Books

EDUCATION IN A DIVIDED WORLD
by James Bryant Conant
Harvard University Press, 249 pp. $3

by Hunter Mead
Professor of Philosophy and Psychology

In this, his latest discussion of education in America, Harvard’s distinguished president continues to increase his stature as a leader of educational thought in this country. In some ways the present book is more controversial and radical than any of Conant’s previous writings on this subject—so radical in fact that one may expect to hear his author accused of “treason to his class” in the same way President Roosevelt was accused by many of his upper-class opponents. For here Conant acknowledges the civil war that has long plagued American education—the fight between the public school people on one hand and college and university educators (aided by administrators of the private preparatory schools) on the other. Then, having admitted that the warfare exists, and can no longer be considered as merely a family quarrel, Conant takes sides with the public school men. He feels that they—and not their opponents in the colleges and universities—have their feet on the ground, and their eyes on the guiding star of the democratic ideal.

To the present reviewer, this is the best evidence of Conant’s capacity for growth and independent thinking. The fact that Conant is not only the head of America’s Exhibit A in private educational institutions, but himself a product of the system he attacks in this book, certainly disproves the old saw that the thinking of every man is bound by his background and economic supports.

The title of this book is somewhat misleading, for the problem of education in a world split by rival ideologies is discussed specifically in only two chapters. The real subject is education in a modern democracy, and college and university educators (aided by administrators of the private preparatory schools) on the one hand and college and university professors (aided by the junior colleges), but not as they are now organized in most school systems. He would reorganize their work around a core of general education, emphasizing three areas: the humanities, the social studies, and the natural sciences. Conant believes the needs of our democratic society can best be served by requiring a judicious balance of work in all three—but he emphasizes repeatedly that the core appeal should be to the student’s innate curiosity rather than to social pressures such as future college entrance. For the gifted students (and Conant implies that they are the only ones in the public schools who should be encouraged to go to college), there would be extra studies intended as college preparation. He insists, however, that such work should be controlled by every possible means to prevent social discrimination or intellectual snobbery.

Federal scholarships—the democratic way

The most radical part of Conant’s general proposal—or at least what would have seemed unthinkable a decade ago—is that calling for Federal scholarships on a large scale to permit gifted students to continue beyond high school. He argues for this aid on the grounds of both democracy and a fuller use of our human resources. Again he quotes some shocking figures to prove that the smug claim, “Any American student can get a college education if he really deserves it,” is a myth without foundation. He shows the amazingly close relation between family income and college attendance, and feels that unless drastic changes are made we will gradually harden into a class-stratified nation.

Conant does not propose that only the really capable should go to college, but he insists that no one who is capable should be excluded from advanced education by economic barriers. If we continue to let these barriers be the primary determinant of whether or not a student goes to college, Conant believes we not only will weaken the nation, but will provide our ideological rivals across the ocean with abundant ammunition for their propaganda claims that America is not really democratic.
ROCKET PROPULSION ELEMENTS
by George P. Sutton '42
John Wiley & Sons, New York 294 pp. $4.50

by H. S. Seifert
Lecturer in Jet Propulsion

THIS COMPACT LITTLE BOOK, illustrated with style, presents, as its title suggests, the basic facts of rocketry in easily assimilable form. It has chapters on basic concepts, history of rockets, thermodynamics of nozzles, properties of liquid propellants, liquid rocket motor design criteria, propellant feed systems, flight performance, static testing, and solid propellant rockets. The necessity for condensing the material of a very broad subject occasionally means that the treatment is qualitative or even superficial; however, the concepts are clearly expressed.

The author's background has been largely in the liquid propellant field, so the emphasis is on liquid rockets—with 45 per cent of the paging devoted to specifically liquid techniques as compared with 5 per cent devoted to solid propellant techniques. It is regrettable that for security and other reasons more attention could not be given to solid propellants, which show promise of increasing importance in the future.

Sutton's writing style is fluent and his organization systematic, making the text easy to read. This reviewer found himself somewhat startled to see on page 135 a picture of a motor, to the design of which he had contributed just a few years back, labeled "Early American Rocket Motor." Apparently the ox-cart is no more obsolete that last year's rocket motor! On page 132, under "Combustion Process," the statement is made that for the oxidizer and fuel fluids, "in no case does any large part of the reaction take place in the liquid phase." It is the opinion of some workers in jet propulsion that this statement is incorrect.

This volume brings into the public domain some of the material of "Jet Propulsion," a restricted text which has been used in the Institute course in rocket systems since 1943. It should be quite helpful to those engineering students who wish to acquire perspective and physical feeling for liquid propellant rockets.

ROCKETS, GUNS AND TARGETS
Edited by John E. Burchard
Atlantic-Little, Brown: Boston 482 pp. $6

by H. S. Seifert

THIS INTERESTING SOURCE BOOK—one of the eight-volume series, Science in World War II, which records the history of the Office of Scientific Research and Development—should be of special value to Caltech readers, since the list of contributors sounds like an alumni-faculty roll call. Eleven of the thirty-six chapters are devoted to work done at the California Institute of Technology.

Rockets, Guns and Targets describes the work of three of the nineteen divisions of the National Defense Research Committee—Division 1, Ballistic Research; Division 2, Structural Defense and Offense; Division 3, Rocket Ordnance. The book, in a sense, complements Rocket Propulsion Elements, reviewed above, since it describes the applications of research on solid-propellant rockets rather than liquid-propellant rockets. It is, however, non-mathematical and descriptive, almost narrative in form.

The Caltech work on Rocket ordnance makes not only impressive, but stirring reading. Substantially all rockets used by the Navy were developed here—the main ones being the anti-submarine, the 4½-inch barrage, the spinner, and the forward-firing aircraft rockets. When the war ended, the Navy had contracts for rocket ordnance, with regular contractors, at the rate of $150,000,000 a month—all the rockets having been developed at the California Institute of Technology. With Charles Lauritsen as Director of Research, and E. C. Watson as administrative head, Caltech's rocket contracts totalled $80,062,000 altogether.

The book contains detailed lists of the personnel of various projects, and you will find many of your friends, and former professors' names here. (It is not intended, of course, that a distinction between professors and friends be implied.)

A blend of physics, battle incidents, tactics, and politics combines here to make exciting reading. The text is charged with feeling and gives one an appreciation of the vitality and urgency of the research and the vision and courage of the men who were prosecuting it. One seems to catch an echo of the spirit of the Pilgrims, Bunker Hill and the '49ers. Here indeed is an intimate chronicle of the physicists' war.