

Book Reviews

Scientific Progress and Human Values. Edited by Edward and Elizabeth Hutchings. American Elsevier Publishing Company, Inc., New York (1967). 219 pp. \$7.50.

A panorama of science and technology, AD 1966, and its impact on man: Nothing less than this is attempted in these 14 essays presented at a conference celebrating Cal Tech's 75th anniversary. The essays are arranged in four groups: Physical Science (physicist Murray Gell-Mann, astronomer Jesse Greenstein, and geologist Robert Sharp); Technology (atomic scientist Sir William Penney, space scientist George Mueller, and communication scientist John Pierce); Biology (James Crow, John Young, Neal Miller, Robert Morison, and Robert Sinsheimer, all biologists or biomedical scientists); and Science and Society (historian Asa Briggs, sociologist Daniel Bell, and humanist Herbert Muller). The volume closes with a panel discussion entitled "What are the Urgent Problems?" (Don Price, James Bonner, Murray Gell-Mann, Carl Kaysen, and Simon Ramo), and an after-dinner speech on scientific education by Lord James of Rusholme, Vice-Chancellor of the University of York.

Sir William Penney's essay on "The Future of Nuclear Power as Seen from the United Kingdom" is of most direct interest to readers of *Nuclear Science and Engineering*. This is a clear and rather conservative estimate of nuclear power technology. Sir William, though writing from the British viewpoint, does not claim that the British approach is the best for everyone; neither does he try to hide his satisfaction at the consistently high load factors of the British gas-cooled reactors. As a proponent of thermal breeders, I could take issue only with Sir William's unquestioning assumption that fast breeders will dominate the future.

Of the remaining essays, I liked best Daniel Bell's "The Post-Industrial Society: A Speculative View." Herein the author argues that we are entering a new "post-industrial" era in which the university or, more broadly, the intellectual institution rather than the business firm will become the dominant social institution.

Then there is Robert Sinsheimer's beautiful and articulate concern with the future of biology. Though he believes consciousness will yield to the methods of biology as presently conceived, he admits at least some reservation on this score. Or Sharp's intensely interesting speculations about the surprisingly many earth craters caused by meteor impacts. These, and other excellent essays, place in almost embarrassing contrast the unsophisticated propaganda for space exploration contained in George Mueller's "Manned Space Flights: Programs, Progress, and Prospects."

Collections of essays such as this usually are just that—separate essays with less coherence than the subject

intrinsically possesses. In this respect, *Scientific Progress and Human Values* is no exception. This does not mean that such collections cannot be read with pleasure. And indeed, most of the essays in *Scientific Progress and Human Values* are stimulating and worth reading.

The discussants on the panel "What are the Urgent Problems?" are wise and distinguished scientists and scientific statesmen; yet the book, though perhaps not the conference, would have been better had the panel discussion been left out. What comes spontaneously of an afternoon, even from able heads and sharp mouths, is hardly worth preserving for all time.

Rather, I would have liked to see a serious synthesis of the entire set of essays in a long preface. Here the editor could identify both common threads (like the emergence of a "post-industrial" society) and uncommon perceptions and facts (I learned from Asa Briggs' essay that Cobden, Marx, George Eliot, Emerson, and A. R. Wallace all believed strongly in phrenology); or the curious lack of specific reference to the role of nuclear energy in providing the base for an abundant, developed world. This omission, very noticeable to a nuclear engineer, is all the more glaring since H. Muller in his essay observes "If improved science and technology is responsible for the 'population explosion,' it alone can take care of the problem"; and Neal Miller all but predicts civilization's collapse because we shall exhaust our easily accessible minerals and fuels. Professor Miller should read the nuclear energy literature to learn how we expect the successful breeder reactor to stave off the dire Malthusian catastrophe he predicts.

But perhaps it is just as well that the essays are presented neat and unsummarized. The attentive reader can trace the common threads himself, and in so doing draw added enjoyment from these generally excellent pieces on *Scientific Progress and Human Values*.

Alvin M. Weinberg

Oak Ridge National Laboratory
Oak Ridge, Tennessee 37830

May 16, 1968

About the Reviewer: Alvin Weinberg, the well-known Director of the Oak Ridge National Laboratory, is recognized for his thoughtful analyses of many current topics important to the scientific community and for his clearly stated opinions founded on a broad background of scientific experience. Among his many activities, Dr. Weinberg served on the President's Scientific Advisory Committee; he is a member of the Editorial Advisory Committee of Nuclear Science and Engineering.