

from about 80 graduate deans, 1800 graduate faculty members, 2300 recent recipients of the doctorate, 600 college presidents, and 70 industrial representatives." Through all of this he brought the trained eye of a social scientist to bear upon "the state of graduate education by institution and by discipline, in terms of what goes in, what comes out, and what happens in between."

The book is written with uncommon clarity of organization, with a somewhat clinical detachment, and happily, with an ever-present and welcome twinkle of unmistakably urbane good humor. Falling into three primary parts, the text deals first with the past in a discussion of "what has happened in graduate education in this country"; in this section the author seeks "only to discern the limitations that the past imposes on the present and the lessons that it ought to teach." The second segment the present and the near future: "The present and the near future . . . is the body of the report and it is organized along the lines of the major problems now active." Section three carries the "conclusions, commentary, and recommendations: what should happen."

This final portion of the book, which is clearly founded upon the data presented earlier, carries some 21 formal suggestions. These range from recommendations pertaining to graduate programs, such as the creation of "more compact, more specified" designs of doctoral work and new approaches to the foreign language requirement, to plans for the creation of "a center for advanced studies in the humanities" and the establishment of a new standard-setting "Graduate University" in Washington, D.C. Berelson assumes such other positions as the following: financial support of doctoral students should be regularized but students certainly should not be completely subsidized; that industry should provide unencumbered block-grant support to graduate schools; that recruiting of candidates for doctoral work should be "conducted more systematically and more energetically"; that training for teaching should be given new thought and effective planning within doctoral programs; that "over the visible future the national load of doctoral study should be carried mainly by the presently established institutions of top and middle-level prestige"; and that there should be a strengthened national or-

ganization of graduate schools. As he makes abundantly clear, there is no shortage of basic issues to which graduate faculties around the nation should be addressing themselves, with a willingness to seek new solutions in a new era of responsibility.

Some readers may sense overtones here and there of excessive reverence for the "top prestige universities," and others may occasionally want to argue that impressive institutional size may not necessarily breed high quality in graduate work, but nonetheless this is a fine and enormously valuable summing up of the problems and challenges confronting a vital segment of American higher education. There will be many differences of opinion over the interpretation of portions of the data that Berelson has assembled, and many a prolonged argument over some of his recommendations. In providing a better lighted stage on which the debates can be held, however, the author has performed an invaluable service.

Berelson observes that "what American academic life needs is a sense of pride, of *esprit de corps*, of profession in the best sense. That is what the American graduate school must take the lead in supplying, to itself and its constituency." Berelson has surely served this high cause well, for in this book he asks the right questions. It is required reading for anyone seriously interested in the future of graduate study.

JOHN C. WEAVER

*Graduate College,
University of Nebraska*

Errors and Deception in Science. Essays on biological aspects of life. Jean Rostand. Translated from the French by A. J. Pomerans. Basic Books, New York, 1960. 196 pp. Illus. \$4.

The six essays presented here have little unity and are best discussed separately. The title-essay, presented first, is the best of the lot. It includes a play-by-play account of the development of Blondlot's fictitious n-rays early in this century; curiously, the author does not tell about the role played by the American physicist Robert W. Wood in revealing the fraud. Details and references may be found in Martin Gardner's *Fads and Fallacies in the Name*

of Science (Dover, 1957), an immensely more valuable source of this sort of *memorabilia* than Rostand's essay.

As with the first, so also for the remaining essays: for each of them a better version is already in print. The subject matter of "Biology and the law," treated by our biologist in a cramped and legalistic spirit, is handled by the jurist Glanville Williams in a most humane and biological way in *The Sanctity of Life* (Knopf, 1957). "The singularities of man" is less interesting than N. J. Berrill's *Sex and the Nature of Things* (Dodd, 1953). It is better to read Roger J. Williams' *Free and Unequal* (University of Texas Press, 1953) than Rostand's "Biology and maladjustment." The chapter "Biological unity and diversity" is a poor substitute for P. B. Medawar's graceful essay, *The Uniqueness of the Individual* (Methuen, 1957; Basic Books, 1958). And the final chapter, "Biology and the cinema" reads as though it had been cribbed from the *Encyclopaedia Britannica*.

Has this book any excuse for being? Perhaps, in its original form. Perhaps there is nothing better in French. But that is no good excuse for translating it into English; in this language it is second best throughout, as I have indicated above. It has not even the excuse for being that it constitutes a new synthesis. To me its publication seems no more than an attempt by the publisher to capitalize on the well-merited praise earned by Rostand's previous book, *Can Man Be Modified?* [reviewed in *Science* 129, 1606 (1959)].

GARRETT HARDIN

*Department of Biological Sciences,
University of California, Santa Barbara*

Electrons and Phonons. The theory of transport phenomena in solids. J. M. Ziman. Oxford University Press, New York, 1960. xiv + 554 pp. Illus. \$13.45.

During the past 15 years remarkable advances have been made in understanding the behavior of semiconductors and metals. This text on the theory of transport phenomena offers a unified presentation of much of this progress. The author starts with a discussion of lattice vibrations and the one-electron theory of the electronic structure of crystals. Chapters on electron-electron