forward so rapidly that important researches of the past four or five years are not found included in it. This defect, however, as intimated above, may be regarded as compensated for by the comprehensive and historical sweep which characterizes Luciani's survey of the subject. W. B. Cannon

The Wonder of Life. By J. Arthur Thomson. New York, Henry Holt and Company. 1914.

Once more we are indebted to Professor Thomson for a semipopular work on biology, this time with contents of a very miscellaneous character, better to reflect the varied aspects of living nature. We have, in fact, a biological (mainly zoological) scrap-book, full of interesting matters gleaned from more or less recent literature, carefully selected and digested for our benefit. All this is loosely thrown together under several general headings, "The Drama of Life," "The Haunts of Life," "The Insurgence of Life," "The Ways of Life," "The Web of Life," "The Cycle of Life" and "The Wonder of Life," with more than 300 separate minor topics. Each chapter is headed by a selection from the aphorisms of Goethe, as translated by Huxley. The book is admirably adapted for "supplementary reading" in a course on biology or zoology, or it might itself be made the basis of a seminar course. Its great value lies in its wide scope and breadth of view, with every emphasis on vital phenomena rather than on morphological details or classification. It is addressed, however, to an educated public, and even in places presupposes more zoological knowledge than most of us can boast. For example, on page 105 we are pulled up short by the startling announcement that "no one expects to find a Crustacean like *Byotrephes longimanus* in a pond." It is probably true that very few have ever approached a pond with any such expectation! Doubtless it is good for us, however, to bump now and again into things we do not understand, merely to diminish that conceit which too readily develops after reading discussions so lucid as those of Professor Thomson.

The specialist will here and there find things not quite up to date, or stated without sufficient reference to diverse points of view, but the general impression gained is that the work is admirably done, and that in all probability no other naturalist could have done it better, if so well. The illustrations, including many colored plates, are pleasing and instructive, but not up to the standard of the text. Some are really bad, as Fig. 81, a colored plate of leaf-insects (*Phyllium*). The coloring of the foliage, to correspond with the insects, is unnatural and without any adequate basis; while the insects are drawn from mounted specimens with the legs spread in the conventional way, without any reference to the plant on which they are supposed to be resting! The most ridiculous object is the young one, shown as resting on a nearly upright branch, with its legs waving wildly in the air. The whole thing is certainly, as it stands, a piece of "nature-faking." Fig. 39, representing young spiders, shows some of them with the head and thorax separate, like an insect.

There is a passage on page 595, beginning the discussion of the Transmissibility of Acquired Characters, which indicates that such transmission is perfectly easy in unicellular animals, which simply divide into two. Jennings has well shown the fallacy of this naïve conception, and it seems surprising that Professor Thomson should offer it, not merely as an idea, but as a well-known fact.

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SPECIAL ARTICLES

MICRODISSECTION STUDIES ON THE GERM CELL[1]

This paper records a continuation of the observations published recently[2] in Science on the male germ cells of the grasshopper, *Disosteira Carolina,* and of the cockroach, *Periplaneta Americana.* The cells were iso-

[1] Slightly modified from a paper read before the American Society of Zoologists, Philadelphia, December 29, 1914.

[2] Robert Chambers, Jr., "Some Physical Properties of the Cell Nucleus," Science, N. S., XL., p. 824, 1914.