

render their liberties without a fight," he replies by describing the modern meaning of "a fight." He believes that there was justification for the last war but that there can be none for the next. The meaning of the word *war* has totally changed. He declares that our weapons are useless before an attack, when to use them would be folly, and that they would be useless after an attack, when to use them would be useless revenge. He fails to recognize at any point the usefulness of our weapons as a deterrent (the weapons exist with the hope that they will never be used but with the determination—this Toynbee considers immoral—that they *shall* be used after an attack, in the belief that such determination is likely to prevent the attack.) He is set straight on this point by Ayer, and when Toynbee concedes superior strength to the Russians, Ayer responds not only with doubt but with the "saturation" argument—that slight "disparity no longer greatly matters."

Toynbee is probably right in considering that the arms race, if it cannot somehow be limited, will almost certainly lead to disaster. However, he considers no half-way measures for ameliorating the situation. He despairs of our mincing diplomacy. What he proposes is unilateral disarmament—by the West if we Americans can be persuaded to go along, or failing that, by a neutral block in Europe, or by Britain alone. He believes that Russia, with the world as its dish, would probably recognize it to be indigestible and would not attempt complete occupation. He considers that occupation after unilateral disarmament is less likely than annihilation is if the arms race continues. He would rather risk occupation than face the race agony of annihilation. Some of his correspondents would rather risk annihilation than face occupation.

Perhaps the most remarkable feature of the debate is the small attention paid to the many-nuclear-nation problem and to the possibility of stopping nuclear tests as a means of controlling the development of nuclear weapons and of tapering off the arms race. One of the most plausible essays is that by Richard Löwenthal, who is prepared to risk "race suicide by accident" rather than accept "slavery by design," because the risk may be deliberately reduced: "We could negotiate steps to stop the spreading of weapons to further powers." In the first half of 1959 there is more reason for optimism concerning the negotiations than there was a year ago when these essays were written.

One often wonders how people react in their thoughts to the nuclear threat, and these essays provide a wide spectrum of interesting answers, ranging from, "Fear is a bad advisor" (Lord Portal of Hungerford) to the Archbishop

of Canterbury's, "Sufficient unto the day is the evil thereof," and "the spirit in which we negotiate must be . . . a general readiness to give more than we receive." Toynbee is remarkable in having a father who agrees with him completely; the senior Toynbee comments tersely: "Let us therefore put first things first, and make sure of preserving the human race at whatever the temporary price may be."

This little book is thought-provoking. It is much too brief to give a balanced view of the problem of avoiding thermonuclear war, and too few of the essays are keenly critical of Toynbee's position. None of it is to be swallowed without thorough mastication. It gives an interesting glimpse of America through English eyes. It provides a chance to examine the views of quite a variety of one's fellowmen and, through them, to be stimulated to broaden and strengthen one's own thoughts on the world's most important problem.

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The Age of Improvement. Asa Briggs.
Longmans, Green, New York, 1959.
xiii + 547 pp. \$7.

Certainly any historian faces a major challenge in endeavoring to chronicle and interpret a period of national life in a volume that will be enlightening to the scholar and the general reader alike. In *The Age of Improvement*, a history of England from 1784 to 1867, Asa Briggs has met this challenge most successfully. Recognizing that his chosen period "cuts into what are usually thought of as two contrasting centuries—the age of balance and the age of progress," Briggs explains his choice on the ground that the sense of change felt by all classes of the population gave a unity to these years. According to the author, "it was the 'march' of events which fascinated contemporaries and sometimes horrified them. They were divided about the merits of 'improvement,' but they were at one in admitting that it existed."

The book is truly national in scope. It recounts the events associated with kings and queens, politicians, and military leaders, and it describes the changing lives of the "lower orders"—the farm workers, the mill hands, and the tradesmen. Due attention is paid to the religious, scientific, educational, and labor movements of the period. As one would expect from the author of *Victorian People*, there are sharp characterizations of the leading personalities, from the days of Pitt to those of Disraeli. Besides numerous works of historical scholar-

ship, Briggs has drawn upon much contemporary writing, both serious and popular. He includes many apt quotations in prose and verse.

The Age of Improvement is part of a ten-volume history of England being published under the general editorship of W. N. Medlicott, whose own work will carry on the account from 1867 to the present. The excellence of the book by Briggs gives promise that the series will be an outstanding achievement in historical writing.

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Colorimetric Methods of Analysis. Including photometric methods. vol. 2A. Foster Dee Snell and Cornelia T. Snell. Van Nostrand, Princeton, N.J., 1959. \$15.

This book is a supplement to volume 2 of the third edition of Snell's *Colorimetric Methods of Analysis* and is primarily a compendium of significant developments in inorganic colorimetry in the 1946 to 1956 period. The authors have adopted the economical plan of periodically publishing supplements instead of continually revising and enlarging volume 2. In addition to colorimetric methods, fluorophotometric, nephelometric, turbidimetric, flame photometric, and ultraviolet spectrophotometric methods are included.

The 68 chapter titles in volume 2A are virtually identical to those in volume 2, and the chapters appear in the same sequence. Each chapter consists of (i) a brief introductory paragraph, (ii) procedures for treating a variety of samples, (iii) cogent discussions and detailed procedures for specific methods, and (iv) miscellaneous methods of limited applicability. Throughout the book the procedures are presented lucidly and concisely. Since the reader is frequently referred to volume 2 for the procedure to be followed in completing the analysis of a specific material or for relevant information, volume 2 should be available for maximum utilization of volume 2A.

In my opinion the methods and procedures presented in volume 2A have not been selected or evaluated critically. In many cases the probable utility and reliability of a specific method is indicated by the space allotted to the discussion. However, the extensiveness of treatment is often proportional to the extent of the original investigation. The reader should also be reminded that the inclusion of a method or procedure in volume 2A does not necessarily indicate superiority to methods and procedures found in volume 2.

It is a Herculean task to keep abreast

of the recent developments pertaining to inorganic colorimetric analysis. The Snells are to be commended for documenting the voluminous recent literature and presenting much useful information in a single volume for practicing analysts. The format and typography of volume 2A are excellent. A complete author index and subject index enhance the value of this book.

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Grundriss der Allgemeinen Zoologie.

Alfred Kühn. Thieme, Stuttgart, Germany, 1959. vii + 289 pp. Illus. \$4.25.

Kühn's *Fundamentals of General Zoology* is one of the best monographs in this field. Published for the first time in 1922, it has become one of the standard works at German universities. Precise formulation, vivid presentation, and exemplary illustrations contribute to the success of the book, which gives the student a systematic introduction to the morphology, physiology, and development of mammalian organisms.

This 13th edition confirms and increases the reputation of the work. Through discussion of modern trends and ideas, it stimulates biological thinking on the part of the reader.

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The Stratigraphy of Western Australia.

J. R. H. McWhae, P. E. Playford, A. W. Lindner, B. F. Glenister, and B. E. Balme. Melbourne University Press on behalf of the Geological Society of Australia, 1958 (order from Cambridge University Press, New York). 161 pp. Illus. \$8.50.

This useful and informative compendium is expressive of significant advances in the geology of western Australia. Not only does it document wide, first-hand stratigraphic and paleontologic experience in western Australia on the part of the writers and their colleagues, but it effectively summarizes pertinent information drawn from 188 published papers and 50 unpublished reports, including those of oil companies. References to the literature are well documented.

The reader is impressed with the account given of the impact of Australian exploration for petroleum, which immeasurably stimulated geological progress in a vast and, until quite recently,

little known territory. Stratigraphy is recognized as being technologically basic in this search, and, at the same time, indispensable from the academic standpoint in connection with structural and historical interpretation. Due credit is given the geologists of the "West Australian Petroleum Pty., Ltd." (WAPET) and of the Bureau of Mineral Resources.

Two-thirds of western Australia is shown to be Precambrian. The remaining area falls in seven somewhat arbitrarily defined structural basins wherein the strata range in age from Cambrian to Tertiary. In a counterclockwise direction from northeast to southeast around the continental periphery these basins are as follows: (i) Bonaparte Gulf, (ii) Ord, (iii) Fitzroy, (iv) Canning, (v) Carnarvon, (vi) Perth, and (vii) Eucla. Older Paleozoic strata are best exposed to the north in the Ord, Bonaparte Gulf, and Fitzroy basins. In the Canning basin Jurassic beds predominate, while in the Carnarvon and Perth basins Permian, Jurassic, and Cretaceous sediments are well exposed. Tertiary rocks prevail at the surface in the Eucla basin on the south.

The generalized geologic map, drawn to a scale of 1 inch to 80 miles, shows only undifferentiated rock systems. A few major fault zones and other structural trends are also shown. Certain anticlines and positions of WAPET drill holes are plotted. The fact that very large areas are shown without geologic detail cannot fail to give the impression that much geological exploration remains to be done.

Stratigraphic descriptions of each system and of its formational units are given in order, beginning with the Cambrian. Under each system the units in each of the seven basins are considered separately. Six page-size paleogeographic maps and nine correlation charts are presented in conjunction with the stratigraphic descriptions of each geologic system.

Of special interest are the widespread plateau basalts beneath the Middle Cambrian formations. Only recently have Silurian and Ordovician rocks been recognized in western Australia and described. The Devonian and its faunas, however, have become fairly well known in the Carnarvon and Fitzroy basins, where reef complexes are recognized.

Permian rocks are shown to be thicker and more widespread in western Australia than in any other section of the continent. The Permian was the main coal-forming period and is of special interest historically because of the widespread occurrence of tillites.

Jurassic deposits are mainly continental, though there are thin marine beds. Deposition appears to have been continuous from the Upper Jurassic to the Lower Cretaceous.

Cretaceous rocks are extensive in all the basins except Bonaparte Gulf and Ord. In the Carnarvon basin the Lower Cretaceous Birdrong formation is of great importance as an aquifer and is locally an oil reservoir.

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New Books

Approximate Methods of Higher Analysis. L. V. Kantorovich and V. I. Krylov. Translated by Curtis D. Benster. Interscience, New York, 1958. 696 pp. \$17.

Behavior of Enzyme Systems. An analysis of kinetic and mechanism. John M. Reiner. Burgess, Minneapolis, Minn., 1959. 329 pp.

A Course of Pure Mathematics. G. H. Hardy. Cambridge Univ. Press, New York, ed. 10, 1959. 521 pp. Paper, \$3.75.

Electrons, Elements and Compounds. Eric Hutchinson. Saunders, Philadelphia, 1959. 565 pp.

Elements of Modern Mathematics. Kenneth O. May. Addison-Wesley, Reading, Mass., 1959. 623 pp. \$6.50.

Elements of Wave Mechanics. N. F. Mott. Cambridge Univ. Press, New York, 1958. 156 pp. Paper, \$2.95 (student edition).

How to Help Your Children. The parents' handbook. Advice from William C. Menninger, Ashley Montagu, Paul Witty, and others. Sterling, New York 16, 1959. 640 pp. \$4.95.

Introductory Calculus. Donald E. Richmond. Addison-Wesley, Reading, Mass., 1959. 222 pp. \$5.50.

La Mesure Précise du Temps. En fonction des exigences de la science. B. Decaux. Masson, Paris, 1959. 126 pp. Paper, F. 1300.

Progress in Biochemistry. A report on biochemical problems and on biochemical research since 1949. Felix Haurowitz. Interscience, New York; Karger, Basel, Switzerland, 1959. 369 pp. \$8.50.

Protides of the Biological Fluids. Proceedings of the sixth colloquium, Bruges, Belgium, 1958. H. Peeters, Ed. Elsevier, Amsterdam, Netherlands, 1959 (order from Van Nostrand, Princeton, N.J.). 339 pp. \$8.50.

A Short Introduction to Anatomy. (Isagogae Breves). Jacopo Berengario da Carpi. Translated with an introduction and historical note by L. R. Lind; anatomical notes by Paul G. Roope. Univ. of Chicago Press, Chicago, 1959. 239 pp. \$5.

Silicones. R. N. Meals and F. M. Lewis. Reinhold, New York; Chapman & Hall, London, 1959. 278 pp. \$5.95.

Strategy and Market Structure. Competition, oligopoly, and the theory of games. Martin Shubik. Wiley, New York; Chapman & Hall, London, 1959. 405 pp. \$8.

The Structure and Function of Subcellular Components. Biochemical Soc. Symp. No. 16. E. M. Crook. Cambridge Univ. Press, New York, 1959. 100 pp. \$4.25.