

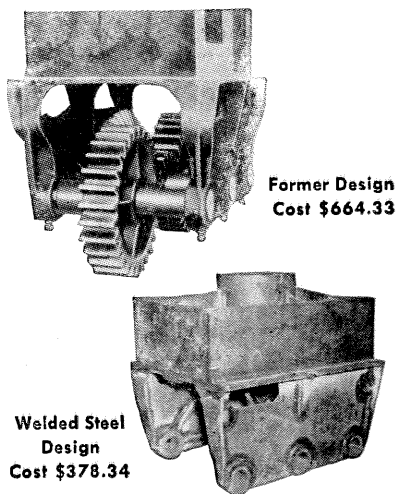
WHEN YOU ARE CHIEF ENGINEER ...WHICH DESIGN WILL YOU OK? welded steel or cast iron

THE first question you'd ask is . . . does the design do the best job at lowest cost? If not—*why* not.

Industry constantly asks why things are done the way they are . . . to see if there is a better, less costly way.

One question is why shouldn't all machinery be designed for welded steel . . . when steel designs are stronger, more rigid, more rugged . . . yet cost less to build.

By knowing how to use welded steel, you hold the answers to many designing problems. Here for example is how one machine part is made for 43% less cost by a simple change from cast iron to steel.



Latest ideas for developing welded steel designs are available to engineering students by writing for *Elements of Machine Design*.

THE LINCOLN ELECTRIC COMPANY
Dept. 6200, Cleveland 17, Ohio
**THE WORLD'S LARGEST MANUFACTURER
OF ARC WELDING EQUIPMENT**

BOOKS

THE CITADEL OF LEARNING

by James Bryant Conant
Yale University Press \$2.00

*Reviewed by L. A. DuBridge
President, California Institute
of Technology*

THIS LITTLE book consists of three essays on education by one of the most distinguished and most thoughtful American educators—the former President of Harvard and now American Ambassador to the Federal Republic of Germany. Like Dr. Conant's other writings, these essays are cogent and stimulating.

The first essay gives its title to the book. The phrase is taken from a quotation from Joseph Stalin, stating the Soviet Policy toward universities: "This citadel (of learning) we must capture at any price. This citadel must be taken by our youth —."

Dr. Conant proceeds to describe from first-hand observation how the Sovietization of the old University of Berlin, now in the Russian sector, has been achieved. Indoctrination has taken the place of learning. "It is the absence of dissenters from the official dogma that signalizes the capture of the citadel of learning," he notes. There follows a penetrating commentary on the necessity for freedom of scholarly research in a university—an admonition not irrelevant in this country. The place of conflict, of arguments, of disagreement in the advancement of knowledge is set forth in illuminating terms.

In the second essay, "An Old Tradition in a New World," (given first as a lecture at Michigan State College) he expands on the role of the free university in a divided world. He points out especially the need for identifying the gifted students at an early age and providing them with something more intellectually challenging than the watered-down curricula of so many high schools. Highly trained minds will be needed by United States citizens in a world of ideological conflict!

The last essay is on the basic problems of American education, seen, as he says, from the vantage point of an American Embassy in Europe. He reiterates his plea that the flood of students in American colleges be absorbed by the creation of many more two-year community colleges, rather than by overloading,

and thus diluting, the four-year colleges. He discusses also (in terms which any Caltech faculty man would applaud) the relation between teaching and research in a university and the dangers in letting applied or commercialized research activities impair the traditions of advanced education and free inquiry.

This stimulating book will be read by many professors but should be read also by many laymen.

NEW WORLDS OF MODERN SCIENCE

edited by Leonard Engel
Dell Publishing Co., N.Y. \$.35

THIS is an anthology of writings about science—articles from magazines, chapters from books, a few scientific papers and a few articles specially written for this volume. Most of the material has been written by professional scientists, but when the editor was unable to find any scientists in a particular field who were writing at a popular level, he turned to the work of a competent journalist. (He is himself, by the way, one of the most competent.)

The book doesn't try to cover all the fields of science. It is just a good, big, bargain-package sampler of popular science writing. It covers six broad areas of scientific activity (labeled *The World of Science, The Earth and the Universe, Inside and Outside the Atom, Life, Man, and Tomorrow*).

Some sample articles include: "The Common Sense of Science," by J. Bronowski; "The Origin and Evolution of the Universe," by George Gamow; "Feeling with Electrons," (radar) by A. M. Low; "The Physical Nature of Viruses," by F. M. Burnet; "Poliomyelitis," by Jonas E. Salk; "Rockets, Missiles and Space Satellites," by Willy Ley.

Dr. James R. Killian, Jr., president of MIT, gives this anthology a nice send-off when he says in his introduction to the book:

"We have urgent need of more scientists and engineers who can build bridges of understanding between the domain of science and the domain of non-science. We need a growing body of exposition to make science and scientific activity understandable to laymen. Therein lies the importance of books such as this one."