and J. C. Tatlow. All the articles digest a relatively voluminous literature into well-written, readable, and concise discussions.

However, there is a vast area for future volumes in this series, and fluorine chemists will be looking forward to the appearance of each succeeding volume. The series is certainly to be recommended to workers in the field and to chemists in general.

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Readings in the History of American Agriculture. Wayne D. Rasmussen, Ed. University of Illinois Press, Urbana, 1960. xi + 340 pp. Illus. $6.50.

God Speed the Plow. The coming of steam cultivation to Great Britian. Clark C. Spence. University of Illinois Press, Urbana, 1960. 183 pp. Illus. $4.75.

Power to Produce. Yearbook of Agriculture, 1960. U.S. Government Printing Office, Washington, D.C., 1960. 480 pp. Illus. $2.25.

Harvests and Harvesting through the Ages. Norman E. Lee, Cambridge University Press, New York, 1960. viii + 208 pp. Illus. $2.95.

Readings in the History of American Agriculture contains some of the sources and documents of American agricultural history. The 52 selections include such items as a 16th-century account of Indian farming, a description of Jethro Wood's patent application for his plow, and analyses of how World War I affected agriculture and how artificial breeding altered dairying. Nearly every important aspect of American agricultural history is covered. Short, informative essays introduce the selections and give the background to, and the results of, the events covered by the documents. Unfortunately, and perhaps unavoidably, the essays do not always provide a continuous narrative link between the documents. Furthermore, many odd or archaic technical terms might have been defined in footnotes. Except for the 16th- and 17th-century documents, however, the illustrations help make things clearer. A fairly comprehensive chronology of American agriculture is at the back of the book. This generally useful outline also provides some continuity for the whole collection. The book emphasizes the scientific and technological development of American agriculture.

In *God Speed the Plow*, Clark Spence traces the efforts of Britons to plow and cultivate with steam-powered machines. The book covers the years from 1618 to 1918, but most of the story takes place in the 19th century. Methods of using steam power centered on (i) stationary engines, (ii) traction engines, and (iii) tractors with powered earth-cutters. Of these, the stationary engines proved to be the most practical. In Britain, at least, stationary engines always outnumbered tractors about 10 to 1. Spence's account of success and failure is told in adequate detail. He does, however, slight the general technical and economic conditions of the times. Thus, the reader may wonder why a 10 horsepower engine had to weight several tons, and why, even so, it might be profitable to own one. Otherwise, this is a thorough, interesting, and abundantly illustrated monograph.

Power to Produce, a yearbook of the U.S. Department of Agriculture, concentrates on present ways of using power, particularly power derived from internal combustion engines and electric motors. The book also covers some of the history of these devices. Although it is a collaborative effort, the book is still remarkably even in style. It appears to have been written primarily, but not exclusively, for an urban audience. Farm methods and machines are explained in detail. The authors intentionally make little effort to cover any other scientific practices or discoveries. The essays tend to repeat information given in other chapters, but this is probably unavoidable. Although the book can be read straight, it was apparently designed as a reference, to be read piecemeal. How does a potato digger work? How did the tractor evolve? Without using jargon, the authors answer these and a host of other questions. Altogether excellent.

The brief *Harvests and Harvesting through the Ages* was written primarily for children (12 to 16 years of age), and I recommend it for them. It is not a childish book, however, and might be read by adults who want a review of world agricultural history. The book covers far more than just harvesting, although it deals mostly with grain production and processing.

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Paléontologie Stratigraphique. Henri and Geneviève Termier. Masson, Paris, 1960. 515 pp. Illus. NF. 148.

Atlas de Paléogéographie. Henri and Geneviève Termier. Masson, Paris, 1960. 99 pp. Illus. NF. 16.

The indefatigable team of Henri and Geneviève Termier continues to turn out an almost incredible amount of synthesis and compilation in the field of historical geology, taken very broadly. Three volumes of their *Traité de Géologie* have appeared, and others are in preparation. In the meantime they have presented some of the same material in other forms, or for different audiences, and are making related but distinct compilations in several fields. Their *Paléontologie Stratigraphique* is a major work in itself. The purpose, translated from their own words, is "to give the reader an exact picture of the vegetable and animal population of our planet in each of the geological periods that have elapsed since about 500 million years ago."

For each geological period or (in the Cenozoic) epoch a table of its subdivisions is given, usually at the level of stages in European terminology, and its life is summarized in words. The floras and faunas, first marine and then terrestrial as appropriate for the given period, are then reviewed succinctly, telegraphically as the authors say, but with much detail, usually to families and often to genera. Each chapter ends with tables of paleontological zones, presented in terms of different groups of organisms and for various parts of the world. As each major group appears in geological sequence, it is taxonomically characterized and summary classifications are sometimes, but not consistently, given. The illustration is extremely rich, with more than 3425 different figures, mostly line cuts of individual fossils redrawn from innumerable primary and secondary sources. Little attention is given to detailed anatomy, and comparatively few figures have anatomical labels.

A book should be judged, first of all, in the light of its authors' intentions. Some errors of fact and many disputable points of opinion are quite unavoidable in an undertaking so very complex, but it can be said that the authors have carried out their own intention well. The extent to which the result corresponds with a felt need depends on each prospective reader. For some the book may seem to fall between two stools: neither a fully ade-

quate professional manual nor an easily grasped nonprofessional survey.

The *Atlas de Paléogéographie* has been issued as a sort of supplement to *Paléontologie Stratigraphique*. It consists essentially of the series of 35 paleobiogeographic world maps originally published in 1952 in the authors' *Traité*, with a new summary verbal description of each map. Many geologists will welcome the opportunity to obtain these maps in convenient and less expensive form. Nevertheless, it does seem fair to criticize the intention, not so much of these particular authors as of this whole approach toward teaching historical geology. In the present state of this science, an attempt to draw a conventional geographic map for any considerable part of the world during a remote geological epoch often involves quite as much fantasy as fact. For a world map, even the most fundamental points of geographic coordinates for crustal segments are still hotly disputed. Would it not be better to present to students (and to popular readers) a consensus of actual knowledge and reasonable inference? The sort of thing that could be done without going beyond the facts and their scientifically established integration is suggested by the sets of paleotectonic maps published by the U.S. Geological Survey. Apart from the general weakness of the conventional geographic approach, for which the Termiers have abundant precedent, their attempt to include biogeographic data is unfortunate. What is, and very likely all that could be, shown in this format is so inadequate and so erratic as to be more misleading than instructive.

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New Books

Economics and the Social Sciences

Community Resources in Mental Health. Reginald Robinson, David F. DeMarche, and Mildred K. Wagle. Basic Books, New York, 1960. 461 pp. $8.50. The fifth of a series of monographs to be published by the Joint Commission on Mental Illness and Health.

Crossroads. Land and life in Southwest Asia. George B. Cressey. Lippincott, Philadelphia, 1960. 607 pp. Illus. $12. A comprehensive geography of the area, written around three principal ideas—the crossroads character of Southwest Asia, the role of water in its economy, and the way in which man is changing the landscape.

Culture in History. Essays in honor of Paul Radin. Stanley Diamond, Ed. Published for Brandeis Univ. Press by Columbia Univ. Press, New York, 1960. 1038 pp. $15.

Demographic and Economic Change in Developed Countries. A conference of the Universities–National Bureau Committee for Economic Research. Princeton Univ. Press, Princeton, N.J., 1960. 545 pp. $12.

Education and Manpower. Henry David, Ed. Columbia Univ. Press, New York, 1960. 342 pp. $5.

An Introduction to Physical Anthropology. M. F. Ashley Montagu. Thomas, Springfield, Ill., ed. 3, 1960. 787 pp. Illus. $14.50.

Methods of Regional Analysis. An introduction to regional science. Walter Isard. Technology Press, and Wiley, New York, 1960. 813 pp. Illus. $9.50.

Political Science. A philosophical analysis. Vernon Van Dyke, Stanford Univ. Press, Stanford, Calif. 1960. 250 pp. $5.

The Preindustrial City. Past and present. Gideon Sjoverg. Free Press, Glencoe, Ill., 1960. 365 pp. $6.75.

Social Systems. Essays on their persistence and change. Charles P. Loomis. Van Nostrand, Princeton, N.J., 1960. 360 pp. $6.50.

The Soviet Cultural Offensive. The role of cultural diplomacy in Soviet foreign policy. Frederick C. Barghoorn. Princeton Univ. Press, Princeton, N.J., 1960. 360 pp. $7.50.

On Thermonuclear War. Herman Kahn. Princeton Univ. Press, Princeton, N.J., 1960. 671 pp. $10.

Values, Ethics, and Esthetics. A selected bibliography. Ethel M. Albert and Clyde Kluckhohn. Free Press, Glencoe, Ill., 1960. 360 pp. $7.50.

Mathematics, Physical Sciences, and Engineering

Analog and Digital Computer Technology. Norman R. Scott. McGraw-Hill, New York, 1960. 533 pp. Illus. $12.75.

Annual Review of Physical Chemistry. vol. 11. Henry Eyring, Ed. Annual Reviews, Palo Alto, Calif., 1960. 595 pp. $7.

Controlled Thermonuclear Reactions. An introduction to theory and experiment. Samuel Glasstone and Ralph H. Lovberg. Van Nostrand, Princeton, N.J., 1960. 539 pp. Illus. $5.60. This volume was prepared under the auspices of the Office of Technical Information, U.S. Atomic Energy Commission.

Crystal-Structure Analysis. Martin J. Buerger. Wiley, New York, 1960. 685 pp. Illus. $18.50.

Edison Experiments You Can Do. Based on the original notebooks of Thomas Alva Edison. Prepared under the direction of International Edison Birthday Celebration Committee of the Thomas Alva Edison Foundation. Harper, New York, 1960. 139 pp. Illus. $2.50.

Elektronenbeugung. Theorie, Praxis und industrielle Anwendungen. Ernst Bauer. Moderne Industrie, Munchen, Germany, 1960. 233 pp. DM. 32.

Elementary Introduction to Nuclear Reactor Physics. S. E. Liverhant. Wiley, New York, 1960. 461 pp. Illus. $9.75.

Essentials of Earth History. An introduction to historical geology. William Lee Stokes. Prentice-Hall, New York, 1960. 512 pp. Illus. $8.75.

Fuel Cells. G. J. Young. Reinhold, New York; Chapman and Hall, London, 1960. 159 pp. Illus. $5.75. A symposium held by the Gas and Fuel Division of the American Chemical Society at the 136th national meeting.

Fundamentals of Signal Theory. John L. Stewart. McGraw-Hill, New York, 1960. 359 pp. Illus. $9.

Hydrodynamics of Oceans and Atmospheres. Carl Eckart. Pergamon, New York, 1960. 302 pp. Illus. $9.

Imperfections in Crystals. H. G. Van Bueren. North-Holland, Amsterdam; Interscience, New York, 1960. 694 pp. Illus. $16.75.

Introduction to Laplace Transforms. For radio and electronic engineers. W. D. Day. Iliffe, London; Interscience, New York, 1960. 190 pp. Illus. $5.50.

Lehrbuch der Theoretischen Physik. Georg Joos. Akademische Verlagsgesellschaft, Frankfurt am Main, Germany, 1959. 859 pp.

Noise Reduction. Prepared for a special summer program at the Massachusetts Institute of Technology. Leon L. Beranek, Ed. McGraw-Hill, New York, 1960. 762 pp. Illus. $14.50.

Physical Chemistry of Surfaces. Arthur W. Adamson. Interscience, New York, 1960. 643 pp. $12.75.

Principles of Control Systems Engineering. Vincent Del Toro and Sydney R. Parker. McGraw-Hill, New York, 1960. 700 pp. Illus. $14.50.

Reactor Analysis. Robert V. Meghreblian and David K. Holmes. McGraw-Hill, New York, 1960. 817 pp. Illus. $19.50.

Runnerless Molding. Ernest P. Moslo. Reinhold, New York; Chapman and Hall, London, 1960. 174 pp. Illus. $4.95.

Soviet Research in Geophysics. vol. 4, *Investigation of the Mechanism of Earthquakes* (English translation). E. N. Bessonova *et al.* American Geophysical Union and Consultants Bureau, New York, 1960. 209 pp. $7.50.

The Space Encyclopaedia. A guide to astronomy and space research. Dutton, New York, ed. 2, 1960. 288 pp.

Space Research. Proceedings of the first international space science symposium. Hilde Kallmann Bijl, Ed. North-Holland, Amsterdam; Interscience, New York, 1960. 1211 pp. Illus. $24. This volume contains approximately 100 papers and constitutes the proceedings of a symposium held at Nice in January 1960. The papers are concentrated on the results achieved in the 2 years since the first sputnik was launched.

Stabilization of Free Radicals at Low Temperature. Summary of the NBS program. Arnold M. Bass and H. P. Broida, Eds. National Bureau of Standards, Washington, D.C., 1960 (order from Supt. of Documents, GPO, Washington 25). 114 pp. $1.50.

Source Book of Astronomy. 1900–1950. Harlow Shapley, Ed. Harvard Univ. Press, Cambridge, Mass., 1960. 438 pp. Illus. $10.

Water Supply. Economics, technology, and policy. Jack Hirshleifer, James C. De Haven, and Jerome W. Milliman. Univ. of Chicago Press, Chicago, Ill., 1960. 390 pp. Illus. $7.50.