

chapter iv., and in verification of the properties of the link polygon and the equilibrium of a general system of coplanar forces in chapter v.

The principles of graphic statics, having thus been well laid and amply illustrated, are further developed in the succeeding chapters by practical applications, such as to stress diagrams for bridge and roof trusses, loaded at the joints, at intermediate points, and under wind pressures; to bending moments and shearing forces in beams, and the action of travelling loads; and to problems involving friction and work done by constant and variable forces.

While the deductive reasoning is well sustained throughout and satisfying to the logician, the subject is everywhere exemplified by concrete examples, fully worked out, and at short stages the student is provided with exercises in abundance, with answers, the author having drawn freely from the examination papers of the University of London, the Board of Education, the Civil Service Commission, and similar sources.

The very fulness with which graphic statics is discussed and illustrated in this volume makes one regret that some space could not have been found (by omissions, if necessary) for the equally important subject of graphic dynamics, founded on the vector conception of Newton's second law, with the application of the hodograph, and illustrations drawn from the motions of machines, the leading idea being to develop the fundamental law that force is vector rate of change of momentum. The author rightly emphasises the need for good-sized figures, and uses fairly large set-squares, in conjunction with straight-edge, scale and compasses, but he seems content with this comparatively meagre equipment, the incompleteness of which must surely handicap a student who does much quantitative graphical work.

With these reservations the book is admirable, and should do much to encourage the teaching of a subject that ought to form an integral part of the mathematical training given in our secondary and technical schools.

Man and his Future: A Glimpse from the Fields of Science. By Lt.-Col. William Sedgwick. Pp. 256. (London: T. Werner Laurie, 1907.) Price 7s. 6d. net.

This book is a curiously naïve attempt to justify and interpret in the light of modern scientific discoveries a somewhat old-fashioned form of orthodoxy. "The whole universe is the scene of a conflict between two powers over the possession of atoms of matter." This conflict is waged by means of the α - and β -rays of the physicist, which have respectively the power of "doing building work" with the atoms and of destroying the systems thus set up. Man is "a transgressing anthropoid ape" who, having wandered out of the regions where alone he could live in a state of nature, has purchased relief from his conditions by taking service with the Power of Repulsion—destroying the forests of the earth for fuel, and analysing compounds (such as ores) for their useful elements. But the growth of his needs has led him from mere destruction to synthesis, and so into the service of the Power of Attraction. Nevertheless, his original transgression condemns him still to destroy on earth, so that his synthetic activities—shown, for example, in chemistry, physics, and engineering—must be regarded as really "a training in the art of Universe-building," to be applied seriously only when the present cosmic order makes way for the New Evolution. Thus death is "a recruiting agency for the staff" to be engaged upon this gigantic re-constructive

operation, when they have re-clothed their "resting forms" in the protoplasmic garments for which the coal seams and the nitrate beds are perhaps intended to provide materials.

This work is so sincerely and modestly written that one regrets the necessity of saying that it can have but little value except to the student of the psychological history of discovery, who will note with interest and curiosity that, in connection with his "building-up" theory, Col. Sedgwick, in 1902, predicted the existence of non-valent elements having the atomic weights now actually assigned to the members of the helium group.

Développement et Progrès de la Fabrication du Malt pendant les quarante dernières Années. By Ed. Eckenstein. Pp. 212. (Paris: A. Hermann, 1908.) Price 5 francs.

THIS work gives an account of the development of methods of malting on the Continent from the time when the employment of mechanical appliances to supplement hand labour was first suggested to the present day, when, in some maltings, hand labour has practically disappeared. The author makes no attempt to discuss the progress of scientific knowledge in relation to malting, but confines himself almost entirely to a description of the manner in which the engineer has overcome many of the practical difficulties met with when attempting to deal with large bulks of germinating grain other than by hand labour. Problems such as the controlling of the heat generated by respiration of germinating grain in mass, and establishing an equal distribution of moisture throughout the individual corns of the mass, together with equal conditions of aération, have to be solved. The solution of such problems by mechanical means is not easy, and there are still many competent critics, both in this country and abroad, who consider that the claim for success made by advocates of mechanical malting is not at present thoroughly well justified. However this may be—and the question is essentially a technical one—everyone interested in the progress of mechanical malting should read M. Eckenstein's book, the value of which is much enhanced by the numerous very excellent drawings and diagrams which it contains.

The Romance of the Sky; the Story of Star-gazing and Star-tracing, being an Introduction to the Study of Astronomy. By C. J. Griffith. Pp. viii + 166. (London: George Routledge and Sons, Ltd.; New York: E. G. Dutton and Co.)

MR. GRIFFITH has undertaken to tell his story through the mouth of a mythical amateur astronomer, condemned to live through all the phases of astronomical science from pre-Ptolemaic days to the present. The method naturally introduces a great deal of reading matter that is not astronomy, but for non-astronomical readers the result, thus diluted, should prove of interest. A talk with Ptolemy, the enunciation of his great theory by Copernicus himself, the unfortunate reaction which delayed astronomical progress for centuries, and the final clearing of the mists by Kepler's results, occupy the first twenty pages. Then in rapid sequence Galileo, Newton, Halley, Herschel, and other notable workers in astronomy are interviewed, the volume concluding with discourses on the making of present-day observations and the deductions arising therefrom. The book is good, in parts, and the glossary of astronomical terms (chapter xxiv.), together with the excellent index, should not prove the least interesting or instructive to the beginner.

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