

picture of the whole field. It would be fitting, in a course of "economic mycology," that Gray's book should be used as a text and Ramsbottom's as collateral reading.

JOHN TYLER BONNER
*Department of Biology,
Princeton University*

The Cell. Biochemistry, physiology, morphology. vol. 1. Jean Brachet and Alfred E. Mirsky, Eds. Academic Press, New York, 1959. xxi + 816 pp. Illus. \$22.

This is the first of a series of three books which will cover most of cell biology in some 40 articles written by well-known workers in the field. This volume is in two parts, the first on methods, the second on general problems. The remaining two volumes will deal with cell constituents and specialized cells. Every biological library should, and no doubt will, buy the series, but its price puts it beyond the means of the individual biologist. The production is excellent and up to the high standards of the publishers. The indexing is good and so are the illustrations (except for the absence of figure captions in Ebert's article).

The best part of this volume is the section on general problems. There is an excellent article by Grobstein on the difficult field of cell differentiation. It is an intractable field at the moment, but it is still the central problem in cell biology. Briggs and King give a good review of the interactions of nucleus and cytoplasm in eggs and embryos and include a summary of their own important work. It is a pity that it could not have been extended to cover recent research with micro-organisms. Ebert gives a clear and critical account of the immunological approach to biological specificity. This is a rapidly developing subject and one of great interest to all biologists, but at the moment the approach is at the level of tissues and whole organisms and has not yet come down to the level of the cell. There are also articles on fertilization, sex determination, radiation effects, and plant cell growth and differentiation (which shows the wide gap between plant and animal cell biologists).

The section on methods is too short to be really useful. The articles cover a wide field and cannot be much

more than summaries of the available methods—Wyckoff on optical methods, Gersh on fixation and staining, Glick on microchemical techniques, and White on tissue culture. The best reviews are those which cover a narrower field—Allfrey on cell fractionation, and Walker and Richards on microscopical methods for measuring single cells. In view of the fact that the same publishers are producing a series of books on general cytochemical methods, I doubt whether this section is really necessary.

I must admit that I experience a slight sinking feeling when handling this book: 800 pages are a weight both for mind and hands. Surely it would have been better to split this into half-a-dozen or so smaller books: For the authors, this would mean greater personal responsibility and, more freedom for individual views. For the editors, less pressure to collect contributions by a given date. For the readers, ease of handling, less mental indigestion, and the possibility of buying some of the books. For the librarian, the fact that six books can be read by six different people at the same time. At its price, it is hard to believe that this book would cost much more if it were so divided.

J. M. MITCHISON
*Department of Zoology,
University of Edinburgh*

Soviet Reviews of Nuclear Science. On the 40th anniversary of the October Revolution. Pergamon Press, New York, 1959. 110 pp. Illus. \$5.

This slim volume was first published in the U.S.S.R. in November 1957 as a special number of the journal *Atomnaya Energiya* in celebration of the 40th anniversary of the Soviet Revolution. This excellent English translation now appears under the auspices of Pergamon Press.

The volume consists of eight papers, the longest of which is devoted to a review of high-energy particle research in the U.S.S.R. Next in length are reviews of work on low-energy neutron interactions and of the use of radioisotopes in the U.S.S.R. Short, additional papers describe Soviet work in radiochemistry and the development of atomic energy in the Soviet Union.

The quality of the contributed papers is generally proportionate to the length; the Soviet scientists apparently find it

difficult to say much in areas where security consciousness still runs high.

The paper on high-energy physics by Dzhelepov and Pontecorvo reviews the use of the synchrocyclotron at the Joint Institute of Nuclear Studies. First completed in December 1949, this accelerator was modified in 1950 and again in 1953 so that it finally achieves proton energies of 680 Mev. The experimental work conducted with this accelerator since 1949 is described in detail. The paper contains a large number of graphs, taken from the Soviet literature, which summarize the experimental findings on high-energy interactions. Much of the apparatus used in these experiments—such as cloud chambers, bubble chambers, and a magnetic spectrometer—is shown in photographs. A clear, running account of the state of the field of high-energy physics at the time of the experiments is given. Non-Soviet work, both theoretical and experimental, is duly noted where necessary.

The review of low-energy neutron interactions was written by Vladimirovsky, Panov, Radkevich, and Sokolovsky. After a discussion of the measurements and the instruments used for this work, the state of the field is summarized, including the current knowledge of the distribution of neutron widths and level spacings, the dependence of the strength function, mean level spacing, and radiation width on atomic weight, and the less systematic data on fission parameters. The improvement in the theoretical fit of the strength function, when the asphericity of the nucleus is taken into account, is shown. However, the review is, in some respects, already out-of-date. Thus, the Porter-Thomas model of the statistical distribution of neutron widths has already gained general acceptance, and so has Wigner's model of the distribution of level spacings.

The papers on radioisotopes and radiochemistry will be of interest to workers in these fields, and indicate that the extent of work in these fields is comparable to that in the United States.

The four papers on nuclear reactors are much more sketchy and incomplete. The paper by Nikolaev outlines the development of atomic energy expected in the Soviet Union during the sixth Five Year Plan. The reactors proposed for construction are only briefly described, although further details have since been released. Generally, it is stated that the program in the U.S.S.R. has aims similar to those of the United