monograph are K. P. V. Menon, director of the Central Coconut Research Station, Kayangulam, and K. M. Pandalai, joint director of the Central Coconut Research Station, Kasaragod. In addition to the discussions of morphology, floral biology, and genetics and variation, there are descriptions of field culture, plantation management, pests and diseases, and the utilization of coconut products. The orientation is practical throughout, and, presumably, this was responsible for the curiously mixed and often outdated presentation in the strictly botanical chapters. The authors have merely repeated previously published works without due regard for their publication date or for the possibility of changing concepts in biology. Thus one finds anatomy discussed in terms of dermatogen, periblem, and plerome, while pollen formation is the result of "heterotypic" and "homoeotypic" divisions of chromosomes derived from a "spireme."

Once past these unpalatable botanical items, the book presents detailed descriptions of the practical aspects of coconut growing, including much tabular material, derived from the very extensive bibliography. Unfortunately there is a separate bibliography for each of the 18 chapters, but separate author and subject indexes are provided. The book should prove useful to those interested in economic aspects of botany and will be a very useful introduction to the literature on the coconut palm.

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America in the Antarctic to 1840. Philip I. Mitterling. University of Illinois Press, Urbana, 1959. 201 pp. Illus. $5.

Current research programs of the United States and other nations have revived interest in the history of antarctic exploration. A failing of several recently published histories is that they recount only exploration which has occurred since the late 1800's. The distant past and, sometimes, the very recent ventures are excluded. This book partially corrects the deficiency by dealing with a little known period of United States antarctic exploration (1776–1840).

America's first expeditions to the southern oceans were for commercial enterprise. Reports of fur seals in these waters circulated widely after Captain James Cook's voyage of 1775 and led to a number of reconnaissance voyages by different nations. *The States,* first known American sealing ship to sail the antarctic seas, shipped out of Boston to the Falkland Islands and took 13,000 pelts for later sale in China. The spectacular profit gave rise to a large industry, centered in Boston, Nantucket, and Stonington, which enjoyed financial success until 1793 when the market declined. After a lull, fur sealing was resumed and continued throughout the early 1800's.

Intense competition resulted in voyages of discovery among the subantarctic islands of the Scotia Arc, among offshore islands along the Antarctic Peninsula (also called Palmer Peninsula or Graham Land), and on the peninsula itself even though few new seal grounds were found.

Mitterling has summarized these voyages concisely, giving careful attention to conflicting claims of discovery made by Nathaniel Palmer, Christopher Burdick, George Powell, John Davis, Benjamin Morrell, and Edward Bransfield. Each of these men led a voyage from the United States or from Great Britain; claims by either country for discovery of Antarctica often cite their work. Palmer's meeting with the Russian, Bellingshausen, in January 1821 is also treated with care and insight. I believe Mitterling shows the difficulty of basing a claim of continental discovery on a single voyage made during this period. He says "Attempts to substantiate this imperfect evidence . . . have obscured [the sealers'] real accomplishments . . ."

By 1820 exploration financed by the sealing industry had become costly. Several suggested a nationally sponsored United States expedition, but, curiously enough, it was a theory expressed by John Symnes and his associate Jeremiah N. Reynolds which led to a national expedition. Symnes declared "the earth is hollow, habitable within; containing a number of concentric spheres, one within the other, and that it is hollow at the pole." Impassioned public pleas along with solicitations in Congress and the Navy Department eventually caused the government to send an expedition to Antarctica in 1838. Under the command of Charles Wilkes, the ships made a few discoveries in the area of the Antarctic Peninsula, then, in a second season, sighted the land now bearing Wilkes' name. Wilkes' discoveries left no doubt that there was a large southern continent, a fact substantiated a year later by Sir James Ross. Mitterling writes "When the United States Exploring Expedition put to sea, a precedent for the use of Federal funds to explore throughout the world was established . . . thus, American beginnings in Antarctica were conspicuous ones."

Philip Mitterling has chosen a fascinating and little known period of United States antarctic activity and has described it in a highly readable yet scholary manner. Because of these qualities the book will be of great value for some time.

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Tukani. Helmut Sick. Translated by R. H. Stevens. Eriksson-Taplinger, New York, 1960. 240 pp. Plates. $5.

This is the first detailed account of the famous Brazilian Roncador-Xingu Expedition, which devoted several years to blazing an 1800-mile route diagonally across Brazil from Rio de Janeiro to Manaus on the Amazon River. The author, a 50-year-old German-born naturalist, joined the expedition in 1946, and he ably describes the unknown lands through which the expedition passed.

Helmut Sick's sensitivity to the world of nature and to the problems of adjustment between civilized and primitive man makes this a valuable contribution to the historical and scientific record of one of the largest undeveloped regions in the world.

The title is taken from the name of a pet toucan that figures prominently in the book, but all living things captivate the author's alert mind. Sick discusses 10-inch stick insects, Indian women who feed water hogs at the breast and allow mice to build nests in their hair, exotic birds 1/15 the weight of a sparrow, stinging ants an inch long, lantern bugs glowing with luminous bacteria, and piping guans that play instrumental music with their wings when they mate.

One may doubt some statements, such as "[the natives] can pinpoint their position . . . [by] instinctive attributes with which many animals such as migratory birds and bees are endowed

by Nature." However, the book is full of hard-won information, and Sick's descriptions of the thunderous onslaught of the rainy season and of the daily and seasonal habits of the wildlife may be ranked among the classic passages of their kind. There is a useful glossary-index and 40 fine photographs.

Sick measures well the insect menace to health and the difficulty of preparing primitive peoples for civilization. In contrast to those who would roughhew half a continent with shorter vision, he favors the establishment of a large protective reserve that would "awaken the interest and admiration of the world."

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Nouveau traité de chimie minérale. vol. 16, group 7, *Fluor, chlore, brome, iode, astate, manganese, technetium, rhenium.* xxxix + 1195 pp. Illus. 1960. Paper, F. 170; cloth, F. 185. vol. 18, group 8, *Complexes du fer, du cobalt, et du nickel.* xxxix + 944 pp. Illus. 1959. Paper, F. 9500; cloth, 10,700. Paul Pascal, Ed. Masson, Paris.

Of the proposed 20-volume *Nouveau traité de chimie minérale*, ten volumes have appeared in print: volumes 1, 3, 4, 10, 11, 12, 14, 16, 18, and 19; and the following have been reviewed in *Science*: volumes 1 and 10 [**125**, 401 (1957)]; volume 3 [**128**, 138 (1958)]; volume 4 [**129**, 636 (1959)]; volumes 11 and 14 [**129**, 1355 (1959)].

Volume 16 covers the elements fluorine, chlorine, bromine, iodine, astatine, manganese, technetium, and rhenium. In volume 18 the complex compounds of iron, cobalt, and nickel are covered.

I have not seen volume 12, covering vanadium, niobium, tantalum, and protoactinium, nor volume 19, covering ruthenium, rhodium, palladium, osmium, iridium, and platinum.

The original intention was to complete the treatise between 1956 and 1960. The rate at which the individual volumes have been appearing indicates that the remaining volumes could be published fairly soon.

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New Books

Advances in Carbohydrate Chemistry. vol. 14. Melville L. Wolfrom, Ed. Academic Press, New York, 1959. 537 pp. $15. Among the research areas covered are the amino sugars, the hemicelluloses, and the inositols; an obituary of Geza Zemplen is included.

Anatomy. Regional and applied. R. J. Last. Little, Brown, Boston, ed. 2, 1959. 457 pp. $15.

Anatomy and Physiology of Speech. Harold M. Kaplan. McGraw-Hill, New York, 1960. 374 pp. $8.50.

Advances in Veterinary Science. vol. 5. C. A. Brandly and E. L. Jungherr, Eds. Academic Press, New York, 1959. 461 pp. $14. Topics covered in this volume include eye examination and operations, Q fever, rabies, eradication of the tsetse fly in the Union of South Africa, theilerioses, and tissue culture in veterinary medical research.

Annual Review of Entomology. vol. 5. Edward A. Steinhaus and Ray F. Smith, Eds. Annual Reviews, Palo Alto, Calif., 1960. 458 pp. $7. Includes a cumulative chapter-titles index for vols. 1–5.

The Application of Genetics to Cotton Improvement. Sir Joseph Hutchinson. Cambridge Univ. Press, New York, 1959. 95 pp. $3.

Bananas. N. W. Simmonds. Longmans, Green, New York, 1959. 482 pp. 45s.

Beef Cattle. Roscoe R. Snapp and A. L. Neumann. Wiley, New York, ed. 5, 1960. $8.50.

British Veterinary Codex, Supplement, 1959. Published by the direction of the Council of Pharmaceutical Society of Great Britain. Pharmaceutical Press, London, 1959 (order from Rittenhouse Book Store, Philadelphia, Pa.). 152 pp. 35s.

Chemical Analysis. Herbert A. Laitinen. McGraw-Hill, New York, 1960. 625 pp. $12.50.

The Chemistry of Plant Gums and Mucilages. And some related polysaccharides. F. Smith and R. Montgomery. Reinhold, New York; Chapman and Hall, London, 1959. 637 pp. $18.

The Control of Growth and Form. A study of the epidermal cell in an insect. V. B. Wigglesworth. Cornell Univ. Press, Ithaca, N.Y., 1959. 147 pp. $3.

Data for Biochemical Research. R. M. C. Dawson, Daphne C. Elliott, W. H. Elliott, K. M. Jones. Oxford Univ. Press, New York, 1960. 312 pp. $10.10.

Design and Performance of Gas Turbine Power Plants. W. R. Hawthorne and W. T. Olson, Eds. Princeton Univ. Press, Princeton, N.J., 1960. 576 pp. $15.

The Education of the Scientist in a Free Society. Marquette Univ. Press, Milwaukee, Wis., 1959. 88 pp. Paper, $2.50. Papers delivered at a conference commemorating the 50th anniversary of the college.

Elements of Algebra. Howard Levi. Chelsea, New York, ed. 3, 1960. 172 pp.

Electrochemical Engineering. C. L. Mantell. McGraw-Hill, New York, ed. 4, 1960 (ed. 4 of *Industrial Electrochemistry*). 690 pp. $16.50.

The Foundations of Chemical Kinetics. Sidney W. Benson. McGraw-Hill, New York, 1960. 721 pp. $13.50.

Gestation. Claude A. Villee, Ed. Josiah Macy, Jr. Foundation, New York, 1959. 262 pp. $5.75.

Glutathione. Biochemical Society Symp. No. 17. E. M. Crook, Ed. Cambridge Univ. Press, New York, 1960. 116 pp. $4.50. Papers reviewing the chemistry of glutathione, techniques for its determination, interactions of glutathione in plant tissues, nerve tissues, human lens, and its bearing on radiation damage to living organisms.

A Guide-Book to Biochemistry. Kenneth Harrison. Cambridge Univ. Press, New York, 1959. 158 pp. Cloth, $3.50; paper, $1.95.

Historical Geology. Carl O. Dunbar. Wiley, New York, ed. 2, 1960. 511 pp. $7.95.

The Hydrogen Bond. George C. Pimentel and Aubrey L. McClellan. Freeman, San Francisco, Calif., 1960. 487 pp. Text edition, $9.50; trade edition, $11.40.

Hydrology. C. O. Wisler and E. F. Brater. Wiley, New York; Chapman and Hall, London, ed. 2, 1959. 422 pp. $9.25.

Introduction to Rubber Technology. Maurice Morton, Ed. Reinhold, New York; Chapman and Hall, London, 1959. 552 pp. $10.

The Manufacture of Sulfuric Acid. Werner W. Duecker and James R. West, Eds. Reinhold, New York; Chapman and Hall, London, 1959. 523 pp. $12.50

Masers. Microwave amplification and oscillation by stimulated emission. Gordon Troup. Methuen, London; Wiley, New York, 1959. 178 pp. $2.75.

Nature and Properties of Engineering Materials. Zbigniew D. Jastrzebski. Wiley, New York; Chapman and Hall, London, 1959. 588 pp. $11.

Nuclear Fuel Elements. Henry H. Hausner and James F. Schumar, Eds. Reinhold, New York; Chapman and Hall, London, 1959. 420 pp. $12.50. Proceedings of the First international symposium on nuclear fuel elements, held at Columbia University in January 1959.

Smithsonian Institution. *Annual Report.* 1958. Publ. 4354 (order from Supt. of Documents, GPO, Washington 25). 569 pp. $3.75.

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Structure Reports for 1952. vol. 16. A. J. C. Wilson, General Ed. Published for the International Union of Crystallography by Oosthoek's Uitgevers, Utrecht, Netherlands, 1959. 659 pp. $38.

Thermodynamics. Franklin P. Durham. Prentice-Hall, Englewood Cliffs, N.J., ed. 2, 1959. 359 pp. $6.25.

The Thunder of the Guns. A century of battleships. Donald Macintyre. Norton, New York, 1960. 352 pp. $3.95.

What Is Cybernetics? G. T. Guilbaud. Translated by Valerie MacKay. Criterion Books, New York, 1959. 134 pp. $3.50.

You and Science. Paul F. Brandwein *et al.* Harcourt, Brace, New York, ed. 3, 1960. 702 pp.

X-Ray Spectrochemical Analysis. L. S. Birks. Interscience, New York, 1959. 149 pp. $5.75.