than the solution of any number of particular problems without correlation.

Among the list of references we miss the names of Burmester, Somoff, and in view of the subject matter treated, De Ross, who in the *Revue Universelle des Mines* published a series of articles on linkages, their different forms and uses. A translation of these articles appeared 1879 in Van Nostrand's Science Series. As in Crelier's kinematic systems, the tracing of curves is the main object of De Ross's investigations. While De Ross uses Peaucellier's inversor and its modifications as a generator, Crelier does not mention it at all.

The first three chapters deal with the curves which are produced by points and lines in connection with the motion of a right angle subject to certain conditions. In the next chapter conchoidal circular systems and curves are studied. The displacement of the extremities of a straight line of constant length along two rectangular lines, and on a straight line and a circle are the subjects of the concluding two chapters.

A number of new curves are obtained from the various motions. The treatment is throughout clear and simple and does not require more than the elements of plane analytic geometry and calculus. In some parts the typography is poor and a number of figures lack precision and neatness of execution.

ARNOLD EMCH.

NOTES.

AT the meeting of the London mathematical society held on January 11 the following papers were read: By W. H. Young, "Successions of integrals and Fourier series"; by G. H. Hardy and J. E. Littlewood, "A new condition for the truth of the converse of Abel's theorem"; by A. Cunningham, "On Mersenne's numbers."

AT the meeting of the Edinburgh mathematical society on February 8 the following papers were read: By Professor Goldziher, "On graphical integration"; by Dr. Muirhead, "A mechanism for solving equations of the nth degree"; by G. Philip, "The geometry of the general pedal curve"; by W. Gentle, "An extension of the remainder theorem."

AMONG the prizes to be awarded by the Paris academy of sciences in 1913, the following are for achievements in pure and applied mathematics: The Francoeur prize (1000 fr.) for discoveries or works useful to the progress of pure or applied mathematics; the Bordin prize (3000 fr.) for improving in some important point the arithmetic theory of non-quadratic forms; the Poncelet prize (2000 fr.) for work in applied mathematics; the Lalande prize (540 fr.) in theoretical astronomy; the Pontécoulant prize (700 fr.) in theoretical astronomy; the Saintour prize (3000 fr.) for the most meritorious memoir in mathematics; the Petit d'Ormay prize (10000 fr.) in pure and applied mathematics; the Pierson-Perrin prize (5000 fr.) in mechanics and physics; the Wilde prizes (one of 4000 fr., one of 2000 fr.) for the most important contributions to science made during the two years immediately preceding the time the awards are made. The competition for all these prizes is unrestricted.

The academy has awarded the Saintour prize (3000 fr.) for 1911 to Professor J. DRACH, of the University of Toulouse, for his memoir on "Groups of rationality of differential equations."

THE international commission on the teaching of mathematics announces the following programme for its next session, in connection with the fifth congress of mathematicians at Cambridge: At the general session the president, Professor F. KLEIN, will give a summary of the results already reached, and formally request that the commission be continued until the next congress in 1916. The commission will then hold three sessions in affiliation with section IV of the congress. At the first the reports of the chairmen of the national subcommissions will be received; at the second, the report of committee A of the Milan meeting will be discussed, and at the third, the report of committee B. (See BULLETIN, volume 18, page 36.) Thus far, forty-nine monographs have been published by the various sub-committees, and a number of others will appear during the next few weeks.

THE report of the national committee of fifteen on a geometry syllabus, which has been under consideration for nearly three years, has finally been published in a pamphlet of 70 pages and is ready for distribution to teachers of geometry,

and all others interested. This report was prepared under the joint auspices of the American Federation of Teachers of the Mathematical and Natural Sciences and the National Education Association. It includes a historical introduction and sections on axioms and definitions, on exercises and problems, and the syllabus itself including both plane and solid geometry. It is the hope of the committee that this report may be of great service to all teachers of geometry, and to this end that it may have a wide distribution among all interested. Copies may be secured gratis upon application to the Commissioner of Education, Department of the Interior, Washington, D. C.

THE firm of Eimer and Amend, 205–211 Third Avenue, New York City, have just issued an Illustrierter Spezialkatalog mathematischer Modelle und Apparate für den Unterricht in der Planimetrie, Stereometrie, Trigonometrie und verwandten Fächern, entworfen von G. Koepp und anderen bewährten Fachmännern. The catalogue contains besides an index, 128 pages of descriptions and prices of several hundred models, largely for instruction in the secondary schools, and 324 illustrations.

MR. W. M. COATES, fellow of Queen's College, Cambridge, died at Cambridge January 16, at the age of 54 years. Mr. Coates had the reputation of being the most successful mathematical coach since the time of the late Dr. E. J. Routh, under whom he won the third wranglership in 1883.

RECENT catalogues of new and second-hand books:—G. J. Göschen'sche Verlagshandlung, Marienstrasse 18, Leipzig, publications of this firm in mathematics and allied sciences, 1907–1911.—A. Hermann et Fils, 6 rue de la Sorbonne, Paris, 300 titles in mathematics and exact sciences.—E. Beyer, Schottengasse 7, Vienna, catalogue 61, 1296 titles in mathematics, astronomy and meteorology.—G. Fock, Schlossgasse 7–9, Leipzig, catalogue 391, 3500 titles in mathematics and physics, also catalogue 407, 4000 titles in mathematics, physics and astronomy.—J. Schweitzer, Lenbachplatz 1, Munich, catalogue 54, 2300 titles in insurance.