

*New Studies of a Great Inheritance: Being Lectures on the Modern Worth of Some Ancient Writers.* By Prof. R. S. Conway. Pp. viii+241. (London: John Murray, 1921.) 7s. 6d. net.

PROF. CONWAY'S "Great Inheritance" is classical—in this instance Latin—literature, and the authors with whom he is chiefly concerned are Cicero, Vergil, Horace, and Livy. It is not necessary to dwell upon the numerous instances in which Prof. Conway's originality and insight are brought to bear upon the interpretation of doubtful or obscure passages. It is enough to say that, even in dealing with comparatively technical points such as the authenticity of the minor Vergilian poems, he sees and, what is more, can convey to his readers their broader significance as elements in the history of culture, and, in particular, their bearing upon the problems of modern life. Most readers, we expect, will turn again and again to the lecture on "Man and Nature in the Augustan Poets," which, with its illuminating parallel between the circumstances which led Vergil and Wordsworth respectively to seek consolation and inspiration in Nature, is, in a brief compass, one of the best studies extant of Vergil's point of view.

In the final essay, on "Freedom and Culture," which, in a sense, sums up Prof. Conway's whole position, he indicates how the classical conception of freedom has moulded the social and political life of this country through our traditional system of education. To point out that this system of education is confined to one class which is ceasing, if it has not already ceased, to be predominant, raises the question of the comparative merits of political ideals and tendencies, which it would be out of place to discuss here.

*Some Investigations in the Theory of Map Projections.* By A. E. Young. (R.G.S. Technical Series, No. 1.) Pp. viii+76. (London: Royal Geographical Society, 1920.) 6s. net.

THE first of the new series of technical publications issued by the Royal Geographical Society is an exhaustive investigation of map projections based upon Airy's idea of making the mean square scale error a minimum. This principle was applied by Airy to zenithal projections as affording a reasonable compromise between the stereographic projection and the projection of equal area. Mr. Young shows how the arbitrary constants in Airy's solution should really be determined, and then proceeds to compare the minimum error projection with others belonging to the zenithal class. The conclusion reached is incorporated in a recommendation to cartographers to use the equidistant projection with total area true as being the best zenithal projection for all cases, except when some specially desired feature necessitates a different projection.

Similar methods are applied to conical projections. It is shown that for a zone the minimum error conical projection is nearly identical with

Murdoch's third projection—a remarkably accurate and simple process invented so far back as 1758, and in the opinion of the author the very best of all conical projections. Later chapters deal with the spheroidal shape of the earth, polyconic projections, finite errors, and the convergency of meridians.

The paper is mathematical throughout. The algebra is laborious, but the results are of great interest. Mr. Young's paper is a valuable contribution to the subject he deals with, and sets a high standard for the series it initiates.

*Elementary Vector Analysis: With Application to Geometry and Physics.* By Dr. C. E. Weatherburn. (Bell's Mathematical Series.) Pp. xxvii+184. (London: G. Bell and Sons, Ltd., 1921.) 12s. net.

AN excellent introduction to the subject of vector analysis is provided by this book. It is admirably clear, and a natural temptation to develop so fertile a theory in excessive detail and to multiply its applications has been successfully resisted. It is a more elementary work than Dr. Silberstein's "Vectorial Mechanics," and still more so than Joly's "Manual of Quaternions." All the ideas which are based on the differential operator of Hamilton are excluded, and the applications are limited to geometry and to the dynamics and statics of rigid bodies. Enough remains to place in a clear light the general principles of the subject, and its value is less apt to be obscured by the complexity of the material. It is understood, however, that the author contemplates a second volume, in which the higher developments will doubtless be treated. Without such a sequel the reader will be left unprovided with some of the most characteristic and important notions of the calculus.

The diversity of notation has always been, and is likely to remain, a hindrance to progress. The existence of Hamilton's system seems to have had a centrifugal result, and Tait's controversial methods probably had an effect precisely the opposite of that intended. The present author adopts the notation of Gibbs. At the moment the wider diffusion of vectorial methods is very desirable, and though the absence of a uniform notation increases the difficulty of pursuing the subject in different books, it is an obstacle on which too much stress can easily be laid.

*The Formation of Colloids.* By Prof. The Svedberg. (Monographs on the Physics and Chemistry of Colloids.) Pp. 127. (London: J. and A. Churchill, 1921.) 7s. 6d. net.

IN this small monograph the author, whose brilliant investigations on colloids are familiar to all interested in that important branch of science, has given a very concise account of much recent work on the formation of colloids. References to the literature are given, and the book is valuable in bringing together much scattered information on the subjects of which it treats. The printing and illustrations are well done.