

some brief discussion of crystal structure, behavior of crystalline materials under load, and structure of alloys. Here, also, is considered the interpretation of cooling curves and equilibrium diagrams, and this serves as an introduction to part II.

Part II, "Metallic materials," includes several chapters on the production and properties of iron and steel. In subsequent chapters, other materials considered include copper, aluminum, zinc, lead, tin, magnesium, nickel, and titanium. In each case the author discusses the production of the metal, its properties and uses, the commercial forms available, and alloys of the metal, some of whose properties are indicated in tabular form.

Part III on "The deterioration and protection of metallic materials," contains chapters on corrosion, inorganic and organic protective coatings, and lubricants.

Part IV, consisting of eight chapters on "Nonmetallic materials," deals with wood, cementing materials, concrete, building stone, clay products, glass, refractories, soil, organic plastics, rubber and rubber substitutes, and solid, liquid, and gaseous fuels. For several of these classes of materials there are tables of comparative properties.

The text concludes with an eight-page bibliography.

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**Demographic Analysis.** Selected readings. Joseph J. Spengler and Otis Dudley Duncan, Eds. Free Press, Glencoe, Ill., 1956. 819 pp. Illus. \$9.50.

**Population Theory and Policy.** Selected readings. Joseph J. Spengler and Otis Dudley Duncan, Eds. Free Press, Glencoe, Ill., 1956. 522 pp. Illus. \$7.50.

These companion volumes contain 101 papers, three-fourths of which were published in the decade 1946-55. With a few exceptions, these are drawn from periodicals and symposia. American demographers, sociologists, and economists strongly predominate among the 74 different authors, who include a few collective persons, such as the U.N. Population Division.

The items are grouped in 16 chapters, for each of which the editors supply a brief introduction, designed mainly to "provide a framework" but also (in too few instances) to "cover important points which have not received sufficient attention in these readings." For each chapter there is an extended supplementary bibliography, likewise limited

largely to "fugitive" post-World War II literature. References to sources of wider scope in time, space, and subject matter are given in footnotes to the individual papers.

The chapter headings and individual titles correctly indicate a rich coverage, although several raise hopes that are disappointed. Almost every topic in the field of population is dealt with, or at least touched on, more than once. Effective use of the materials, however, is regrettably limited by the lack of an index.

Most of the selections should be read with the date of writing or publication borne firmly in mind. Such words as *present*, *recent*, and *next few years* refer to very different periods of time. For example, "The economic consequences of the present trend of population" was completed in December 1945 and was first published in 1950 and refers only to the United Kingdom; and "Some recent results in population analysis" was presented at the International Population Congress in July 1937. Unfortunately, neither table of contents identifies the individual papers by date of publication—which ranges from 1927 to 1956. In *Population Theory and Policy*, the source and date of each paper are given in a footnote on its title page. In *Demographic Analysis*, most of the papers were apparently reproduced by photo-offset and therefore display a variety of formats, and sources and dates can be ascertained only by a laborious process of working through the "Acknowledgments."

The two volumes were published primarily for use by university instructors and students in this special field, although the bibliographies were planned to be useful, also, "to the reader who wishes to gain an overview of current research in population." Used under the guidance of a keen, critical, well-informed instructor, especially in conjunction with an up-to-date textbook, these materials can be extremely valuable. Anyone who has a good grasp of recent population developments and some knowledge of the earlier literature will welcome the opportunity to browse through, or consult, this large and representative collection.

The more general reader, whatever his specialty and range of knowledge, must be warned to be on his guard in using these volumes. Obsolescence in this field is rapid. A collection of papers on *Population Problems in the United States and Canada* was written in 1924 and published in 1926. Although this was ably planned and well edited, it is now hopelessly out of date, and a new edition today would be startlingly different. Since 1940, long-established trends and relationships have been gravely altered

and firm convictions upset. These important facts are not clearly brought out in the volumes under review, although two or three papers discuss some of them, and most of the changes receive incidental mention here or there. A few of the earlier selections are largely obsolete, and several others are obsolete in spots, even though they are less than a decade old. Few of these defects are pointed out or corrected, and the editors even refer in the present tense to "Population policy for the United States," which was published in September 1939, before the unexpected upsurge had radically altered the prospect for future growth.

Time and again the informed reader will be surprised at the wide divergence between current facts and the confident assertions of scholars of high repute in some year before, during, or after World War II and can be sure that the same authors could not now express the same views. But the reader who is unfamiliar with the course of population developments is likely to be misled or confused and to get an unbalanced view of the present state of research and expert thought in this important field. *Caveat lector!*

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**The Mechanism of Phase Transformations in Metals.** A symposium organized by the Institute of Metals and held at the Royal Institution, London, 9 Nov. 1955. Institute of Metals monograph and report series No. 18. Institute of Metals, London, 1956. 346 pp. Illus. + plates. \$7.50.

*The Mechanism of Phase Transformations in Metals* contains all of the papers that were included in the symposium of the same title which was held in London, 9 Nov. 1955, as well as the discussions which were presented there. The symposium was divided into two parts. The first part was devoted to transformations which involve nucleation-and-growth processes; the second, to martensitic transformations.

The first paper of the first group, "Nucleation-and-growth processes in metals and alloys," by H. K. Hardy and T. J. Heal, provides an excellent review of the subject as a whole; the next seven papers are concerned with special aspects of it. Of particular interest in this group is the paper "A resistometric study of the kinetics of precipitation in lead-tin alloys," by G. Borelius and L. E. Larsson. These authors show that precipitation in alloys that contain approximately 20 percent tin occurs in two stages. They conclude that the first stage consists of a homogeneous clustering of the tin atoms,

with a mean distance between clusters of 100 Å. The second stage leads to a precipitate visible under the microscope, with a mean separation distance of 1 micron. Pages 277 to 301 of this volume contain discussions of all of the eight papers as well as the authors' written replies.

The second group of papers was introduced by the review paper "Martensitic transformations," by B. A. Bilby and J. W. Christian. In this comprehensive paper the authors review the experimental observations and theoretical interpretations related to the various aspects of these transformations. Included are discussions of the nucleation and the kinetics of transformation and a particularly noteworthy section on theories of the crystallography of martensitic transformations. A final section is devoted to the role played by dislocations in these transformations.

The following nine papers are devoted to a variety of topics, including transformations in cobalt, metastable beta-brass, and a uranium-chromium alloy. A paper by O. Krisement and F. Wever is devoted to the bainite reaction in high-carbon steels and one by M. A. Jaswon, to the nucleation problem in martensite.

The final 40 pages, which contain the discussions of the papers on martensitic transformations, add significantly to the value of this volume; particularly noteworthy are the discussions by R. W. Cahn and F. C. Frank.

The papers and discussions in this book constitute an important addition to the literature on transformations in metals, and the Institute of Metals is to be thanked for arranging the symposium and for publishing the proceedings.

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## Books Reviewed in

### The Scientific Monthly, July

*Franklin and His French Contemporaries*, A. O. Aldridge (New York Univ. Press). Reviewed by I. B. Cohen.

*Discovery of the Elements*, M. E. Weeks (Journal of Chemical Education).

*A History of the Ancient Southwest*, H. S. Gladwin (Bond Wheelwright). Reviewed by J. B. Wheat.

*Foundations of Inductive Logic*, R. Harrod (Harcourt, Brace). Reviewed by M. Black.

*Discoveries and Opinions of Galileo*, Translated by S. Drake (Doubleday).

*Integration*, E. J. McShane (Princeton Univ. Press).

*Theory of Lie Groups*, I. C. Chevalley (Princeton Univ. Press).

*Man Unlimited*, H. Gartmann (Pantheon). Reviewed by R. G. Daggs.

*What Makes a College?*, C. Meigs (Macmillan). Reviewed by L. T. Benezet.

*Learning and Instinct in Animals*, W. H. Thorpe (Harvard Univ. Press). Reviewed by D. R. Meyer.

*Experiments with a Microscope*, N. F. Beeler and F. M. Branley (Crowell). Reviewed by G. Hardin.

*Scientific and Learned Societies of Great Britain* (Allen and Unwin).

*Indian Students on an American Campus*, R. D. Lambert and M. Bressler (Univ. of Minnesota Press). Reviewed by W. W. Lambert.

## New Books

*Breeding and Improvement of Farm Animals*, Victor A. Rice, Frederick N. Andrews, Everett J. Warwick, James E. Legates, McGraw-Hill, New York, ed. 5, 1957. 547 pp. \$8.50.

*The Physiology of the Pituitary Gland of Fishes*, Grace E. Pickford and James W. Atz, New York Zoological Society, New York, 1957. 636 pp. \$6.

*Vegetable Oils in Nutrition*. With special reference to unsaturated fatty acids. Dorothy M. Rathmann, Corn Products Refining Co., New York, 1957. 70 pp.

*Fishes of the Red Sea and Southern Arabia*, vol. I, *Branchiostomida to Polynemida*. Henry W. Fowler. Weizmann Science Press, Jerusalem, 1956. 240 pp.

*Mammals of the Great Lakes Region*. William H. Burt. University of Michigan Press, Ann Arbor, 1957. 246 pp. \$4.75.

*A Key to the Stars*. R. van der Riet Woolsley. Philosophical Library, New York, ed. 3, 1957. 144 pp. \$4.75.

*Primates*. Comparative anatomy and taxonomy. 3. *Pithecoidea*. Platyrrhini (Families Hapalidae and Callimiconidae). A monograph. W. C. Osman Hill. Interscience, New York; Edinburgh University Press, Edinburgh, 1957. 354 pp. \$13.50.

*Electricity and Magnetism*. B. I. Bleaney and B. Bleaney. Clarendon Press, Oxford, 1957 (order from Oxford University Press, New York 11). 690 pp. \$10.10.

*Scientific French*. A concise description of the structural elements of scientific and technical French. William N. Locke. Wiley, New York; Chapman & Hall, London, 1957. 122 pp. \$2.25.

*Marine Algae of the Northeastern Coast of North America*. William Randolph Taylor. University of Michigan Press, Ann Arbor, rev. ed., 1957. 518 pp. \$12.50.

*Scientific German*. A concise description of the structural elements of scientific and technical German. George E. Condoyannis. Wiley, New York; Chapman & Hall, London, 1957. 171 pp. \$2.50.

*Technique of Organic Chemistry*, vol. X, *Fundamentals of Chromatography*. Harold G. Cassidy. Interscience, New York, 1957. 464 pp. \$9.75.

*Digital Computer Programming*. D. D. McCracken. Wiley, New York; Chapman & Hall, London, 1957. 260 pp. \$7.75.

*The Chemistry of Organometallic Compounds*. Eugene G. Rochow, Dallas T. Hurd, Richard N. Lewis. Wiley, New York; Chapman & Hall, London, 1957. 350 pp. \$8.50.

*The Copernican Revolution*. Planetary astronomy in the development of Western thought. Thomas S. Kuhn. Harvard University Press, Cambridge, Mass., 1957. 315 pp. \$5.50.

*The Casting of Steel*. W. C. Newell, Ed. Philosophical Library, New York, 1957. 607 pp. \$27.50.

*Pilot Plants, Models, and Scale-up Methods in Chemical Engineering*. Robert E. Johnstone and Meredith W. Thring. McGraw-Hill, New York, 1957. 318 pp. \$9.50.

*The 1,2,3- and 1,2,4-Triazines, Tetrazines and Pentazines*. John G. Erickson, Paul F. Wiley, V. P. Wystrach. Interscience, New York, 1956. 272 pp. \$9.50.

*Ion Exchangers in Organic and Biochemistry*. Calvin Calmon and T. R. E. Kressman. Interscience, New York, 1957. 773 pp. \$15.

*Numerical Methods*. R. A. Buckingham. Pitman, New York, 1957. 609 pp. \$15.

*Biological Aspects of the Transmission of Disease*. C. Horton-Smith, Ed., Oliver and Boyd (for the Institute of Biology), London, 1957. 192 pp. 21s.

*Light Scattering by Small Particles*. H. C. Van de Hulst. Wiley, New York; Chapman & Hall, London, 1957. 483 pp. \$12.

*Psychology Applied to Life and Work*. Harry W. Hepner. Prentice-Hall, Englewood Cliffs, N.J., ed. 3, 1957. 654 pp. \$6.95.

*The Hypercircle in Mathematical Physics*. A method for the approximate solution of boundary value problems. J. L. Synge. Cambridge University Press, Cambridge, 1957 (order from Cambridge University Press, New York 22). 434 pp. \$13.50.

*Nuclear Weapons and Foreign Policy*. Henry A. Kissinger. Harper (for the Council on Foreign Relations), New York, 1957. 475 pp. \$5.

*The Person in Psychology: Reality or Abstraction*. Paul LaFitte. Philosophical Library, New York, 233 pp. \$6.

*An Introduction to the Philosophy of Education*. D. J. O'Connor. Philosophical Library, New York, 1957. 148 pp. \$3.75.

*Language and Religion*. A semantic preface to a philosophy of religion. Ben F. Kimpel. Philosophical Library, New York, 1957. 153 pp. \$3.75.

*An Essay on Mankind*. Gerhard Hirschfeld. Philosophical Library, New York, 1957. 114 pp. \$3.75.

*Fundamentals of Microbiology*. Martin Frobisher. Saunders, Philadelphia, ed. 6, 1957. 639 pp.

*College Physics*. Robert T. Beyer and A. O. Williams, Jr. Prentice-Hall, Englewood Cliffs, N.J., 1957. 671 pp. \$7.50.

*La Chimie Nucléaire et Ses Applications*. M. Haüssinsky. Masson, Paris, 1957. 651 pp. Paper, F. 5000; cloth, F. 5600.

*Chimie Organique Générale*. Jean Vène. Masson, Paris, 1957. 349 pp. Paper, F. 3500; cloth, F. 4100.