefages has communicated to the Academy of Sciences of Paris some remarks upon the geographical distribution of those animals. He observes that, although the imperfection of our knowledge of the species would render it premature to undertake any detailed investigation of the subject, it is possible to indicate certain general laws, some of which are of the more importance as they contrast strikingly with facts universally recognized in other groups. His results are as follows:—

1. The class of Annelida properly so called (*Annelida Errantia* and *Tubicola*) is in salt waters the geographical term corresponding to the land and freshwater class of *Erythræina* (*Lumbrici* and *Naïdes*).

2. The class of Annelida has representatives in all seas. This is also the case with the two orders of which it is composed (*Errantia* and *Sedentaria*); in this respect the group under consideration may be said to fall under the general rules.

3. This cosmopolitism appears to extend not only to the large genera which best reproduce the general type, but also to the most exceptional subtypes, and even to those genera which might be supposed to be most characteristic. In this respect the Annelida differ from all the other groups which have been investigated from a geographical point of view.

4. Hence it results that the Annelidan fauna does not appear to

present anything resembling *zoological regions*, or *centres of creation* characterized by one or more special types—regions and centres the existence of which has been demonstrated for most of the other classes of the animal kingdom.

5. The tendency to the diffusion of the genera and subgenera is counterbalanced by the tendency to restriction, which is no less distinct, in the species.

6. The number of species common to two continents, to two hemispheres, to the eastern and western seas bounding a continent, &c., if not absolutely *nil*, is always exceedingly restricted. The species of the same genus sometimes change at very small distances. The author has not found a single species to be common to the French Atlantic coasts and to the shores of the Mediterranean.

7. Marine currents may explain the rare exceptions to the law of the local restriction of species. Thus M. de Quatrefages found at Saint Jean-de-Luz the large West Indian *Eunice Rousseaui*, confounded by Cuvier with the *E. gigantea* of the Indian Ocean. This species had evidently been conveyed from the West-Indian seas by the Gulf-stream.

8. From the cosmopolitism of the types and the local restriction of the species, it is evident that the *corresponding geographical terms* must be sought only among the latter. These are indeed almost always found, even in the case of those species which are most remarkable for some peculiarity of organization &c.

9. The class of Annelida, as regards the perfection of the organism, does not present the differences in correspondence with the latitude which have been indicated in other groups, and especially in the Crustacea, by Milne-Edwards. Equality of organization is one of the most general laws of this group.

10. The nature of the coast has the most marked influence upon the development of the Annelidan fauna. Judging from known facts, granitic and schistose coasts are in general remarkably rich in species and individuals, whilst calcareous coasts are as remarkably poor in both respects.—*Comptes Rendus*, July 25, 1864, p. 170.

On a new Species of Turacus. By G. R. Gray.

A new species of the interesting genus *Turacus* has just been brought by the Rev. C. Livingstone from the Manganja Highlands of East Africa, where it was obtained at an elevation of 3000 or 4000 feet above the sea.

It approaches the *Turacus albocristatus* in its general appearance, but the crest differs in form, being as it were bicrested; viz. the plumes from the crown are long and narrow, thus forming a crest pointed posteriorly, while those on the occiput are very short and closely set upon it. All the plumes of both parts are tipped with white. The rest of the plumage is very similar to that of *T. albocristatus*; but the feathers of the back and wings are margined with shining golden green instead of bluish green, as is seen on the latter-mentioned species.

I propose the name of *Turacus Livingstonii*, as a slight acknowledgment of that gentleman's merit in adding so interesting a species to our knowledge of this showy genus.—*Proc. Zool. Soc.* Feb. 9, 1864.



Quatrefages, A. de. 1864. "On the geographical distribution of the Annelida."
The Annals and magazine of natural history; zoology, botany, and geology 14,
239–240.

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