

might be materialized by means of a slightly different sort of symbolism.

The book does not attempt to give a completely exhaustive account of the subject of functions of curves. It omits notable researches by Hadamard, Levy, Fréchet, and confines itself rather closely to the personal researches of the author, who is of course the inventor of their analysis and the principal source of its development. But if it lacks consideration of some of the possible branches, it makes up for the omission by possessing the artistic quality which is characteristic of unified original work. Moreover, the reader will continually find references to theoretical physics and other branches of mathematics, which, besides illuminating profoundly the matter in hand, testify to a not common comprehensiveness of thought on the part of the author.

G. C. EVANS

The Essence of Astronomy. By EDWARD W. PRICE. G. P. Putnam's Sons. 1914. Pp. xiv + 207. Illustrated.

The Century Dictionary defines *essence* as being the inward nature, true substance, or constitution of anything. From the title of Mr. Price's book, therefore, one would expect to find something of the inward nature of the solar system, or true substance of the stellar universe, some hint as to the underlying causes and formations of the heavens. But one who opens the book with such expectations will be most grievously disappointed, for the work is but a compilation of the simplest statistical facts; facts which have been compiled and written about over and over again. Further, the book contains some strange and new conceptions: to classify the milky way as a freak, and double and variable stars as oddities, is certainly new, and such classification, itself, might even be called odd and freakish.

The book is well made mechanically, well printed, with clear and beautiful illustrations, but otherwise it is one of dozens of similar crude compilations.

CHAS. LANE POOR

An Introduction to General Psychology. By ROBERT MORRIS OGDEN. Longmans, Green and Co., 1914. Pp. xviii + 270.

Professor Ogden's text-book is the outcome of a definite abandonment of the purely sensationalistic conception of psychology. Dr. Ogden defines his science as "the study of mental happenings." He treats not merely of "mental contents" and their physical conditions, but also of the "mental activities" which constitute what he rather vaguely calls the "purposive aspect" of mental happenings. As elements of mental contents Dr. Ogden enumerates sensations, images, thoughts—which he classifies as notions or relations—and affections. Attention, memory, perception, ideation, emotion and reaction are brought together under the heading "The Synthetic Facts of Mind." The concluding section of the book contains chapters on "mind and body," "personality" and "character." In the last of these chapters Mr. Ogden suggests the relation of psychology to logic, to esthetics, to ethics and to religion. Under the second heading he discusses mainly sleep, dreams, hypnosis, multiple personality and insanity. Not all teachers—it may be noted—will approve the inclusion of the topics just named in a book of fewer than 300 pages; and many will regret the brevity with which all topics are treated and the omission of "all diagrams, references to literature and practical demonstrations."

The writer of this notice is glad to find Professor Ogden in substantial agreement with Herbert Spencer, William James, Binet, Meinong, the Würzburg school, and with several recent American writers in his view that thought-elements as well as sensational and affective elements, should be explicitly acknowledged in a text-book of psychology; and she welcomes also his repeated descriptions of consciousness—the relating consciousness (pp. 14 ff.), affection (pp. 85 ff.) and will (pp. 171 f.)—in terms of the self who is conscious. Occasional artificial constructions and a certain vagueness in the use of the term "mental activity" might indeed have been avoided, had this natural and inevitable point of view been more steadily held.

The book, and in particular chapters I., II., VIII., XII. and XIII., may be commended to those who are interested in the development of psychological theory. Almost every page is marked by the touch of the clear thinker, the first-hand observer, and the careful experimenter.

MARY WHITON CALKINS

WELLESLEY COLLEGE

PETROLEUM DEVELOPMENTS IN FOREIGN COUNTRIES

THE worldwide activity in the search for petroleum deposits of commercial importance which characterized the year 1913 continued unabated during the early part of 1914. During the later part of the year development in proved areas was greatly curtailed and exploration work postponed on account of the European war and the enormous overproduction of oil in the United States and Mexico.

John D. Northrop, of the United States Geological Survey, is authority for the following statement discussing the petroleum developments in foreign countries in 1914, which has just been made public by the survey.

NORTH AMERICA

Canada.—The productive fields of Ontario and New Brunswick continued to furnish the declining petroleum output of the Dominion. Though considerable effort was made to extend the boundaries of the productive areas, new production sufficient to offset the decline in older wells was obtained only in the Belle River field, Ontario. Good gas wells continue to be found in the Tilbury district, Ontario, but attempts to retard the declining oil output were unsuccessful.

Wildcat activity, with apparently undue interest centered in the vicinity of Calgary, Alberta, was the feature of the year in the western provinces. The discovery of small quantities of high-grade petroleum at depths of 1,562 and 2,700 feet in the Dingman well, southwest of Calgary, created a hysterical rush for mining locations in the area. Drilling was commenced at a number of points southwest and northwest of Calgary and, though proving

the presence of small quantities of heavy oil in certain areas of favorable structure, failed to demonstrate the true extent or value of the field before the end of the year. In northern Alberta the lack of transportation facilities retarded the development of the promising oil strikes of the Athabasca Oils, Ltd., near Fort McKay.

In British Columbia encouraging oil indications in the valley of Flathead River and in the vicinity of Revelstoke, Kootenai County, and at Pitt Meadows, New Westminster County, near Vancouver, resulted in more or less prospect drilling.

In Saskatchewan interest was centered at Moose Jaw, where good oil showings were found, but included additional projects at Regina, Battleford, and Saskatoon and in Souris Valley, where oil seepages occur near Roche Percee.

Mexico.—Early in 1914 field operations in the oil districts of Mexico were very active—more so in the northern fields at Panuco and Topila than in the southern fields where the work was interrupted by the belligerent political factions. The bringing in of an enormous gusher by the Corona Oil Co. (Dutch-Shell) at Panuco on January 11 became the signal for a pronounced increase of work in the northern fields, where, as in the southern fields, the lack of adequate storage facilities tended to hamper developments greatly. Work in all districts was abruptly curtailed and in many places terminated by the exodus of operators and workmen beginning in April. Although the subsequent activities of the warring factions resulted in no great damage to the petroleum interests, the resulting conditions of unstable government prevented the resumption of more than nominal activity in the oil fields up to the end of the year. Late in the year the resumption of local oil consumption by the Mexican railroads and mining industries served to revive activity to some extent at Panuco and Topila.

Of more than passing interest was the fire which raged about the famous Potrero del Llano No. 4 well of the Mexican Eagle Oil Co., during the later part of the year. Seepages of