he has called "kiths" (Puritans, Jews, Chinese, etc.) is determined in a major degree by the heredity of the "kith" and by climate, temperature, ozone, electrical disturbances of the atmosphere and other aspects of physical environment.

The reviewer would be the last one to deny that climate, etc., make no difference in the culture of peoples, that a tropical environment will produce a civilization different from that of Iceland; nor would he question the effects of diet and disease on the energy of different peoples and on their cultural development; but he does not think that Dr. Huntington has proved that these differences in culture are primarily due to hereditary differences induced by physical environment as he seems to believe in spite of his care in calling attention to the constant operation of all three factors.

As a sociologist the reviewer feels that Dr. Huntington has at best but a dim appreciation of the way in which one's cultural environment permeates his every thought and action. This is because Dr. Huntington thinks of culture in terms of a culture of the Puritans or Armenians or Chinese or Junkers or some other "kith" and ignores the family, the neighborhood, the gang and other intimate groups as purveyors of culture to the individual and to smaller groups within the "kith." This failure to understand the relation of the individual to his intimate groups is also the basis of Dr. Huntington's underlying belief that social classes, as manifest in present-day societies, really rest on fundamental hereditary differences, that is to say, have a basis in the natural order and hence can not be disturbed without danger of social deterioration.

Since his search is for physical factors lying beyond man's control (heredity, climate, weather cycles, etc.) which determine his conduct it is not strange that he neglects to a large extent those which lie primarily within his control, his family and community life, his social organization, his economic system, his religious beliefs, etc., and hence falls back largely on physical determinism to explain human conduct.

In the judgment of the reviewer this is a useful book and should be widely read, even though the author sets himself the impossible task of analyzing "the role of biological inheritance and physical environment in influencing the course of history" (p. v) rather than studying their influence in particular situations which might be handled more scientifically.

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PHYSICAL GEOLOGY

Principles of Physical Geology. By ARTHUR HOLMES. xii + 532 pp. 95 pls. 262 text figs. New York: Ronald Press, 1945. $4.00.

THIS is an introductory volume designed for the general reader as well as for students and teachers of geology. The book should appeal to large numbers in each of these groups because it is unusually well written in a clear and forceful style. In organizing his material Dr. Holmes has departed from the pattern ordinarily followed in introductory texts. Recognizing that the various aspects of geology can not be understood or fully appreciated except in relation to the whole and recognizing too that many of his readers may have no prior acquaintance with the subject the author opens his text with a "Preliminary Survey." This part, the first of three, occupies slightly more than one fifth of the volume and is in itself a very readable introduction to geology. Part two is devoted to a more detailed consideration of external processes and their effects, part three to a similar treatment of internal processes and effects. Duplication in the later sections of the book of material given in the preliminary survey is largely avoided by careful writing and the arrangement should be successful in developing and maintaining the reader's interest.

The results of many recent researches, some published as late as 1943, are included. The author's attempts to discriminate between fact and theory are successful in most instances, and several of geology's unsolved problems are deliberately left in an unsettled state.

Innovations are not limited to the broad outline of the subject. There are rather detailed discussions of topics such as the causes of vulcanism, the transmission of earthquake waves and continental drift that usually receive perfunctory treatment in introductory texts. The prominence given to such discussions may explain, in part, the absence of certain types of information that ordinarily are included in beginning texts. Thus, though both coal and oil are given fairly comprehensive treatment, ore deposits are almost completely ignored. The relation of geology to astronomy is mentioned casually, but the customary discussion of earth relations and the origin of the earth are passed over.

The author has admittedly made a special effort to illustrate the text as fully and as effectively as possible. In preparing and assembling the text figures this goal has been achieved. About 200 of the 262 figures are sketches, diagrams and maps that add a great deal to the work, some of them bringing out broad relations in a very striking manner. There are

many excellent structure sections and small-scale tectonic maps. There are, however, no very satisfactory geologic maps, and only in one instance is a structure section accurately tied to a map. At no place in the text did the reviewer find any contour maps or any discussion of contours. Unfortunately many of the photographs are very poorly reproduced. This is due largely, no doubt, to the use of inferior paper in wartime. The text appears to be relatively free of typographic and other minor errors and the index is reasonably complete.

The book has a distinctly cosmopolitan flavor, and examples to illustrate the subjects discussed are chosen from many little known parts of the world. Where not used as a text it should prove invaluable as collateral reading. It is a book, furthermore, that an interested layman can read with great profit.

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GENERAL CHEMISTRY

General Chemistry. By JOHN A. TIMM. Illustrated. xii + 692 pp. New York and London: McGraw-Hill Book Company, Inc. 1944. $3.75.

THIS is one of few really excellent general chemistry text-books; a clear, understandable presentation of orthodox, descriptive general chemistry. It is for the beginner, not the advanced freshman.

Fact and theory are skilfully blended by alternating the descriptive and theoretical material throughout the text; the following content of chapters illustrates this: (1–6) introduction to scientific methods and literature; elements and compounds; a brief statement of atomic theory and molecular weights; balancing equations; (7–8) preparation and reactions of oxygen; fire; (9) valence; (10) hydrogen; (11–12) gas laws and kinetic theory; (13) reactions of oxides; (14–16) liquids, liquefaction and solids; (17–18) chlorine and hydrochloric acid; (19–20) molarity, molality; freezing point depression and other laws of solutions; (21–22) molecular and atomic weights and problems based thereon; (23) halogens; (24) periodic table; (25–29) atomic structure, radioactivity; (30–33) ionization, reaction velocity, protolysis; (34) sulfur and sulfides; (35) precipitation; (36–39) oxides of sulfur, the atmosphere, nitrogen chemistry; (40) oxidation and reduction, electron balancing, electromotive force series, electrode potentials; (41–43) phosphorus family, carbon, boron and silicon; (44) colloidal state; (45–48) electrometallurgy, metallurgy, alloys, alkali and alkaline earth metals; (49) complex salts as illustrated by Cu, Hg, Ag and Au; (50) amphoteric properties as illustrated by Zn, Al, Sn and Pb; (51) oxidation and reduction as illustrated by Fe, Cr and Mn; (52–55) organic chemistry of aliphatic hydrocarbons and their derivatives, aromatics and the chemistry of life, with approximately one page each devoted to coal tars, dyes, plastics, medicines, hormones, photosynthesis, carbohydrates, rayon, fats, proteins, nylon, etc.

Especially commendable are a separate chapter on liquefaction, critical temperature, etc.; a simple arrangement for solving weight and volume problems based on equations; clear-cut emphasis of the importance of Cannizzaro's contribution in interpreting Avogadro's paper; an excellent treatment of light emission and energy levels; probably the most understandable elementary treatment of the Lowry-Bronsted system of acids and bases to be found in any general chemistry text; unusually fine chapters on precipitation, the significance of the electromotive force in oxidation and reduction, and ferrous and non-ferrous alloys. Modern industrial processes are well represented. There are a number of fine photographs, particularly of atomic models.

Sins of omission and commission fortunately are few. Vitamins do not appear in the index, although several pages of vitamin chemistry are given; the old-fashioned fire extinguisher is represented as extinguishing with both water and carbon dioxide, although in reality the latter serves only to eject the former; detergents and a few other topics are missing.

Style is conversational. Such statements as the one on page 42, "Chemistry . . . is far more than a museum of forms, but rather an arena in which interesting and even exciting changes take place," does much to humanize the text and inspire the student.

The author is obviously a teacher of much experience, unusually sympathetic and skilful in training the beginner to learn and to grow in wisdom. He has succeeded in translating these good qualities into his text.

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LOWY, ALEXANDER, BENJAMIN HARROW and PERCY M. APFELBAUM. *An Introduction to Organic Chemistry.* Sixth edition, revised. Illustrated. Pp. xiv + 448. John Wiley and Sons, Inc. $3.50. 1945.

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