



BOOKS

The Amoral Atom

MUST WE HIDE? By R. E. Lapp. 182 pp. Addison-Wesley Press, Inc., Cambridge, Mass., 1949. \$3.00.

There is no doubt that despite periodic, earnest attempts to educate the American people about the atom bomb, misconceptions concerning it stubbornly persist. Nor is this new folklore limited to the folk. Even members of Congress (or so one gathers from the newspapers) are as confused, as disturbed, and as misled as any of their constituents. The consequences of such widespread ignorance can be tragic, as Mr. Lapp foresees. His little book is an attempt to translate the truth about the bomb into terms which anyone who can read can understand. Stripping a technical subject of technical phraseology is no light task, and Lapp is to be congratulated on the job he has done.

"Must We Hide?" considers the atomic bomb as a military weapon from every angle—with perhaps one significant exception. Lapp appraises the casualties in Japan and carefully explains just how the bombs exploded there killed the people that they did. He was at Bikini and describes the underwater test and its implications for future warfare. He tells how people die from radiation sickness and what defenses against this unpleasant death exist. The latter part of the book is devoted to considerations of the future use of the bomb in warfare. Can it be used as a definitive weapon in a super-blitz? Lapp doubts it, and documents his reservations. What should we be doing to defend ourselves against atomic attack? A detailed discussion of the proper dispersal of population and essential industry ensues. It is a thorough book, indeed.

Since to see the bomb steadily and see it whole was Lapp's primary objective, he has written his book in as pedestrian a manner as possible. He has gone to excessive lengths to combat sensationalism and hysteria. After a discussion of the hideous effects of radiation upon the human body, one finds this tempered statement: "Actually all modern war puts a severe strain on the participants and who can say that the victim of an atomic attack suffers more than the victim of a flamethrower or a person who has broken down mentally under the stress of combat? Much of the revulsion against the use of atomic weapons arises because the very newness makes it seem more horrible. A careful cataloguing of the injuries resulting from the use of the automobile would also be impressive but any proposal to outlaw the automobile would be considered ridiculous." Later in the book the author, who seems to have a grudge against America's favorite method of transportation, reminds us that: "... as a killer, the automobile must be placed high on the list, claiming as it does over thirty thousand lives a year in the United States alone. This is about three times the number of deaths from radiation at Hiroshima."

Now, one doesn't have to be a Chevrolet dealer to take exception to the emphasis of these remarks. In fact, the significant omission from "Must We Hide?" is a consideration of the moral implications of atomic bombing or, indeed, of any strategic bombing.

This reader, at any rate, finished reading the book with a considerable sense of uneasiness and depression. For all the author's matter of factness, it is impossible to regard the atom bomb as just another hazard of modern living. To accept atomic bombing as a routine technique of warfare seems to emphasize a profound loss in our national morality. The skeletal structure to which Lapp introduces us, stripped of its sensational fleshiness, is still hideous and deformed—just as would remain the infamous medical experiments of Buchenwald, no matter how prosaic or antisceptically scientific the language describing them might be. The type of pessimism reflected in the book itself tends to diminish possibilities of happier alternatives. It should be said however that although the author takes strategic bombing (the uglier word is genocide) for granted, he carefully shows that it is questionably effective in winning a war and an obstacle to winning a peace. He sketches the grim and grey outlines of future conflicts (the plural is his) omitting only the significant detail of war aim. He indicates, too, the direction the nation must go to wage these wars:

"Our individualistic population must be made to realize that some regimentation and obedience to competent authority will be required if bad situations are not to be made worse."

"Must We Hide?" has value in that it contributes greatly to the popular understanding of the problems of the atomic bomb. However, the answer to these problems will not be found in raising defenses—defenses which will inevitably be ineffective. Rather it can—and it must—be found in wise statesmanship based upon that deep regard for humanity which has always motivated us as people and as a nation.

Robert R. Wilson
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Pulsating Stars

THE PULSATION THEORY OF VARIABLE STARS. By Svein Rosseland. 152 pp. Oxford University Press, London, 1949. \$5.00.

Cepheid variable stars (whose light varies regularly with a period between a few hours and a hundred days) have played a unique role in astrophysics. Because the period of light variation is a unique function of total luminosity, the distance to one of these stars can be determined accurately once the period and apparent brightness have been measured. Just why the periods of these stars should be correlated so exactly with their total luminosities, and, in fact, why these stars should pulsate at all has naturally been one of the great problems of theoretical astrophysics. Professor Rosseland, director of the Institute of Theoretical Astrophysics at Oslo, has brought together in a systematic and elegant volume the extensive work in this field.

The first and last chapters outline the development and basic concepts of the pulsation hypothesis, together

with the direct but admittedly rather limited observational confirmation of this hypothesis. The remaining chapters present the mathematical theory of pulsating gaseous spheres, proceeding from the simplest case—infinitesimal radial oscillations of a homogeneous gas at constant pressure—to such refinements as finite, anharmonic pulsations of model stars, secular stability of pulsating stars, and generation of shock waves in stellar atmospheres. While the presentation is necessarily mathematical, the physical concepts are usually kept clearly in the foreground, and observational data introduced wherever relevant. Since Eddington's classic analysis of Cepheid variables there has been much work done on these problems, and now for the first time this material is available in a unified and accessible whole.

Professor Rosseland is to be congratulated for an outstanding contribution to the literature of theoretical astrophysics. While the theory which he presents has not yet reached the state where it can explain the observations quantitatively, it nevertheless gives a qualitative understanding of the processes we believe are involved, and indicates where more work might be useful. The book will have a double value. It will be an indispensable reference work to all astronomers concerned with variable stars, especially to those engaged in theoretical exploration. It will also be of interest to mathematicians and theoretical physicists who wish to survey this extension and application of analytical mechanics in an important and interesting branch of astronomy.

Lyman Spitzer, Jr.
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Kitchen Physics

A BRIEF COURSE IN PHYSICS FOR STUDENTS OF HOME ECONOMICS. By Lester T. Earls. 340 pp. Prentice-Hall, Inc., New York, 1949. \$5.65.

The lay public frequently reacts to current research developments by asking the nearest scientist a question of the genus, "Will it fry an egg?" This elementary text book explains, using a minimum of mathematics, how the fundamental principles of mechanics, heat, light, electricity, and magnetism may be applied to gain a better understanding of the tools of modern living and indeed do assist in frying eggs.

Professor Earls treats these principles in a very elementary fashion but uses many analogies for clarity in explanation, illustrating them with discussions of familiar domestic equipment such as refrigerators, thermostats, cameras, pressure cookers, and household wiring circuits. The book is primarily intended, as the title indicates, for women students of home economics; it can certainly give to the women who study it more intelligent consumer and home management attitudes—even though it gives little of the background necessary for further studies in physics.

A need for physics texts of this scope is probably felt in many other fields outside of the physical sciences where only a background knowledge of physics is needed.

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Acoustics

RESONANT ABSORBERS AND REVERBERATION. A Report of the 1947 Summer Symposium of the Acoustics Group of the Physical Society. By Alexander Wood, P. V. Brüel, A. J. King, J. Moir, C. A. Mason, and Hope Bagenal. Published by the Physical Society, London, England. The report may be obtained from the Secretary of the Acoustical Society of America, 57 East 55 Street, New York 22, N. Y. \$1.75.

The present volume is a collection of the papers presented at the first summer symposium of the Physical Society's acoustics group, held in London in 1947.

Alexander Wood reviews broadly, in his address, the main currents of the acoustics field as related to music, audition, electrical communications, architecture, and noise control. P. V. Brüel, in a paper on Helmholtz panel absorbers, discusses the design and performance of resonators of this type, after having summarized briefly the absorptive properties of porous materials and vibrating membranes. King's paper deals with the boosting of low frequency sound absorption by means of flexible membranes in front of porous absorbers. The papers by Moir, Mason, and Bagenal are concerned with auditorium acoustics. The usefulness and shortcomings of the classical approach to the reverberation of sound is examined in comparison with subjective observations of the acoustic qualities of rooms. Short pulse studies seem to agree more closely with these subjective impressions than do simple reverberation data.

The factual information and viewpoints compiled in this volume form an important contribution to contemporary acoustics literature.

R. H. Bolt
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Broad

ADVANCES IN ELECTRONICS, Volume I. Edited by L. Marton. 475 pp. Academic Press, Inc., New York City. 1949. \$9.00.

This initial volume of *Advances in Electronics* convinces one that electronics is a very broad field. The ten sections are: Oxide Coated Cathodes, Secondary Electron Emission, Television Pickup Tubes and the Problem of Vision, The Deflection of Beams of Charged Particles, Modern Mass Spectroscopy, Particle Accelerators, Ionospheric Research, Cosmic Radio Noise, Propagation in the FM Broadcast Band, Electronic Aids to Navigation, and all this without touching on amplifiers and oscillators.

Individually many of the articles are good or excellent, but it is not quite clear at whom they are aimed as a group. The one on deflection is mathematical, tough, and detailed. That on navigation is simple, descriptive, but almost too brief. The FM propagation article is a thorough survey of an engineering problem, while that on secondary emission is an excellent summary of the physics of the subject. Some are on intermediate ground. Life must be tough for editors.

J. R. Pierce
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Hydrogen Occlusion

HYDROGEN IN METALS. By Donald P. Smith. 366 pp. University of Chicago Press, Chicago. 1948. \$10.00.

Dr. Smith has devoted a large part of his scientific life to the experimental study and consideration of hydrogen

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