been meticulously detailed, but the deductions he has drawn from them have been experimentally tested to determine their objectivity and their validity. Unlike many naturalists, Tinbergen constructs ingenious methods of testing what he thinks he can deduce from his observations, and, by so doing, is able to present his observations in critically acceptable form. The first essay in this book deals with insect studies at Hulshorst, in Tinbergen's native Holland, where he first found the type of study that he decided to make his life work. This is followed by two chapters on experiences in the arctic, especially in Greenland, where he made his notable studies of snow buntings and phalaropes. Following these are a number of chapters devoted to a variety of creatures—falcons, sand wasps, butterflies, gulls, and ducks, as well as penetrating discussions of both animal camouflage and the symbiotic relations between insects and flowers. All in all, a pleasant and stimulating literary experience is in store for those who read this book.

All three books are well indexed. While this is of less importance in the second and third than in the first volume, the presence of an index indicates to me at least, that the author attempted to make his ideas and his data available to his readers, an attitude always to be commended. Anyone who has had to peruse, page-by-page, old unindexed travel books for the observations of natural history they contain must have had occasions to condemn the authors for this lack of cooperation.

HERBERT FRIEDMANN
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Men and Atoms. The discovery, the uses and the future of atomic energy. William L. Laurence. Simon and Schuster, New York, 1959. xiii + 302 pp. $4.50.

This is a fascinating account, written by the science editor of the New York *Times*, of the birth of the atomic age. Laurence was the only reporter privileged to be in on the secret of the first nuclear bomb before it was exploded above the New Mexico desert in 1945.

Though much of the story has been recorded previously, the reader may enjoy reliving the cloak-and-dagger intrigue that surrounded the Manhattan Project and some of the events of the tense 3½-day countdown that preceded the triggering of the bomb—Bacher struggling with a balky mechanism while he assembled the vital core of the bomb in an old ranch house; Kistiakowsky braving an electrical storm to inspect the bomb-laden test tower; Oppenheimer and General Groves anxiously eyeing the foreboding skies. Then "there rose as if from the bowels of the earth a light not of this world, the light of many suns in one" to herald the end of World War II and the beginning of man's efforts to avoid universal suicide.

Actually, the book covers a great deal more than the Manhattan Project and should give the lay reader, in particular, a good idea of how basic research provides the building blocks for the foundation on which technology lies. This lesson comes through despite the chronologically disjointed narrative (perhaps a reflection of the occupational disease which afflicts us newspapermen) and Laurence's unrestrained prose—sometimes as purplish as the awesome fireball it seeks to describe.

Among other things, Laurence painstakingly debunks the popular notion that the atom-bomb project was sparked by Einstein's famous letter, written in 1939, to President Roosevelt. "The tragic truth is," Laurence says, "that the Einstein letter . . . played no part whatever in the decision (26 months later) to go all out on the building of an atom bomb." For, the author points out, "it was not until December 6, 1941, the day before Pearl Harbor, after the British scientists had shown us that an atom bomb was a definite possibility and when it appeared that we had handed the Germans a head start of three full years (an assumption later proved to be erroneous), that we at last decided to go start work on the project."

As Laurence details our procrastination and lack of top-level concern, the reader should come to realize the implication of two situations: the danger to democratic survival of a scientifically illiterate electorate and, worse yet, the folly of entrusting our national fate, in times such as these, to lawmakers and policy planners ignorant of the ways of science and technology.

The reader should also sense the utter ridiculousness of some of our secrecy rules while, at the same time, recognizing the treacherous cunning of traitors like Fuchs, who breached the tight security precautions to "feed Soviet agents the secrets of the atom bomb and the early theories about the hydrogen bomb."

Undoubtedly, some readers will take issue with the author's discussion of "clean" hydrogen bombs (though he makes it clear they'll never be as pure as Ivory soap), with his defense of our recent nuclear weapons tests (to which I subscribe), and with his conviction that "there cannot be another war" because an aggressor would risk "the certainty of absolute and swift annihilation" (an obvious reality which madmen have a tragic habit of overlooking).

But, all in all, the book is well worth your reading.

JOHN TROAN
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Libraries and Bibliographic Centers in the Soviet Union. Indiana University Publications. Slavic and East European series, vol. 16. Paul L. Horecky. Indiana University, Bloomington, 1959. xviii + 289 pp. $3.

Paul Horecky, assistant chief of the Slavic and East European Division of the Library of Congress, characterizes his study as "an attempt to present an up-to-date and realistic picture" of libraries and bibliographic centers in the U.S.S.R. The attempt is timely, worth while, and highly successful. Drawing its information from a wide range of Soviet material and from interviews with American visitors to Soviet libraries, the book has a double merit: it presents a great deal of carefully sifted information about the institutions in question and also points out the rather special role such institutions have been made to play in the Soviet environment. On the factual side, the book describes the Soviet legal deposit-copy system and organs of bibliographic registration and the various aspects of the network of libraries and collections; on the analytical side, the book touches upon the Soviet concept of librarianship as a vehicle for indoctrination.

The well-organized volume begins with a glossary which defines pertinent Soviet terms that often puzzle the nonspecialist, and includes 12 chapters of closely packed data interspersed with elucidating organizational charts, diagrams, and tables. Thirty-four "supplements" containing additional relevant material, a selective and up-to-date bibliography of sources, and a detailed index add to the value of the publication.

The readers of *Science* will be particularly interested in the chapters dealing

with the science and technical libraries, and with the organizational aspects of libraries of the various Soviet academies of sciences.

The book's preface announces a companion volume by Boris Gorokhoff on the abstracting and bibliographic programs of various nonlibrary information services in the Soviet Union. Together, the two volumes should answer most of the pertinent questions for the scientist concerned with Soviet libraries and documentation.

T. W. MARTON
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The Customs and Religion of the Ch'iang. David Crockett Graham. Smithsonian Institution, Washington, D.C., 1958 (Smithsonian Miscellaneous Collections, vol. 135, No. 1). 114 pp. Illus. + plates. $2.

Now that China is closed to social scientists, we are constantly reminded of great gaps in our knowledge of that huge land and its diverse inhabitants. Certain areas of ignorance relate to current problems and their immediate social and political effects. Others seem more obscure and academic until the morning newspaper flashes exotic names and informs us that the center of the crisis-of-our-times is now lodged in Laos, in Tibet, or in the borderlands between China and Burma. Then there is a general shaking-of-heads and much deploring of the shameful limitations of our knowledge.

Such are the thoughts aroused by a reading of this collection of notes about one of the lesser known non-Han peoples of southwestern China. The Ch'iang are people of generally Mongoloid type who speak a Tibeto-Burman language. Those whose culture is described (primarily in its religious aspects) live in western Szech'uan. They are farmers and keepers of domesticated animals, and their clothing as well as their language immediately sets them apart from the Chinese who dwell in nearby valleys and from the other non-Han peoples, the Wa and the Chia-rung, who are their neighbors. The Ch'iang are particularly interesting because the Chinese have long asserted that the Ch'iang are descended from the peoples of Northwest China who, over 2000 years ago, were dislodged and became the fundamental population of Tibet. Graham's notes on Ch'iang religion throw little positive light on this problem, since few resemblances are manifest between Ch'iang religion and Bon-po, the pre-Buddhist religion of Tibet (as opposed to contemporary Tibetan Bon, which is so heavily inroaded with Buddhist elements that it virtually constitutes an aberrant sect of Lamaism). Nevertheless, Graham's book suggests once again a most fascinating problem for a linguist: what light does glottochronology thrown on the question of the Ch'iang-Tibetan relationship and its time depth?

This volume does not pretend to be a complete and unified account of Ch'iang culture but pursues the author's special interest in Ch'iang religious beliefs and ceremonies. It will also be found useful because of its substantial body of Ch'iang texts which appear in phonetic renderings (in Chinese and in English). Graham is to be congratulated for making this material available, and the Smithsonian Institution is to be complimented for providing for its publication.

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Steroids. Louis F. Fieser and Mary Fieser. Reinhold, New York; Chapman and Hall, London, 1959. xvii + 945 pp. $18.

Steroids revises and extends the Fiesers' *Natural Products Related to Phenanthrene* which, in three editions, has been the authoritative text in this field since 1936. The authors' justifications for undertaking a new edition under a different title are the expanded interest in and importance of steroid chemistry in recent years, the introduction of conformational analysis and other theoretical tools into the steroid field, and the organic chemists' need for a reliable guide to recent advances in this intricate subject. Although under the Fiesers' authorship, *Steroids* is a collaborative effort in the sense that no less than 67 outstanding steroid chemists cooperated with the authors by supplying suggestions, corrections, and unpublished advance information (this made it possible for the book to cover current literature to March 1959). The material is presented as a series of separate topics, and each topic is complete in itself, in that the topic is developed from historic to modern dates; early work is interpreted in modern terms. The Fiesers' captivating and readable prose style continues to be strongly evident in the present text.

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New Books

College Physics. Robert L. Weber, Marsh W. White, Kenneth V. Manning. McGraw-Hill, New York, ed. 3, 1959. 645 pp. $7.50.

Electrolytic Conductance. Raymond M. Fuoss and Filippo Accascina. Interscience, New York, 1959. 288 pp. $8.

A Handbook of Colorimetric Chemical Analytical Methods. Tintometer Ltd., Salisbury, England, 1959. 30s.

International Review of Cytology. vol. 8. G. H. Bourne and J. F. Danielli, Eds. Academic Press, New York, 1959. 551 pp. $13. Contents: "The structure of cytoplasm," "Wall organization in plant cells," "Submicroscopic morphology of the synapse," "The cell surface of *Paramecium*," "The mammalian reticulocyte," "The physiology of chromatophores," "The fibrous components of connective tissue with special reference to the elastic fiber," "Experimental heterotopic ossification," "A survey of metabolic studies on isolated mammalian nuclei," "Trace elements in cellular function," "Osmotic properties of living cells," "Sodium and potassium movements in nerve, muscle, and red cells," and "Pinocytosis."

International Review of Neurobiology. vol. 1. Carl C. Pfeiffer and John R. Smythies, Eds. Academic Press, New York, 1959. 395 pp. $10.

An Introduction to Electronic Data Processing. Roger Nett and Stanley A. Hetzler. Free Press, Glencoe, Ill., 1959. 287 pp. $6.75.

Kinematic Analysis of Mechanisms. Joseph Edward Shigley. McGraw-Hill, New York, 1959. 361 pp. $7.75.

Lectures on Fourier Integrals. Salomon Bochner. With an author's supplement on monotonic functions, Stieltjes integrals, and harmonic analysis. Translated from the original by Morris Tenenbaum and Harry Pollard. Princeton Univ. Press, Princeton, N.J., 1959. 341 pp. Paper, $5.

A Manual for Histologic Technicians. Ann Preece. Little, Brown, Boston, Mass., 1959. 228 pp.

Mathematical Programming and Electrical Networks. Jack B. Dennis. Technology Press and Wiley, New York; Chapman and Hall, London, 1959. 192 pp. $4.50.

Measurement. Definitions and theories. C. West Churchman and Philburn Ratoosh, Eds. Wiley, New York; Chapman and Hall, London, 1959. 282 pp. $7.95.

Protein and Amino Acid Nutrition. Anthony A. Albanese, Ed. Academic Press, New York, 1959. 616 pp. $16.

Races and People. William C. Boyd and Isaac Asimov. Abelard-Schuman, New York, 1959. 189 pp. $2.75.