Invertase

A Monograph. (Scientific Report Series, No. 4.) By Prof. Carl Neuberg and Dr. Irene S. Roberts. Pp. ix + 62. (New York, 5 : Sugar Research Foundation, Inc., 52 Wall Street, 1946.)

THIS useful monograph on invertase by Prof. C. Neuberg and his daughter, Dr. I. S. Roberts, is a Scientific Report of the Sugar Research Foundation, Inc., of New York. As might be expected from so eminent an investigator as Prof. Neuberg, the monograph gives a succinct and authoritative account of the properties, sources, and modes of preparation of one of the earliest known enzymes. The methods of purification of invertase by adsorption techniques, first used with success by Willstätter, and by precipitation procedures are described in some detail.

Invertase was discovered more than a hundred years ago, and while its study has played an important part in the development of our knowledge of enzymology, its industrial importance, especially in the sugar industry, has not been perhaps so well recognized. Invertase was employed extensively in the preparation of molasses for the supply of sugars to alcohol plants during the times of great urgency when alcohol was required for making synthetic rubber. It plays an important part in the manufacture of confectionery. Biochemists will do well to read this monograph, which summarizes recent literature (405 references) on the subject.

It is unfortunate that the monograph is not entirely free from error. Thus the statement that Quastel and Yates have reported on the inactivating non-reversible influence of both basic and acid dyes is incorrect. These authors (*Enzymologia*, 1, 60 ; 1936), on the contrary, have shown that both basic and acid dyes combine reversibly with invertase according to mass action laws. In fact, the equilibrium between invertase and acid and basic dyes provides an excellent example of the reversible combination between the ions of an enzyme and those of organic inhibitors such as the dyes. The equilibrium constants of the enzyme–dye combinations were determined, and these results, together with other facts, led Quastel and Yates to the suggestion that invertase acts as a *zwitterion*, the oppositely charged groups of which may be bridged by sucrose when this is present as substrate.

The Soochow Astronomical Chart

By W. Carl Rufus and Hsing Chih Tien. Pp. v + 24 + 2 plates. (Ann Arbor, Mich. : University of Michigan Press ; London : Oxford University Press, 1945.) 14s. net.

THIS chart and the text appearing with it constitute instructions for an Emperor and were prepared in A.D. 1193 and engraved in stone in 1247. More than thirty years before they were engraved the capital had been moved from Peking to Kai-Feng Fu, in Honan, but in 1267 Peking was restored as the capital. We are informed in the text that before the Great Absolute had unfolded itself the three primal essences, heaven, earth, and man, were involved within it. The Great Absolute evolves into the sun and the moon, divides into the five planets, arranges in order as the twenty-eight mansions, and meets to form the directors (the Plough) and the circumpolar stars. In the description of the sky the equator is called the Red Road, the ecliptic the Yellow Road, the moon's path the White Road, and the Milky Way the River of Heaven. The planets are the essences of the five elements—wood, fire, earth, metal and water—these elements constituting the planets Jupiter, Mars, Saturn, Venus, and Mercury, respectively. A description of the star map, the purpose of which is astrological rather than astronomical, is given on pp. 8–10. The asterisms follow the traditional oriental pattern—terrestrial beings personified, especially the Emperor, his court, and numerous officials, which differ from the predominant mythical heroes of the West, including supernatural or superhuman personages.

The authors must have spent much time and energy on the production of this work, which will interest all who study the history of ancient constellations.

The Mentally Ill in America

A History of their Care and Treatment from Colonial Times. By Albert Deutsch. Pp. xvii + 530 + 8 plates. (New York : Columbia University Press ; London : Oxford University Press, 1946.) 26s. 6d. net.

"THE Mentally Ill in America" outlines the history from the earliest times of the attitude towards the insane of their fellow men, particularly in the United States. The author has spent a great deal of time on literary research, and the result has well repaid the time spent. Benjamin Rush, Dorotha Dix and Clifford Beers, names very familiar to English-speaking psychiatrists and others concerned in the care and treatment of the mentally sick, come in for prominent mention, as well they deserve. The detail given is extraordinary and makes a fascinating study ; but the author presents mental hygiene with a stupendous task when he posits the goal toward which mental hygiene must strive as "a 'world of peace and freedom, from which the twin specters of war and insecurity will be banished, a world of equal opportunity, where people will be freed from stunting inhibitions and guilt feelings arising from outworn prejudices and taboos. . . ." What an objective, and how hopeless it seems in the present state of society the world over ! G. W. T. H. FLEMING

A New Arithmetic

By A. W. Siddons, K. S. Snell and E. H. Lockwood. Part 1. Pp. vii + 184. 2s. 9d. Part 2, including Numerical Trigonometry. Pp. viii + 210. 3s. Part 3, including Numerical Trigonometry. Pp. vii + 151. 2s. 9d. Notes and Answers for A New Arithmetic. Pp. ii + 90. 5s. (Cambridge : At the University Press, 1947.)

THIS new arithmetic consists of three parts, published separately. Part 1 revises the elementary processes of arithmetic, including mensuration, and includes a chapter on statistical graphs. Part 2 begins with the use of four-figure tables of squares, square roots, reciprocals and logarithms. Through the elements of mensuration it leads to numerical trigonometry. Part 3 is devoted to further work on trigonometry, mensuration, more difficult percentages, compound interest, civic arithmetic, stocks and shares, followed by an introduction to statistics for post-school certificate reading.

Carefully graded sets of examples are provided, together with many revision papers. A commendable feature is the emphasis laid upon the proper use of English in writing out the solutions.

Teachers' editions are published separately for Parts 1 and 2 giving notes and answers ; the latter are not provided in Parts 1 and 2, but are given in Part 3.