Review

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the text-book designed to meet the wants of a definite class of students. The authors have set themselves the problem of covering the syllabus of the Intermediate Examination at Calcutta University, and furnish an exposition of elementary statics and dynamics, with several illustrations happily chosen with reference to Indian daily life.

The explanatory matter is abundant, and so are the worked-out examples, but unfortunately many of the statements are extremely loose. For instance, at page 47 we read, "Forces P and Q pounds acting in opposite directions on a mass of m pounds produce an acceleration $\frac{P-Q}{m}g$ feet per

second per second," a mode of statement which will unite the advocates of the pound, poundal, and slug, until the question of dimensions is raised. And again, at p. 291:—"We conclude therefore that whenever a body moves in any curve it is acted upon by a force along the normal and outwards from the centre." Alas!

A large number of misprints, usually trivial, have escaped the eye of the proof reader, e.g. at pp. 78, 80, 117, 119, 120, 169, 211, 225, 231, 232, 258, 261, 262, 263, 264, 283, 294, 299, 313. S. K.

A First Book of Practical Mathematics. By T. S. USHERWOOD and C. J. A. TRIMBLE. Pp. 183. 1s. 6d. 1913. (Macmillan & Co.)

The book deals in ten chapters with the simple operations of arithmetic and algebra, the use of squared paper, and practical applications of elementary mathematics to simple problems in elementary mensuration and physics. Attempts are made with varying success to justify the mathematical operations involved, but it will be seen from the following quotations that the emphasis is on the *practical* rather than on the *mathematical* side: "The sign $-$ denotes the inverse of the sign $+$." "Division is the inverse operation to multiplication. Thus $a \times \frac{1}{b}$ is the same as $\frac{a}{b}$." "If any numbers whatever be substituted for a , b and x , it will be found that $a(b+x) = ab+ax$." "Drawings will show that equiangular triangles are of the same shape."

The book is well printed, and there is abundance of good examples, many of them taken from examination papers.

Practical Geometry and Graphics for Advanced Students. By JOSEPH HARRISON and G. A. BAXANDALL. Pp. 677+xiv. 6s. 1913. (Macmillan & Co.)

This book is an enlarged edition of the original work first published in 1899 and subsequently reprinted six times. It covers the syllabus of the Higher Examination of the Board of Education in Practical Geometry and Graphics. The new matter includes (i) a chapter illustrating the application of geometry to the work of the builder, mason, joiner, and metal plate worker, (ii) an extended treatment of graphics, including graphic integration and differentiation, graphic statics in two and three dimensions, and graphic dynamics, (iii) a collection of questions selected from the Board of Education examination papers, grouped and arranged, with answers.

The subject-matter is sub-divided into three sections dealing respectively with Plane Geometry (175 pages), Descriptive Geometry (344 pages), and Graphics (88 pages). Then we have 43 pages of examination questions, 6 pages of mathematical tables, an Appendix enumerating the definitions and theorems of Pure Solid Geometry, and a very full Index.

The book has been carefully and concisely written, the explanations are clear, and the numerous diagrams are well drawn and conveniently arranged. Contrary to the usual practice, the decimal point is invariably placed at the bottom.

The last chapter of Section I. is entitled Plotting on Squared Paper, and is chiefly devoted to the Straight Line. The determination of the equation of a straight line already drawn is based on the calculation of the constants of the equation from the observed coordinates of two points selected near its ends. Would it not be worth while to explain how the gradient can be read off directly from the drawing?

Probably few students will read through the whole of Section II., which includes chapters on Surfaces in Contact, Interpenetration of Solids, Cast Shadows and Metric Projection. It seems a pity that only four pages are devoted to Spherical Triangles.

The perusal of such a book—a goldmine of information on the application of geometry to matters of human interest—makes one desire to bring the fundamental ideas within the reach of schoolboys. Perhaps in time we may hope to see a school course in Solid Geometry based on Motion of Rotation about an axis and Parallel Motion, and developing simultaneously the foundation principles of Pure Geometry, Descriptive Geometry, Coordinate Solid Geometry, and Spherical Trigonometry. W. J. DOBBS.

Nouveaux Essais de Magie arithmétique polygonale. Étoiles magiques à 10 et 12 branches. Pp. 26. **Questions inédites de Magie arithmétique polygonale. Étoiles magiques à 8, 16 et 20 branches et rosaces hypermagiques.** Pp. 21. Par C. SALOMON. 1.50 fr. each. 1913. (Gauthier-Villars, Paris.)

These extensions of a former pamphlet contain many curious and complicated magic figures, all constructed by the same method of superposing two figures with simpler properties. H. P. H.

CORRESPONDENCE.

TO THE EDITOR OF THE *Mathematical Gazette*.

Osborne, 31st March, 1914.

SIR,—The interesting argument in your March number between Mr. A. G. Cracknell and your reviewer X. Y. Z. suggests the following reflection: If these questions of fundamental laws in arithmetic and algebra are so difficult as to be a matter of dispute between two competent mathematicians, why trouble beginners about them?

X. Y. Z. "again puts his conundrum: '6 lbs. of sugar $1\frac{1}{2}$ times...?'" Why not 9 lbs.? I don't think that most people would consider it wrong to say that 6 lbs. are contained in 9 lbs. $1\frac{1}{2}$ times, or that the circumference of a circle is about $3\frac{1}{2}$ times the diameter.—Yours faithfully,

CHARLES GODFREY.

THE FORTHCOMING EDINBURGH MATHEMATICAL COLLOQUIUM.

THE successful Colloquium which was held in Edinburgh last August was described in the October number of the *Gazette*, and the suggestion was there made that a Colloquium should be held in the same city in the present year, in conjunction with the Napier Tercentenary Celebrations. This suggestion has been adopted by the Edinburgh Mathematical Society, who have now resolved to hold an open Colloquium on July 28th to 31st inclusive, immediately following the Napier celebrations on July 24th to 27th. The following short courses of lectures have been arranged:

(A) Two lectures by **M. d'Ocagne** (*Professor at the École Polytechnique and the École Nationale des Ponts et Chaussées, Paris, and Past President of the Société Mathématique de France*), on **NOMOGRAPHY**.

It is now generally recognised that for most purposes the nomographic methods are superior to the older graphical methods of calculation. The introduction of some nomographic teaching in British Universities (and schools, for much of it is not too hard for schoolboys) is much to be desired.