The Algebra of Logic. By L. Couturat. Authorised English Translation by L. G. Robinson. Preface by P E. B. Jourdain. Pp. xv+97 $1.50. 1914. (Open Court Co.)

Miss Robinson may be congratulated on her excellent translation of a work which will be welcome to many in its English form. To those who are interested in the subject, the book is too well known to need more than this passing reference. There are few readers who will not appreciate the interesting historical retrospect given by Mr. Jourdain in his preface, and agree with him that M. Couturat shows "in an admirably succinct form, the beauty, symmetry and simplicity of the calculus of logic regarded as an algebra."

An Elementary Treatment of the Theory of Spinning Tops and Gyroscopic Motion. By H. Crabtree. Second Edition. Pp. xv+193. 7s. 6d. net. 1914. (Longmans, Green.)

The second edition of Mr. Crabtree's well-known introduction to the elementary theory of gyroscopic phenomena is enriched by about fifty pages of additional matter, mainly in the form of appendices. These deal with the swerve of the "sliced" golf ball, the drifting of projectiles, and the behaviour of a spinning top under various conditions. The gyro-compass is described in Chap. V., and a fuller account of the theory and equations of motion of Anschütz's invention is given in the last appendix. Two plates have been added, showing respectively Schilowsky's Monorail Car and the "damping" device in the Gyro-Compass.

CORRESPONDENCE.

The Editor of the *Mathematical Gazette*.

Dear Sir,—In a note on Desargues' Theorem in the October number of the *Mathematical Gazette*, Dr. D. M. Y. Sommerville discusses an "interesting representation," by Major Dixon, "of a plane geometry in which straight lines are represented by closed curves on a closed convex surface devoid of singularities." In a discussion on such a system, I do not desire to intervene, but I cannot allow the following footnote at the bottom of page 394 to pass unchallenged:

> "Essentially the same form of proof is given by J. L. S. Hatton, *Projective Geometry* (Camb. Univ. Press, 1913), p. 19. The elegance of the proof disguises its logical unsoundness."

There is, I submit, no illogical unsoundness in the proof as used in my book. It depends on the following facts:

(1) That given two points A and B on a straight line and the ratio $\frac{AP}{BP}$ (sign being taken into account), the point P on the straight line is uniquely determined;

(2) That, defining $(ABCP)$ as $\frac{AC}{BC} : \frac{AP}{BP}$, if A, B, C are given and also the value of $(ABCP)$, then the point P is uniquely determined on the straight line ABC, provided A, B, C are collinear.

(3) That in a real projection $(ABCP)$ is unaltered.

(4) Hence by (2) and (3), if $(ABCD)=(AB'C'D')$, then the straight lines BB', CC', DD' are concurrent.

Nothing, I submit, could be more simple and straightforward.

As far as I can follow Dr. Sommerville's argument, the fact that (4) is a particular case of the "Fundamental Theorem of Projective Geometry" renders this proof such that "the elegance of the proof disguises its logical unsoundness." I have yet to be convinced that every theorem must be stated and proved in the first instance in its most general form, nor am I at present prepared to grant that there is any logical unsoundness in proving and using the Binomial Theorem for a positive integral index before it has been proved for a complex index.

If such a simple, straightforward and logical proof as that under discussion can be a matter of any interest, I may say that I have given it in my lectures for about fifteen years, and that about ten years ago one of my students drew my attention to the same proof in a small German text book by Dr Doehlemann. I am, yours very truly, J. L. S. HATTON.

East London College (University of London),
2nd November 1914.

THE LIBRARY

THE Library has now a home in the rooms of the Teachers' Guild, 74 Gower Street, W.C. A catalogue has been issued to members containing the list of books, etc., belonging to the Association and the regulations under which they may be inspected or borrowed.

The Librarian acknowledges with thanks the gift of 39 volumes of valuable mathematical works from the Library of King's College for Women.

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ERRATUM

Vol. vii. p. 87 line 4, *to* Feb. 8 *add* 1913.

BOOKS, ETC., RECEIVED.

Lehrbuch der Differential- und Integralrechnung. By J. A. SERRET. Fourth and Fifth editions. Edited by G. SCHEFFERS. Vol. III. *Differentialgleichungen und Variationsrechnung.* Pp. xiv + 735; 13 m., bound 14 m. 1914. (Teubner.)

A New Analysis of Plane Geometry, Finite and Differential. By A. W. H. Thompson. Pp. xvi + 120. 7s. net. 1914. (Cambridge University Press.)

Problèmes d'Arithmétique Amusante. By P. DELENS. Pp. viii + 164. 2 fr net. 1914. (Vuibert, Paris.)

The School Algebra. By A. G. CRACKNELL. Pp. viii + 568 + lxxvii. 5s. With or without answers. 1914. (University Tutorial Press.)

Time as a Fourth Dimension. By Prof. R. C. ARCHIBALD. Pp. 4. Reprint from the *Bull. of the Amer. Math. Soc.* Vol. XX. Pp. 409-412.

The American Journal of Mathematics. Edited by FRANK MORLEY. Vol. XXXVI. No. 3. July 1914. 5s per ann. (The Johns Hopkins Press, Baltimore, Md., U.S.A.)

On a certain completely integrable System of Linear Partial Differential Equations. E. J. WILCZYNSKI. *On the Connection of an Abstract Set, with Applications to the Theory of Functions of a General Variable.* A. D. PITCHER. *On Series of Iterated Linear Fractional Functions.* R. D. CARMICHAEL. *The Derivative of a Function of a Surface.* C. A. FISCHER. *Some Invariants and Covariants of Ternary Collineations.* H. B. PHILLIPS. *A Geometrical Application of the Theory of the Binary Quantic.* F. P. LEWIS.

The American Journal of Mathematics. Edited by F. MORLEY. Vol. XXXVI. No. 4. Oct. 1914. 5s per ann. (Johns Hopkins Press, Baltimore.)

The Quartic Curve and its Inscribed Configurations. H. BATEMAN. *On the Continuity of a Lebesgue Integral with respect to a Parameter.* J. K. LAMOND. *Geometry on Ruled Surfaces.* S. LEFSCHETZ. *Restricted Systems of Equations.* (Second Paper.) A. B. COBLE. *Character of the Solutions of certain Functional Equations.* T. E. MASON. *Binary Conditions for Double and Triple Points on a Cubic.* L. A. HOWLAND. *Modular Invariants of Two Pairs of Cogredient Variables.* W. C. KRATHWOHL.

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