However, if the specialists in any group can permanently agree among themselves in the designation of the types of genera now recognized, there is no reason why any changes need be made. No new difficulties are, indeed, introduced by these suggestions; but to carry them out would simply bring to definite expression the disagreement and confusion latent among systematists, and make plainer the fact that uniformity and stability stand in inverse ratio to the personal equation; which means that some uniform, and hence arbitrary, method of assigning types for fixing the application of the older generic names will probably be necessary, such as the use of the first designated species.

O. F. Cook.

U. S. National Museum,
September 22, 1898.

THE SUPPOSED BIPOLARITY OF POLAR FAUNAS.

Dr. John Murray, in a recent paper,* again mentions the supposed general likeness of a large number of organismsca ptured in the Antarctic seas to those found in the Arctic seas (p. 133). I should like to say a few words on this topic, since I have paid particular attention to this question, and have repeatedly endeavored to show that in most cases this supposed 'bipolarity' does not exist at all, while in others it is no true bipolarity, cases of true bipolarity being extremely rare.

Especially for the Decapod Crustaceans I have found that "not a single bipolar species is known."† This sentence is quoted by Dr. Murray (l. c.), and he tries to show its incorrectness by mentioning the close resemblance of *Lithodes murrayi* Hend. of the Kerguelen region to *Lithodes maja* (L.) from the North-Atlantic, and by adding that—according to a communication by Mr. Henderson—there is no better illustration of bipolarity than that furnished by the *Lithodidæ*.

I cannot admit these objections, since they are not supported by the facts. We possess a very valuable monograph of the *Lithodidæ* published by Mr. E. L. Bouvier in 1896,* and Mr. Bouvier has shown plainly—as I have maintained previously—that the chief distribution of the *Lithodidæ* is what I have called *meridional distribution;* that is to say, a distribution in the direction North-South, along the western coasts of the continents. It is a true case of false or mistaken bipolarity, a connection of the Arctic and Anarctic range of this family being present along the western coast of America (and perhaps of Africa). Moreover, according to the key of species and the notes given by Mr. Bouvier (l. c. p. 24), *Lithodes maja* is not at all the most closely allied form to *L. murrayi;* but there are two other species which may claim this distinction, namely: *L. tropicalis* A. M. E. and *L. ferox* A. M. E., both from tropical latitudes off the western coast of Africa, where they have been found in depths ranging from 800 to 1100 meters. This fact again suggests a connection from the Arctic to the Antarctic seas along the western coast of Africa, and we see that true bipolarity in the family *Lithodidæ* as well as in the genus *Lithodes* is wholly out of the question.

I cannot understand at all why Dr. Murray again and again calls attention to the supposed bipolarity of the polar faunas as a *striking* feature in zoogeography. Most of the cases introduced formerly as instances illustrating this bipolarity could not be maintained after a critical examination of the respective zoogeographical facts. Thus, among the Decapods this theory finds no support, as I have shown, and likewise the supposed bipolarity of the Holothurians (Théel) does not exist, since Professor H. Ludwig† states that "not a single species of the Antarctic fauna is represented in the Arctic fauna," and that "there is not even a resemblance of both faunas, but a great dissimilarity."

Thus we see that a critical examination lessens the number of the superficially recorded cases of bipolarity, and that my doubts as to the correctness of the bipolarity as a *prime law* or as a *striking feature* of distribution are fully supported, and I am convinced that a careful

*On the annual range of temperature in the surface waters of the Ocean and its relation to other Oceanographical phenomena. *The Geographical Journal*, August, 1898, v., 12, No. 2.

†Zool. Jahrb. Syst., v. 9, 1896, p. 585.

*Ann. Sci. Nat. Zool. (8) v. 1.

†Hamburger Magalhaensische Sammelreise. Holothuriden, 1898, p. 90, f.

investigation in other groups of animals will have the same result. Here I shall add another instance. Dr. Murray (*l. c.*, p. 134) gives a list of bipolar species and genera of fishes (after Günther). Now I took the trouble and tried to verify this list, using the recent publications of Jordan and Evermann* and of Goode and Bean†, but I was very much astonished to find that this list is of no value at all. After having found out that of eleven bipolar species of this list at least *five* are really *not* bipolar, and that of twenty-eight bipolar genera at least *five* are to be dropped, and that *seven* more are very doubtful, I did not think it worth while to examine the whole list, since it is evident by these facts that it is utterly devoid of scientific value.

In order to avoid any misunderstanding, I wish it to be understood that I do not deny the possibility of 'bipolarity,' and, indeed, I have myself established at least *one* instance of true bipolarity of a genus (*Crangon*), and I have given an explanation of it. But I protest most emphatically against the view that bipolarity is a striking character of the marine polar faunas, and I also protest against the introduction of doubtful or poorly established facts or of simply incorrect statements or opinions (cf. *Lithodidæ*) in support of this 'bipolarity' of species or groups.

ARNOLD E. ORTMANN.
PRINCETON UNIVERSITY, September, 1898.

SCIENTIFIC LITERATURE.

Die Zelle und die Gewebe. Grundzüge der allgemeine Anatomie und Physiologie. OSCAR HERTWIG. Jena, Gustav Fischer. 1898. *Zweites Buch. Allgemeine Anatomie und Physiologie der Gewebe.* Pp. viii + 314. 89 figs. Preis, 7 Mark.

The first part of the work, of which this forms the second and concluding volume, appeared in 1892. Its appearance, as the author tells us in the preface, was due to three reasons: first, to impart to a wider circle of readers the views set forth in his university lectures; second, the desire to give to his own investigations, scattered in various periodicals and separate publications, a more comprehensive setting; and third, to crown his 'Lehrbuch der Entwicklungsgeschichte des Menschen und der Wirbelthiere' with more theoretical views, which could not suitably be included there. "But the second part of the book, which includes the subject of the tissues, and which will be about the same size as the first part, will be in a more special sense a completion of the 'Embryology.' For in it, in addition to the description of the tissues, special emphasis will be laid on their origin or histogenesis, and on the physiological causes of tissue-differentiation." The entire work is thus the result of the life-long observations and reflections of one of the most active and successful of modern biologists. It is the product of a true process of growth, and, probably, a final product; for those who have carefully followed the author's writings of the last six years will not find in this volume much not outlined before.

Perhaps the chief significance of the present volume is that it is the first thorough and consistent exposition of Lamarckian principles, as seen in the light of recent embryological work. The leading idea of the entire exposition is the the author's theory of development, which he names *the theory of Biogenesis.* The three foundation stones of this theory are stated in the twentieth chapter to be: (1) Lamarckism, *i. e.*, 'to use Nägeli's expression, the theory of the specific and direct action' of the environment; (2) 'the doctrine of the inheritance of acquired characters, or their transmissibility through the germ-cells to the offspring;' (3) 'the doctrine of the continuity of the process of development, and the principle of progression, that is to say, that development' (both ontogenetic and phylogenetic) 'progresses steadily in a definite direction.'

The first seven chapters are preliminary, dealing with 'the Stages of Individuality,' 'Specific (Artgleiche), symbiotic and parasitic cell-union,' 'On the Methods of Interdependence of the cells of Organisms,' 'The Law of Causation in its Application to the Organism,' 'On the Causes Separating Cell-aggregates into Tissues and Organs,' and the 'Theory of

*The Fishes of North and Middle America, Bull. U. S. Nat. Mus., 47, 1896.

†Oceanic Ichthyology, Mem. Mus. Comp. Zool., v. 22, 1896.