fined gold of royalty. But a man so generally popular as Dr. Gill gets all the praise that is good for him, anyway; so it may be observed that there are some things in which this book may yet be improved. The illustrations are better than none, but not much; and the directions for using flash-test apparatus are not quite as complete as a beginner ought to have. It should always be remembered that a metallurgical or cement chemist, for example, skilled in using ordinary apparatus, may know nothing at all about a flash-test; and it is in little details that the manipulation of the expert excels and has its greatest value. In most cases the directions given in this book are full and clear.

The inclusion of refractive indices would probably be generally approved, since the refractometer has come into general use. In general, the book would be better if there were more of it; and while its value is partly due to leaving out information not useful to the analyst, some further remarks as to the nature of the various oils, as well as to changes produced by reagents, from one so experienced as the author, would be of much use to the student.

Somewhat more than half of the book is given to physical and chemical tests; then there are descriptions, including preparation, uses, tests and constants for the chief petroleum products, for seventeen vegetable and nine animal oils, and certain waste fats and greases. There is an appendix of tables and other information. The book has been largely rewritten and has a good index; it appears to be free from typographical errors.

A. H. SABIN

SCIENTIFIC JOURNALS AND ARTICLES

The American Naturalist for May presents two papers, and notes: "The Categories of Variation," by S. J. Holmes, in which the author discusses the differences between fluctuating variations and mutations; going to some length in the analysis of elementary species, retrograde varieties and fluctuations, as distinguished by De Vries; with the general conclusion that the evidences, so far presented, do not sufficiently distinguish between unstable mutations and fluctuations. "The General Entomological Ecology of the Indian Corn Plant," by S. A. Forbes. "Notes on Some Recent Studies on Growth," by Raymond Pearl; "Cuénot on the Honey-bee," by T. H. Morgan; "Poulton and Plate on Evolution," by V. L. K[ellogg].

The American Naturalist for June presents four papers, and notes: "Heredity and Variation in the Simplest Organisms," by H. S. Jennings. "The Color Sense of the Honeybee: is Conspicuousness an Advantage to Flowers"? by John H. Lovell; with the adduced evidence that the query is to be answered affirmatively. "Variation in the Number of Seeds per Pod in the Broom, *Cytisus scoparius*," by J. Arthur Harris. His conclusion is that for this species variability due to habitat is not more noticeable where it is introduced than where it is native. "Present Problems in Plant Ecology." These are presented in two articles read before the Botanical Society of America at the Baltimore meeting, 1908: (1) "The Trend of Ecology," by Henry C. Cowles, and (2) "Present Problems of Physiological Plant Ecology," by Burton E. Livingston. Under "Notes and Literature" V. L. K. makes note, under the heading of Evolution, on the retirement of Ernst Haeckel from his chair in the University of Jena, with emphasis upon the establishment and care of his new Phyletic Museum. He also notes the recent German discussion of mechanical versus vital basis for explaining phenomena of nature. George H. Shull notes the literal translation into French of Hugo De Vries's "Species and Varieties: their Origin by Mutation." J. F. McClendon presents a note on "The Totipotence of the First Two Blastomeres of the Frog's Egg."

SPECIAL ARTICLES

ON THE CONNECTION BETWEEN STIMULATION AND CHANGES IN THE PERMEABILITY OF THE PLASMA MEMBRANES OF THE IRRITABLE ELEMENTS

EVIDENCE of a varied and highly conclusive kind now exists that the phenomena of stimu-