cage and beyond his reach, but he also sees a stick that he can use to push the banana within range.

As Polya points out, each procedure depends for its success on some helpful idea, which may flash on us unexpectedly, but more often is long in coming. This leads him to discuss the working of the mind, and how it can be disciplined, and to speculate on other favorite topics, the question whether there are rules of discovery and the role of guessing in the scientific method. In between there is a long and instructive chapter on learning, teaching, and learning teaching, which every teacher should take to heart. It includes 20 pages of notes from which I single out a quotation from Anatole France: "Do not try to satisfy your vanity by teaching a great many things. Awake their curiosity. It is enough to open their minds, do not overload them. Put there just a spark. If there is some good inflammable stuff, it will catch fire."

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Virology

Techniques in Experimental Virology. R. J. G. Harris, Ed. Academic Press, New York, 1964. xiv + 450 pp. Illus. $15.

In the preface to this volume the editor informs us that the book is intended for use in the laboratory rather than in the library. Prospective purchasers of this book are advised that, in my opinion, the main use of this book will be in the library.

The volume is a collection of reviews partially covering the preparation and properties of plant virus proteins, infective viral RNA, assay of plant and animal viruses, insect viruses, purification of animal viruses, serological techniques, electron microscopy, hemagglutination, interference, and tissue culture technique.

My task of reviewing is lightened by the fact that the reviews are, for the most part, collections of references to techniques, with a minimum of advice from the "acknowledged experts" (I borrow the phrase from the dust jacket) to the laboratory worker. There is little that can be said for or against such a compilation of references. To the book's credit, well-written and practically useful discussions are given by Dougherty on animal virus titration technique, by Fiset on serological technique, by Parsons on electron microscopy, and by Sanders on infective RNA from animal viruses.

A chapter by C. H. Knight, on the preparation and properties of plant virus protein, contains a very good but very brief outline of techniques for the preparation of TMV protein. But I doubt if the details of standard biochemical techniques for determining the primary amino acid sequence of a protein warrant three-quarters of the whole chapter.

This raises the question of who are the people for whose use this volume is intended. The editor states that it is for "those galloping enthusiastically into a new field . . ." and "for all virologists . . . for whom the selection of the right technique is as important as the choice of the right wife." The latter, I fancy, is a comparatively small group of virologists. For those trained in formal virology, the volume is deficient in articles as detailed in biochemical techniques as that presented by C. H. Knight; for those venturing into virology for the first time, many of the contributors assume a knowledge of virology so that there is insufficient discussion of such procedures as preparation of virus stocks, single-step growth conditions, and the culture and infection of animal cells.

Noticeably absent in a modern volume of techniques in virology are discussions of the physical and chemical characterization of DNA and RNA, of the application and implication of in vitro RNA-DNA hybridization, of autoradiography, of the preparation of radioactive virus, and of other techniques now used to study the mechanism of viral replication.

Sadly lacking is a well-organized, up-to-date chapter by an acknowledged expert on the culturing of animal cells, surely one of the most important techniques of modern virology. There is indeed a chapter entitled "Tissue culture techniques" which is padded with recipes for some culture media and with brief mention of less frequently employed cell culture methods. However, this chapter says almost nothing of practical value about spinner culture technique or about the subculturing of cells as monolayers. One gains the impression that the author of the chapter in question is not as familiar as he should be with recent developments in his subject or that he is reticent about providing the reader with any useful information.

For those authors who might be in the process of, or even contemplating, writing a book on techniques in experimental virology, this volume should be an encouragement to continue. For those virologists for whom the selection of the right technique is important, this volume will provide some useful references that will help them to start searching the literature.

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Nonlinear Mechanics

The Dynamic Stability of Elastic Systems. V. V. Bolotin. Translated from the Russian edition (Moscow, 1965) by V. I. Weingarten, L. B. Greszcuzuk, K. N. Trirogoff, and K. D. Gallegos. Holden-Day, San Francisco, Calif., 1964. xii + 451 pp. Illus. $12.95.

This translation of Bolotin's monograph provides further access to Russian developments in nonlinear mechanics and emphasizes a specialized class of dynamic stability problems of interest in the design of structures, particularly the more efficient ones. If a compression member such as a strut or column is subjected to a periodic longitudinal force, transverse vibrations in the buckling modes occur for certain values of the disturbing frequency. Specifically, when the disturbing frequency is twice that of a natural frequency of bending vibrations, a so-called parametric resonance occurs. The author examines this problem and the corresponding problems involving curved bars, frames, plates, and other structural forms.

The well-written text, with a pleasing format, is in three parts. In part 1 the Mathieu-Hill equation is discussed, with applications to the straight bar and to modifications thereof. A general treatment of parametrically excited vibrations, and methods for determining frequency boundaries and vibration amplitudes, are given in part 2. Consideration of the more complex structural elements and frames, which reflect the researches and contributions of the author, complete the text.

The mathematical developments are quite elaborate in parts 2 and 3. Alternate methods of analysis, by the