BOOKS

AIR POWER: KEY TO SURVIVAL
by Alexander P. de Seversky
Simon and Schuster, New York, $3.50, cloth; $1, paper

Reviewed by George K. Tanham, Instructor of History

AIR POWER: KEY TO SURVIVAL might well be termed a repeat performance, with some slight modifications made by the eight years that have gone by since Seversky's previous book. The thesis is the same one he advocated in *Victory Through Air Power* in 1942—that "air power alone can impose surrender on an enemy."

A common misunderstanding is that by this Seversky means strategic bombing of the enemy. He does not; he means "conquest of the air," and then bombing as an incidental procedure until the enemy seeks peace. He feels that once an opponent is stripped of his air power—just as in previous times when his army was wiped out—he will seek peace.

Two factors have added strength to the already persuasive nature of this thesis. In the first place World War II demonstrated the great value of air power, especially in the final defeat of Japan. Vannevar Bush, in his *Modern Arms and Free Men*, admits that, without friendly control of the air, land and sea forces are practically useless. Even opponents of air power concede that without air superiority other military operations are extremely difficult, if not impossible. In a sense this is encouraging to Seversky, but he claims that by clinging to the idea of the need for land and naval forces as *equal* partners in a future war, these thinkers have weakened the concept of air power and unnecessarily divided our defense effort. Since the war will be won by planes based in the United States, there will be no need for overseas bases or the army or navy.

A second factor strengthening the theory is that in the present cold war with Russia the United States is inferior in numbers and materials, and only in a technological sense does it have a real superiority. As this seems to be reasonably true, we must utilize our strength and wage war on our terms—not fight on Russia's terms of masses of men and material.

Since many Americans have recognized these facts, the Seversky theory becomes all the more appealing. He does not, however, foresee a twenty-four hour victory, but feels that there will be bitter and perhaps drawn-out fighting for air control. So it is no cheap or easy means of victory.

The weakness in this book seems to be the failure of the author to objectively appraise the defense. Since the offensive was dominant in the last war, he assumes that it always has been and always will be, though lessons of World War I would seem to indicate that at given periods of history the defense can be nearly impregnable.

Seversky claims that in air warfare all the instruments and methods used by the defense may be used by the bombers to combat the defensive forces. This may be true, but he fails to recognize the fact that the technique of ground installations (radar, etc.) and ground control have been and will probably remain superior to those utilized in a bomber.

Defensive aspects of battle

Two illustrations may be used to show Seversky's neglect of the defensive aspects of battle. In the first plan he states that escort planes will no longer be small one-seaters, but as large as bombers and equipped with all the latest scientific devices for air combat. He fails to point out that the defensive fighters may be of the same type.

Secondly, after he has admitted that homing devices and proximity fuses may be used by the defense, he then states that the same measures may be used by the bombers to explode the missiles aimed at them by the opposing ground defense. He neglects to say that if these devices are so perfected they might be used by the defending air forces against enemy bombers and fighters, and even to explode dropped bombs before they reach the target.

Even though Seversky relegates bombing to a minor role, it would seem that, if the war-producing capacity of a nation was not destroyed, the ability to continue the war would still exist. Therefore bombing would seem to be essential. While denying this, he gives great space to strategic bombing. Here again he assumes that precision bombing will be infallible and completely effective, though there is considerable evidence that during World War II bombers at times not only could not locate their targets, but also were ineffective against them. Vannevar Bush even goes so far as to say that the days of mass bombings are over, not only because of improved defenses, but because of the difficulty of hitting the targets.

While Major Seversky marshalls many facts, thinks clearly, and argues persuasively for his theory, it still seems a large gamble.

PLANT BIOCHEMISTRY
by James Bonner

Academic Press, New York, $6.80

FOR TWELVE YEARS Biology Professor James Bonner has been giving a course in plant biochemistry at the Institute. In the absence of any appropriate text the course has been conducted by lectures and readings in the original literature.

In this book, based on his course, Dr. Bonner has brought together the scattered work on general biochemistry as it applies to plants, and summarized those fields of biochemistry pertaining to the plant. As the only modern book in this field it is a valuable reference work for advanced students in the plant sciences, as well as a valuable text for courses in plant or agricultural biochemistry on the senior and early graduate level.

CHANCE AND CHOICE
by Lancelot Hogben

Chanticleer Press, New York, $9.50

Reviewed by Robert P. Dilworth, Assoc. Professor of Mathematics

AS STATED in the foreword to this book, Professor Hogben, author of *Mathematics for the Million* and *Science for the Citizen*, has here set himself the task of presenting the rationale of modern statistical methods to readers having a moderate mathematical background.

In order to accomplish this he has made extensive use of charts, diagrams and other visual aids. Thus many combinatorial theorems are given diagrammatic as well as formal proofs, and most of the illustrations are taken from situations which can conveniently be represented visually by cardpack or urn schemes. Furthermore, assuming a familiarity with the elements of the calculus, the book contains quite complete deriva-

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tions of all of the necessary mathematical results.

Though quite self-contained mathematically, the book will not be easily read by anyone of limited mathematical facility. Indeed, the mathematical limitations frequently lead to cumbersome and inelegant proofs. Also, the author's attempt to make the basic ideas precise by introducing new terms for standard statistical concepts is, at the very best, confusing. It seems likely that the reader for whom the book is intended would do better to first devote a little time to the necessary mathematical techniques and then consult one of the standard treatises on the subject.

THE LOS ANGELES BOOK

Photographs by Max Yavno
Text by Lee Shippey
Houghton Mifflin, Boston, $5

THE LOS ANGELES BOOK is not solely a picture book, through Max Yavno's striking photographs do capture all your attention when you first open it. Actually the book is almost 40% text.

This has been written by Lee Shippey, columnist ("The Lee Side of L.A.") for the Los Angeles Times. In his 40% of the book Mr. Shippey packs in an astonishing number of little-known facts about L.A. (Some samples: The city of Chicago could be contained in the San Fernando Valley area. The first public building in L.A., in 1781, was the jail. There are 430 public schools in L.A. today, and the minimum campus of a high school here is 20 acres—though one school in the San Fernando Valley uses 400. Los Angeles has a Buddhist Temple, as well as five different kinds of Russian churches. In fact, there are more Russian-born here than either English-born, German-born or Italian-born residents. L.A. has Chinese, Japanese, Yugoslav and Dutch communities, and it's said there are more Mexicans here than in any other city except Mexico City).

Mr. Shippey's text is refreshingly objective, and free from back-slapping, chest-swelling or Chamber-of-Commerce adjectives.

Max Yavno's photographs, which range all the way from Muscle Beach to a Hollywood "preemeer" to Angels Flight, Pershing Square, the new freeway and the oil fields, are in a variety of styles as well—a nice mixture of scenic, art, documentary, candid and character studies.

All in all, it's about as good a book on Los Angeles as you can find—and a natural, of course, for Christmas.

BLACK BONANZA

by Frank J. Taylor and Earl M. Welty
McGraw Hill, New York, $4.00

SUBTITLED "How an Oil Hunt Grew Into the Union Oil Company of California," *Black Bonanza* attempts to describe the fantastic growth of "the industry that furnishes the lifeblood of modern living" by describing the growth of one oil company from a wildcatting operation in the late nineteenth century to one of the "Big Twenty" today.

Union Oil serves as an excellent case study in this endeavor. It bridges the complete life span of the oil business; big as it is, it's still classified as an independent; and it can take credit for an impressive list of "firsts": building the first tanker on the Pacific Coast, for instance; laying the first pipeline from the oil fields to tidewater; first spanning the Isthmus of Panama with a pipeline from the Pacific to the Atlantic; and perfecting the first oil burner—to mention just a few.

The authors, both professional writers, find little to criticize—and a great deal to praise—in the history of Union Oil, and have managed to make a fairly lively story out of a mass of research material and old records. For good measure, the book contains nearly 200 photographs.

ADVENTURE INTO THE UNKNOWN

The First 50 Years of the
General Electric Research Laboratory
by Laurence A. Hawkins
William Morrow, N.Y., $3.50

THIS DOESN'T pretend to be a full-scale history of the 50-year-old General Electric Research Laboratory; it's merely a quick survey of some of the prominent men who have worked in the lab, and some of the valuable developments which have come out of it.

The book is intended for popular consumption, and, aside from an occasional passage of purely intramural interest (the author was with the Research Laboratory for 38 years—having retired as its business manager in 1948) should appeal to most science-minded laymen.

Adventure Into the Unknown concentrates chiefly on the contributions of the three directors of the Research Laboratory — Willis R. Whitney (1900-32), W. D. Coolidge (1932-45), and the present director, C. G. Suits—as well as those of the laboratory's most distinguished scientist, Irving Langmuir. Other men and their contributions are mentioned briefly and the work of the laboratory in general reviewed and brought up to date with a description of the plant and program of the new Knolls Atomic Power Laboratory.

MAN THE MAKER

by R. J. Forbes
Henry Schuman, New York, $4.00

Reviewed by R. L. Daugherty, Professor of Mechanical Engineering

THIS BOOK TRACES the development of man from the pre-dawn of history down to the present day, not so much through the growth of his brain and increase in culture as by unfolding for us his achievements in inventing, making, and improving tools and machines from their crudest beginnings.

The story starts with the Stone Age and traces the developments in irrigation, spinning and weaving, pottery making, working stone, metallurgy, and communication. It goes on to the works of the peoples in the empires of the Near East; the contributions of the Greeks and the Romans, such as the building of roads, aqueducts, bridges, and war machines; the rise of the medieval engineer, the use of the water wheel and windmill, the production of cast iron and of paper, and the beginning of the art of printing.

A chapter headed "Steam Comes of Age" describes the various early types of steam engines and the industrial revolution brought into being by this new source of power.

Another chapter, on "The Conquest of Distance," describes the growth of highway systems with good paving and the evolution of the railroad, streetcar, bicycle, automobile, and airplane.

The closing chapter, entitled "Steel and Electricity," covers the development of the modern steel industry on which so much of our present day civilization is based; the electric power industry, together with radio and television; and finally some phases of modern chemical engineering.

The author—a chemical engineer, formerly on the staff of the Shell Oil Company, and now professor of the history of science and technology at the Amsterdam Municipal University in the Netherlands—has condensed a vast amount of material, both in time and in content, into this book. But he has done a skillful job and the book is not highly technical, so it can be read with interest and profit by anyone.