Book Reviews

Who Wants Disarmament? Richard J. Barnet. Beacon, Boston, Mass., 1960. xviii + 141 pp. $3.50; paper, $1.45.

The major dilemma of the current arms race lies in two fundamental truths that are stated by Under Secretary of State Chester Bowles in an excellent introduction to this book. The first is that arms races throughout history have *usually* ended in war. The second is that unpreparedness and unilateral, or unsafe, disarmament have *always* ended in national catastrophes.

There are two fundamentally different approaches for dealing with this dilemma. The first, now known as arms control, is to try to raise the odds that the arms race does not lead to total thermonuclear disaster. It accepts the continued existence of thermonuclear weapons and delivery systems but tries to alter national postures and intentions to make a nuclear explosion less likely. Although he hedges his conclusions, Barnet seems to reject this approach as failing to come to grips with the fundamental problem of the thermonuclear age, that is, with the existence of very large thermonuclear stockpiles.

This leads the author to seek a solution to the second problem: to devise a multilateral, safeguarded disarmament scheme that would lead to peace and not to national catastrophe. Unfortunately, the book fails to take a hard look at the political and military problems and assumptions of total and complete disarmament. It pleads, instead, for research of a technical nature. In the final analysis, the author argues that we should look hard and then take the risk because the other course leads to disaster. In making this plea, he is reversing Bowles' presentation by suggesting that the arms race must lead to war and that disarmament may not. Although this is frequently asserted, Barnet has not brought us any closer to a demonstration of how it can be done.

In the tradition of books on disarmament, the author felt it necessary to review the efforts made toward disarmament since World War II. In doing so, and in particular in his discussion of the Baruch plan, he displays a sophistication and an awareness of the reality of international politics which seem to be lacking in his later proposals. In addition, the book begins to fill the great void in our knowledge about Soviet attitudes toward arms control. In a way this is the most disappointing chapter in the book. Barnet, who is connected with the Russian Research Center at Harvard University, might have been expected to provide a penetrating analysis of Soviet motives. His analysis of Soviet doctrine leads him to the conclusion that serious disarmament negotiations with the Soviets are not possible. He then jumps to a discussion of hopeful signs and signs of progress and concludes that we should not let our awareness of the contradiction between disarmament and Marxist ideology stand in the way of possible negotiations.

We need to know much more about arms control than we now know before we either dismiss it, as Barnet seems to do, or completely accept it. What we know suggests that, without a radical alteration in the nature of man and international society, total disarmament will not mean an end to disputes, violence, or arms races. Until we have a much clearer idea of what it does mean and of what its consequences are, we should not accept disarmament as the goal. Even if we had all the evidence, we might still have to answer the author's question—if he means *total disarmament*—by replying "not us."

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Graduate Education in the United States. Bernard Berelson. McGraw-Hill, New York, 1960. vi + 346 pp. $6.95.

As the destiny of our society grows ever more dependent upon specialized intellectual competence, the graduate schools of our universities are assuming an increasingly complex but vital role. Here at the apex of the higher-education pyramid, however, is found a near maximum of academic conservatism, and about these venerable heights have gathered thickening clouds of controversy. Pages of discursive debate about graduate education, its organization, its quality, its very validity, have multiplied in plentiful supply; opinions have been as numerous as solid factual knowledge has been scarce. As Bernard Berelson recognized at the outset of his endeavor: "The assumptions have been various; the values ambiguous or in conflict; and the facts alleged, contradictory, scanty, or altogether absent." There can be no doubt that we have been much in need of an extensive, objective study such as the one on which Berelson here reports.

Probably there has never been such a comprehensive survey of graduate education between the covers of a single book, certainly none based on as wide an array of accumulated fact and authoritative testimony. In an effort to bring understanding perspective to the first century of graduate work in the United States (1876 to 1976), the author draws with incisive care upon the accumulation of documents already available on library shelves. Concentrating his primary attention upon the years just past and those just ahead, he has drawn new and richly diversified insight from the field: from the practicing deans and faculties of the principal graduate schools; from young men and women who have recently earned graduate degrees; and from persons seeking to employ the products of graduate education.

As he summarizes his two years of effort under the sponsorship of the Carnegie Corporation of New York, Berelson speaks of having "read countless pages and collected numerous statistics, attended about 10 formal meetings, visited 20 or more institutions, secured about 45 disciplinary consultations, conducted 5 or so special studies, talked to over 150 people, and systematically collected facts and judgments

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 organization 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.

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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)].

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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