Biological Units

The Cell. Biochemistry, physiology, morphology. vol. 4 and vol. 5, *Specialized Cells*, pt. 1 and pt. 2. Jean Brachet and Alfred E. Mirsky, Eds. Academic Press, New York. vol. 4, 1960. xv + 511 pp. vol. 5, 1961. xv + 597 pp. $20.

With these two volumes, covering more than a thousand pages, *The Cell* is well on its way. The middle volumes (2 and 3) are yet to come. There is no doubt that this is, and will remain for many years, a most important series of books and a necessity for any comprehensive biological library. There is no other collection of reviews on cell biology which covers this wide field with such thoroughness and quality.

Specialized cells are the subject of the 15 articles, which begin at the bottom of the scale with short, clear reviews on viruses by Thomas and on ciliates by Nanney and Rudzinska. Bacterial cytology, both with the light and the electron microscope, is dealt with by Robinow and illustrated by some beautiful photographs. Here one can well add a word of congratulation to the publisher on the quality of both the illustrations and the printing. Trager has written a most interesting article on intracellular parasites and symbionts—a subject which many cell biologists should know more about. One wonders, for example, how many of us are aware that the body louse appears to get vitamins from bacteria living as intracellular symbionts in a specialized organ.

Most of the reviews are concerned with the specialized tissue cells of the Metazoa—neurons by Hyden, photoreceptors by Miller, muscles by Huxley, glands by Gabe and Arvy, kidney by Forster, blood by Bessis, bone and cartilage by Lacroix, skin by Montagna, and antibody production by McMaster. Taken together, these reviews give an impressive survey of the differentiated cells of higher animals, and many of the articles deal with the physiology of the systems as well as with the morphology. But it is still striking how much less is known about cellular function than about cellular structure. In the same way that we still do not know what half of the organelles do within a typical cell, so also are we ignorant of the functions of many cell types within organs.

The last two articles deal with cancer cells. This is not an easy subject to review since much of the work on trying to differentiate tumor cells from normal cells has led to negative results. Oberling and Bernhard conclude that there is no "single morphological sign which is truly specific of cancer cells." But it is still possible to feel that more stress might have been laid on comparing cancer cells with other *growing* cells rather than with nongrowing cells of the tissue of origin.

Since *The Cell* is claimed by the publisher to be an "encyclopedic reference work," it is fair to point out that there are a number of omissions. Two of the commonest types of animal cells used in current research, gametes and amebas, are not included. Nor is there anything about plant cells, either at the level of the differentiated cells of higher plants or at the level of the cells of the lower groups, algae and yeasts.

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Essays on Genius

Some Reflections on Genius and Other Essays. Russell Brain. Lippincott, Philadelphia, 1961. 191 pp. $4.50.

Some Reflections on Genius consists of a selection of interesting essays—an initial one, from which the book derives its major title, plus 11 others that form commentaries on the lives of six men who distinguished themselves in ways that are related to the author's concept of genius. The commentary on Dr. Johnson is by far the longest, consisting of six essays. The book ends with two essays, one on symbols and images, the second on words.

In the first essay, which is the heart of the book, Russell Brain suggests that genius depends on the organization of the nervous system. He pays no more attention to the nervous system until the last two chapters, wherein he relates neurology to perception and the hemispheres of the brain to handedness and speech.

Intelligence is considered to be the most important general determinant of genius. Coupled with other specific independent abilities, it determines the character of genius. The connection between abnormality and genius is discussed in the first essay. Brain concludes that most geniuses are perfectly sane but that they tend to be emotionally unstable.

In the remaining essays the author interprets the lives of various great men and illustrates some aspects of his concept of genius.

The book suffers from disconnectedness. Had the commentaries been edited more carefully so as explicitly to illustrate the author's concept of genius, the book would have been more coherent and convincing.

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Wave Propagation

Wave Propagation in a Turbulent Medium. V. I. Tatarski. Translated by R. A. Silverman. McGraw-Hill, New York, 1961. 285 pp. Illus. $9.75.

Russian contributions to the theory of wave propagation in inhomogeneous media have been both extensive and impressive. An approach which has been consistently explored in the development of this theory is the combination of first-order perturbation theory, on the assumption of small inhomogeneities, combined with the Born, or far-field, approximation. In this book known results concerning the spectra of homogeneous turbulence are combined with these other approximations to yield a theory which gives impressive agreement with experimental data.

Tatarski gives a thorough account of the theory which results from the assumption of the validity of a perturbation approach, as well as the converse case which is amenable to analysis by the Wentzel-Kramers-Brillouin approximation. Applications are discussed in the fields of acoustic, electromagnetic, and optical propagation phenomena. The theory developed is amply documented by experimental data from studies of atmospheric turbulence and from the propagation of light and sound near the earth. Further reports are made of observations of twinkling and quivering of stellar images in telescopes, together with a theoretical interpretation along lines laid down earlier in the book.

This volume, together with the companion volume, *Wave Propagation in a Random Medium* (by Chernov), forms an important contribution to the literature because of the generality and wide applicability of the theories. American and British readers might, however, be