

dozen scattered lines (sometimes only clauses) describing the Pech de l'Azé specimen. This does not mean that the new information is scanty, for later on 53 measurements and 26 indices are listed for the skull, and these are discussed at length in 26 pages of text!

Really, this is a very welcome addition to our knowledge, and my complaint is not about the amount of information provided but about the way in which it is presented. The reader will find it very difficult to piece together the descriptions of the two infants. Some of the space might better have been used for the illustrations. The eight plates are overly crowded, and this makes the individual pictures too small. Besides, the legends for the plates are too brief.

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The Testing of Negro Intelligence. Audrey M. Shuey. J. P. Bell, Lynchburg, Virginia, 1958. 351 pp. \$4.

Representing the most exhaustive literature survey of the intelligence-test performance of American Negroes yet attempted, this book covers over 300 references that appeared between 1913 and 1957. Of these, approximately 170 are published reports of original investigations, 71 are unpublished master's or doctoral dissertations, and the remainder include reviews, critiques, and other interpretative discussions. Except for one Canadian and one British West Indies study, all data were obtained on Negroes living in the United States. Research results are presented in the form of summary tables and text discussion, one chapter being devoted to each of the following: young children (primarily in nursery schools and kindergartens), school children, high-school and college students, the armed forces, deviates (including gifted and retarded), delinquents and criminals, racial hybrids, and selective migration. All varieties of intelligence tests are covered, including group, individual, verbal, nonverbal, performance, and "culture-fair." A few studies utilizing multiple-factor batteries, such as the tests of Primary Mental Abilities, and special aptitude tests, such as the Minnesota Paper Form Board, are likewise reported.

Despite the meticulous care with which minutiae were ferreted out, the treatment of certain studies may be such as to create misleading impressions. For example, in discussing D'Angelo's study (pp. 12, 16, 22), in which no significant Negro-white difference in Draw-a-Man IQ was found, Shuey concludes that the results are uninterpretable because the subjects were selected by nursery direc-

tors and did not comprise all cases meeting the age and language specifications. In actual fact, *all* children who met these two requirements were tested, the nursery directors merely providing the names of those who fulfilled these specifications. It is also difficult to understand why reference is made to D'Angelo's unpublished dissertation but not to the later article, by Anastasi and D'Angelo in the *Journal of Genetic Psychology* (1952), which covered more cases and provided more refined statistical analyses. Similarly, in discussing a study by Boger (pp. 68, 77, 110, 122-3), Shuey fails to mention that intelligence-test scores of Negro children improved more than those of whites as a result of perceptual training. Only the performance of both groups prior to training is reported.

On the whole, Shuey's survey serves only to document the old familiar finding that whites usually excel Negroes in mean intelligence-test scores, although overlapping is extensive and all levels of test performance can be found in both groups. With these purely descriptive facts few psychologists have ever taken issue. The major differences have centered around interpretation. Although Shuey concludes that the data "point to the presence of some native differences between Negroes and whites as determined by intelligence tests" (p. 318), few of the studies shed even a glimmer of light on causal factors, and their results are at least equally consistent with an environmental interpretation of group differences.

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Agricola on Metals. The age of technology waited for better and more abundant metals; it arrived so much sooner because Agricola published *De Re Metallica*, a mining and metallurgical classic. Bern Dibner. Burndy Library, Norwalk, Conn., 1958, 128 pp.

Bern Dibner celebrates the third International Geophysical Year by reducing to a 100-page summary the 600 pages of the Hoovers' translation of *De Re Metallica*. He has presented a straightforward statement of Agricola's observations and theories in their historical context, the Hoover footnotes being, in effect, incorporated in the text. His introductory chapters provide a neat defense of Agricola and his works.

There is much to be said for digesting a classic such as *Agricola* in order to make available a complete presentation of the text for those who otherwise find the Hoover volume inaccessible or too expensive, or who seek information about

the background of the well-known woodcuts; but it is hoped that *Agricola on Metals* will not entirely replace *De Re Metallica* on the reference shelves, since it would be a pity if the painstaking scholarship of the Hoovers were forgotten.

The plates reproduced are well chosen and representative, though they would have been improved if Dibner's useful explanatory notes had been added to the original captions.

I would question Dibner's explanatory subtitle and ask, How much sooner did the age of technology arrive because Agricola published *De Re Metallica*? Before the Hoovers revived the book in 1912, there had apparently been no edition of *Agricola* since 1687. The German translation prior to that of 1928 was, according to Hoover, "a wretched work by one who knew nothing of the science" and who was clearly unqualified to unravel the technical mysteries of the original text. *De Re Metallica* could hardly have been a vade mecum for the practical man, even in Germany. If it had been popular, one would expect to find a record of frequent republication and revision, just as Andrew Ure's *Dictionary of Arts, Manufactures and Mines* was kept more or less up to date in the early days of the 19th century. No evidence is presented by Dibner that this happened. One suspects that while *De Re Metallica* now provides us with a useful account of the state of the art at the end of the 16th century, the work had little or nothing to do with technological progress of the period. Though it may have helped to spread knowledge of the operating techniques described, the more aggressive miners and smelters probably went on with their job of improvising, modifying, and sometimes innovating, little affected by Agricola's report. There is room for more research in the history of 17th- and 18th-century mining and mineral processing before it can be confidently assumed that Agricola did, in fact, accelerate technological advance.

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Applied Differential Equations. Murray R. Spiegel. Prentice-Hall, Englewood Cliffs, N.J., 1958. xv + 381 pp. Illus. \$6.75.

This book would serve, and serve well, as a text for a beginning course in elementary ordinary differential equations. The usual special types of first and higher ordered equations are treated. Single and simultaneous equations with constant coefficients come next; then series solutions and a brief chapter on

numerical methods. Two final chapters relate to the origin of partial differential equations and the solution of boundary-value problems by Fourier series.

The logical and pedagogical presentation is handled with skill. Basic problems of existence and uniqueness are pointed out and disposed of by quoting theorems, with appropriate reference to proofs elsewhere. In the treatment of applications, derivations of a number of equations are given in detail, based on physical principles.

The collection of up-to-date practical problems is excellent. Numerous exercises with answers are given in each chapter; these fall into three categories: standard drill problems; more interesting, involved problems; and problems intended to broaden the scope of the text.

I would like to have seen a chapter stressing geometrical aspects. The sketching of integral curves in the phase plane by the method of isoclines would have led at once to a discussion of nodes, centers, foci, and so on. Questions of stability, existence of limit cycles, and so forth, would come next, all treated qualitatively and to some extent intuitively.

The questionable and long-standing practice of presenting something on partial differential equations in a text such as this, which, in my opinion, really should be devoted to ordinary differential equations, is followed here. Space which could have been devoted to such topics as Hurwitz stability criterion, asymptotic series solutions, further details on numerical methods, and geometry is lost.

A little amplifying by the instructor along the lines indicated should make this book, however, a most satisfactory text.

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Human Infertility. C. Lee Buxton and Anna L. Southern. With a chapter on endometrial diagnosis by Earl T. Engle. Harper, New York, 1958. x + 229 pp. Illus. \$7.50.

This little volume was written by authors well known for their contributions in the field of involuntary infertility—medical doctors who were trained where exposure to basic research in the physiology of human reproduction was incapable.

The diagnosis and treatment of the infertile couple is complicated, first by the fact that sterility concerns two individuals, not one. In this book the major attention is given to the female partner; the importance of examination of the

male is emphasized, but treatment of the infertile husband the authors leave to the urologist.

Many variables are involved in a diagnosis of sterility; this renders research only partially susceptible to rational statistical analysis. Enough statistics are given in this book to enable the physician roughly to estimate the effect of his treatment; the difficulty of evaluating different types of treatment is increased where the follow-up reveals the fact that, whether the patient is treated or not, the cumulative percentage of "cures" gradually increases, either spontaneously or as a result of treatment, at least for 10 or 12 years.

Much is made of the psychological factor. The beneficial effect merely of the quieting assurance of the wise physician has been noted by many. The rather surprising finding that the greatest percentage of pregnancies in the authors' study population of some 2000 patients occurred during the first months of investigation implies that factors other than treatment are at work. The conservatism implicit in this statement is characteristic of the book. While cautioning against undue enthusiasm with respect to corrective measures employed, the authors proceed to evaluate the therapeutic measures which, research has shown, bring about a certain percentage of cures. For the general reader of *Science* the book gives a brief and authoritative clinical abstract of the sterility problem.

For the general reader, too, the authors present as background the basic physiological processes in human reproduction. There is a chapter on the methods of diagnosing whether or not ovulation takes place—methods that depend on basal body temperature, determination of urinary pregnanediol, and endometrial biopsy. To help evaluate the last method, there is included a chapter on "Endometrial interpretation," by the late Earl T. Engle, to whom the book is dedicated as the authors' "guide, friend and preceptor."

For the physician, the current methods of diagnosing causes are presented and evaluated in the light of the authors' not inconsiderable experience over a decade.

As the results of tests for ovulation give information on the endocrine status of the sterile woman, particularly with reference to the pituitary gland, the ovaries, the adrenal cortex, and the thyroid, the activity of these glands is carefully evaluated. The clinical importance of the *cervix uteri* for the entrance of spermatozoa and the patency of the fallopian tube, through which sperms must ascend to the ampulla and through which the egg descends to the uterus, are discussed in detail.

The role of prenatal death of the ovum due to genetic causes is not mentioned, probably because there is nothing one can do about it, and stimulation of a laggard ovary by irradiation is not endorsed because "geneticists advise against this type of therapy."

In the chapter on the sociological implications of efforts to correct sterility, the authors point out that such efforts concern the individual's right to have children, if it is at all possible, and that medical help in this direction will have no great impact on the frightening demographic problem of overpopulation that faces the world.

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Principles of Physical Chemistry. An introduction to their use in the biological sciences. Wallace S. Brey, Jr. Appleton-Century-Crofts, New York, 1958. vii + 433 pp. Illus. \$7.

Intended as a textbook to be used in a one-semester course for premedical students, this book is strengthened in that purpose by limited examples in which physicochemical principles are applied to biology. Consistent with the objective is the serious attempt to employ only the simplest mathematical operations. In a few cases, this causes fundamentally easy derivations to appear complex, but usually the author has achieved his desired effect of inspiring confidence in the validity or reasonableness of equations without the tedium or complication of detailed development.

The book is about half as long as most of today's textbooks in physical chemistry. This has required that there be deletions or extreme brevity in some fields. There is nothing about the phase rule, solid solutions, or eutectics and very little about the solid phase. Except for solutions of electrolytes, the treatment of homogeneous equilibrium is fragmentary; the kinetics of heterogeneous equilibrium are omitted altogether. Even more surprising, in a book for biologists, is the confinement of photochemical reactions within one short sentence. The discussion of photosynthesis is separate and almost as brief. Nevertheless, these are prices that must be paid to reach a group who never try very hard to learn physical science. Despite the exceptions mentioned, nearly all customary topics have been included and accorded adequate treatment.

The author appears not to acknowledge the jurisdiction of the General Conference on Weights and Measures or the national standardizing laboratories to determine the temperature scale. He gives