through the several branches of mathematical analysis differs materially from the order of American texts. Of course, it does not follow that because another nation prefers a certain plan it is the best thing for us to adopt the plan. It must be admitted, however, that the loosely articulated subject matter as given in our so-called college algebra, which closes with a rudimentary and isolated treatment of the theory of equations, then trigonometry, then analytics, then calculus, leaves much to be desired. Many desirable things might be suggested by the close study of such masterly treatments as this of M. Tannery by would-be authors of college algebras and of other mathematical books for use in our schools. Both in point of gradation of inherent difficulties and in point of simplicity or treatment without loss of rigor the French text-book writers can teach us much. The logical order and mode of this volume are admirable.

Again, the plan by which M. Tannery gradually inducts the learner into the logical niceties of the subject, by giving him from time to time enough to satisfy present needs and as much as his stage of mathematical maturity and advance justifies, then reverting to the matter later, when experience has ripened sufficiently to enable the novice to interpret what he is doing, is a distinct advance pedagogically upon the common practice of American college professors. The latter are too prone to seek fulness of detail the first time the subject is taken up. The reviewer would invite their attention to M. Tannery's procedure, for these Leçons were evidently prepared to inform and to educate rather than merely to present a beautifully perfect mathematical exhibit.

Only half a dozen typographical errors, and these of no particular consequence, have been discovered in the entire volume. Typography and general mechanical excellence are sufficiently guaranteed by the imprint of Gauthier-Villars.

<div align="right">G. W. MYERS.</div>

Mathématiques. Principes et Formules de Trigonométrie Rectiligne et Sphérique. Par J. PIONCHON, Professeur à la Faculté des Sciences, Directeur de l'Institut Electrotechnique de l'Université de Grenoble. Paris, Gauthier-Villars, et Grenoble, A. Gratier et J. Rey, 1904. 5 francs.

THIS is one of the 70 odd volumes now appearing from the press of Gratier et J. Rey, of Grenoble, under the editorial

supervision of J. Pionchon and bearing the general title Biblio-
thèque de l'Elève-Ingenieur. This Bibliothèque is to consist
of five sections entitled respectively : Mathématiques, Mé-
canique, Physique industrielle, Electricité industrielle, and
Economie industrielle. The collection as a whole is to com-
prise a recapitulation of the fundamental notions, both theoret-
ical and practical, of the applied sciences. M. Pionchon is to
be assisted in this undertaking by about a dozen of the foremost
representatives in France of the several subjects to be treated.
The book under review is one of the half-dozen numbers of this
collection that have recently appeared. A dozen other volumes
of the general series are announced to be in preparation.

This little volume of 146 pages is designed for use as a
hand-book for practical engineers. It is contended by the
author that the needs of the practicing engineer for trigonom-
etry are met neither by the standard texts of trigonometry pre-
pared by professors for their classes, nor by the treatises
written by experts for mathematicians. The former are held
to be too scanty and the latter too extensive for practice. It is
believed therefore that in the bibliography for engineering stu-
dents there is a real want which this compilation seeks to
supply.

This book, therefore, is not intended for a first study of the
subject. Nor is it a mere compilation of the formulas needed
in engineering practice. It is a sort of running sketch of the
substance of the theory of trigonometry, of sufficient fulness to
enable one who has once learned the science to readily recover
the *rationale* of formulas and transformations. A feature of the
book is the large number of such approximate formulas as are
useful in practice. Lists of trigonometric integrals and of
trigonometric series, full enough to meet the demands of ex-
tended practice, are also included. It is perhaps needless to
say that special attention has been given to adaptations and
simplifications of formulas for the solution of triangles, both
plane and spherical.

A rather full appendix, comprising notes on Divers cases of
maximum and minimum of certain geometric magnitudes in
figures satisfying given conditions, is also included. In this
appendix such questions are treated as " To find on a right line
the smallest segment which may be seen from a given point
under a given angle " ; and " Through a point situated on the
interior of an angle, to insert between the sides a rectilinear
segment of minimum length," etc.

The pages are fairly well supplied with footnotes pointing out sources in which fuller detail of development can be seen, or drawing attention to certain special features of transformations that are worthy of particular attention by the practitioner.

On the whole, the volume is an unusually practicable summary for workers in trigonometry, is singularly free from typographical errors, and is printed in type of such size and variety as to enable the eye to catch readily the particular thing the reader may want. As a ready reference handbook it leaves little to be desired.

G. W. MYERS.

Beispiel-Sammlung zur Arithmetik und Algebra. Von Dr. Hermann Schubert, Professor an der Gelehrtenschule des Johanneums in Hamburg. Dritte, durchgesehene Auflage. Leipzig, G. J. Göschen'sche Verlagshandlung, 1905. 136 pp.

THIS is one of the little 80-pfennige handbooks of the well-known Sammlung-Göschen. On 120 pages, 3 inches by 4 inches, it contains 1275 exercises and problems, formal and clothed (eingekleidet), covering the following topics : the transition from calculation to arithmetic, modes of calculating of the first order, of the second order, applications of these modes, quadratics, modes of calculating of the third order, an appendix of problems on higher arithmetic, and selected results.

The appendix contains, in the language of problems : observations on building arithmetic systematically, arithmetic and geometric series, compound interest and annuities, the binomial theorem, Moivre's theorem, and cubic equations.

The problems are arranged in a developmental order, according to the German idea of development. In mathematics the German notion, as shown by their text-book literature, seems to be to begin a topic with a large number of formal and easy exercises, to pass by easy gradations to and through more complicated problems, still of the formal type, and, lastly, to give a list of carefully graded verbal problems having a real content. This accords with the views of some American writers on high school mathematics.

In the view of other writers in our own country and in England, we should get on much better if pupils were not first mechanized by the formal problems. These writers favor fewer of the formal type of problem, and a much larger pro-