

Carrying this theme a step further, Ross Talbot sees the 1960's as "the decade of decision" for which our farm policies are totally inadequate; and he proposes a White House conference on farm policy as a "new and dynamic framework" for dramatizing the problem, reconciling ideological and personality differences among the major farm organizations, and "working out a rational farm policy in terms of our national interest."

Finally, Wallace Ogg turns the spotlight on the Extension Service as an organization that must, because it is the one that can, assume responsibility for bringing about profound nationwide changes in the attitudes of college and university leaders, farmers, and nonfarm people; these changes are required to integrate foreign and domestic policy. "If the Extension Service does not accept this new role it may not be possible to have the kind of foreign agricultural policy that the world situation demands from the United States."

Symposia are *ipso facto* not uniform in quality, but as a whole this one reaches a high level of conception and execution.

GOVE HAMBIDGE

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Saturday Science. Andrew Bluemle, Ed. Dutton, New York, 1960. 333 pp. Illus. \$5.95.

Accelerators. Machines of modern physics. Robert R. Wilson and Raphael Littauer. Doubleday, New York, 1960 (available to secondary-school students and teachers through Wesleyan University Press, Columbus 16, Ohio). 187 pp. Illus. Paper, \$0.95.

The current ferment in public education is illustrated by the publication of these books. They represent two of the many recent programs aimed at improving high-school science education. In addition, their availability to the general public illustrates the way in which many of these programs are growing in scope, influencing other levels of formal and informal education.

Saturday Science is a compilation of articles by scientists from the Westinghouse Research Laboratories. In recent years, Westinghouse has invited many outstanding high-school seniors to at-

tend a series of Saturday morning lectures by staff scientists who discuss their own research fields. The students are considered to be members of the Westinghouse Science Honors Institute.

A group of the Saturday morning lectures have been rewritten for this book. Although the origin sometimes shows, for on many occasions the reader misses the exciting demonstrations which must have illustrated the sessions, the translation into printed form succeeds well.

The book is divided into two parts. The first (9 chapters), called "Some principles," has subjects ranging from radioactivity to the chemistry of solids to propulsion. The second part, entitled "Some techniques," considers mathematical and experimental methods for scientific study.

The book jacket announces that a new series of educational television programs, "Lab. 30," is being based in part on *Saturday Science*. The television series should benefit from the scientific competence of the contributors to the book.

By now, most scientists have heard of the exciting, controversial work of the Physical Science Study Committee. Their reworking of the high-school physics course has encompassed a new textbook, laboratory materials, films, and a series of monographs on special topics in physics. Their ideas are filtering upwards and downwards in our educational system, influencing course content and presentation in colleges and universities and in the lower grades of public schools.

Characteristically, the monographs in the "Science Study Series" are intended for the general public as well as for students. Almost 100 volumes are planned, all on topics within or relevant to physics, and all written by experts. [For reviews of published volumes see *Science* **130**, 616 (1959) and **131**, 219 (1960)]. *Accelerators* is a fine example of the excellence of the series. Wilson is the director of the Laboratory of Nuclear Studies at Cornell University, and Littauer is one of his colleagues. Both have had extensive experience in the design of accelerators and in their use in significant experiments.

The book begins with a discussion of why physicists need high-energy accelerators, and it proceeds to give a historical account of their development, always clarifying the physical principles employed. It discusses the

Cockroft-Walton machine, the Van de Graaff accelerator, the other linear accelerators, and the many circular machines. The limitations of the various accelerators are indicated along with the techniques which overcome some of the limitations. The book concludes with a discussion of acceleration on a grander scale—that which produces cosmic rays.

Accelerators is well-written and should prove understandable to anyone with a command of only elementary physics. By having the reader concentrate in detail on a single topic, the book should present him with additional perspective on the broad range of physical principles relevant to a penetrating study in a special field.

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Pasteur and Modern Science. René Dubos. Doubleday, New York, 1960 (available to secondary-school students and teachers through Wesleyan University Press, Columbus 16, Ohio). 189 pp. Illus. \$0.95.

This book is a tribute to the man as well as a critical study of the life and accomplishments of one of the most celebrated and dedicated scientists of all time, Louis Pasteur. The author has met with a large measure of success in his endeavor to explain the influence of Pasteur's contributions upon the development of scientific progress in his own time and its continuing influence upon modern research.

René Dubos discusses how Pasteur moved forward in a logical sequence from his studies of crystals to his research on fermentation. The unchallenged evidence of his experiments overthrew the theory of spontaneous generation—a triumph that gave rise to modern microbiology and bacteriology. The author then elaborates on pasteurization, and he follows this with a detailed, fresh approach to Pasteur's theories on contagious diseases. These theories helped to expand researches in this field to include what Dubos beautifully and accurately calls "the domestication of microbial life." Dubos emphasizes Pasteur's awareness of the possibilities of controlling and destroying infective microorganisms not only by acting directly on them in their modified environment in the host body

but also by the aid of other microbes, a precursory approach to treatment by antibiotics. Enthusiastically the author points to immunology, which Pasteur considered a natural law, and to Pasteur's dream of "chemical vaccines" which actually led to the birth of immunochemistry.

In his masterly translation of quotations, mainly from French sources, Dubos presents their meaning in harmony with the text. It is regrettable, however, that he neglects to document such information properly or to give a general bibliography. He might also have eliminated the unnecessary, repeated interruption of his narrative, had he given the whole biography of Pasteur in the opening chapter instead of scattering it throughout the text (see pages 34, 38-43, 63, 128-9, and 176-8). In this manner, the reader could have been acquainted with Pasteur the man, as an introduction to Pasteur the scientist.

Although the author does not explicitly mention that this volume was intended as a contribution to the history of science, its presentation of the development of biological sciences deserves great praise for filling a gap in the history of science.

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Thoracic Surgery Before the 20th Century. Lew A. Hochberg. Vantage Press, New York, 1960. 858 pp. Illus. \$15.

Thoracic surgery came of age during the three decades encompassed by the First and Second World Wars, and it has undergone a phenomenal expansion in recent years. It is appropriate that a comprehensive history of thoracic surgery should be brought forward at this time. Such a survey, aside from its humanistic values, may serve as a guide for the future efforts of those laboring in this subdiscipline and as insurance against repetition of some past errors. Lew Hochberg has accepted this challenge at an opportune time, but as the title of his book suggests, in an incomplete fashion. Perhaps because of the enlarging scope of thoracic surgery, the rapidity of present changes, and a reluctance to sit in judgment on his contemporaries, the author has deliberately restricted

himself, carrying this subject only through the closing years of the last century.

There are not many phases of thoracic surgery the evolution of which can be considered complete, or nearly complete, by 1900. The specialist in thoracic surgery, of course, can supply his own concluding chapters, but the lay reader or the occasional student of medical history may feel that he has been left dangling and that the final acts of a fascinating drama are still to be played out.

Hochberg treats the events of the medieval and Renaissance periods comprehensively in several well-written chapters. Beginning with the 1800's, however, he elects to approach the burgeoning material by individual subjects; for example, empyema, pulmonary suppuration, tuberculosis, diaphragmatic hernia, the mediastinum, the esophagus, and the heart and great vessels. Certain of these sections are more descriptive than interpretive. The writer uses freely the technique of lengthy direct quotations (with translation as necessary) from the original sources to lend, as he states, "authenticity to the present work and help correct some of the misquotations noted in the literature." His technique has accomplished these objectives, while yielding some insight into the hearts and minds of earlier surgeons as they sought new light to guide them on unfamiliar paths, and as they courageously made the trials that left them wide open to the criticisms and even abuse of their less enterprising and imaginative colleagues. But in so doing, Hochberg has been unavoidably repetitious, especially in the more than 80-page section on empyema. Whenever possible, however, he lightens this heavy fare with lively biographical sketches and entertaining vignettes of key personages.

Appended to the main text is a series of chapters, entitled "Nonsurgical contributions to the advancement of thoracic surgery." Those sections concerning percussion, auscultation, vital capacity (perhaps better titled "Estimation of pulmonary function"), and peroral endoscopy are excellent reading, among the best in the book. But in other chapters, antisepsis, anesthesia, and x-rays receive more cursory treatment, and of course these topics have implications beyond the scope of this work.

During the 20 or more years that

the author has been delving into medical history he has turned up a great volume of important, and some new, material which will make his *Thoracic Surgery Before the 20th Century* a valuable source book for the serious student, as well as an easy reference work for the educator who illuminates his lectures and writings with appropriate historical notes. Time and again the reader is made aware that the first solution proposed for many surgical problems was an inspired and theoretically correct one, but finally rejected or forced to yield to necessary compromise or improvisation because of inadequacies in surgical technique, anesthesia, and supportive therapy. Those adjuncts are taken for granted in the present day and ensure almost routine success for modern surgeons, who may be less thoughtful and even less skillful than their sometimes frustrated predecessors.

Many of the 155 illustrations in this book are rare finds, and they deserve better reproduction than Vantage Press has managed to provide.

Hochberg's style of writing is simple, precise, and clear, attesting to the truth that the pursuit of medicine is still compatible with proficiency in the field of letters. The publication of his projected companion volume on the thoracic surgery of the present century will be eagerly awaited.

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Nuclear Photo-Disintegration. J. S. Levinger. Oxford University Press, New York, 1960. 144 pp. \$2.

In this monograph J. S. Levinger summarizes all the available theoretical ideas about the nuclear photoeffect and relates them to the experimental results. Two outstanding chapters reflect the author's interest in sum rules and models. He begins by considering the fundamental interactions between photons and charges; the concept of oscillator strength is introduced, and sum rules are discussed and used to calculate the different moments of the charge distribution. These ideas are initially set forth for an atomic system, and then the proper modifications are made so that they become applicable to a nuclear system. Levinger emphasizes that the main features of the nuclear