lections of theorems relative to inequations, maxima and minima, and continued fractions, together with an eleven-place table of decimal logarithms of the first one hundred and fifty prime numbers (the last one is eight hundred and fifty-nine). The binomial theorem of Newton terminates this part, which concludes with the one hundredth paragraph and the one hundred and thirteenth page of the book.

The first eighteen sections of the part dealing with geometry are taken up with the elements of the simple regular and irregular polygons. The details of the geometry of the circle and the computation of π follow ; the series of Wallis, Leibnitz, Brounker, Lacroix, and Bernouilli, and the value of π to one hundred places of decimals are given. The remainder of the third part is devoted to the geometry of space and the sphere, concluding with a concise résumé of the characteristic properties of the conic sections.

The extent of the syllabus of trigonometry, which fills the last forty-two pages of the book, is indicated by the presence of De Moivre's theorem and its corollaries and the elements of the circles associated with a spherical triangle.

The above volume is the two hundred and eightieth number of the scientific series of the collection of manuals now in course of publication by M. Hoepli, of Milan. Up to the present there have been issued six hundred different numbers of these manuals devoted to subjects in science, technology, literature, law, and art. Of the various volumes relating to mathematics the following may be mentioned : Aschieri's analytical geometry, descriptive geometry, and projective geometry ; Bagnoli's statics ; Cattaneo's thermodynamics ; Panizza's practical arithmetic, rational arithmetic, exercises in arithmetic ; Pascal's differential calculus, integral calculus, calculus of variations and finite differences, exercises in the infinitesimal calculus, determinants and their applications, elliptic functions, repertorium of higher mathematics ; Pincherle's elementary algebra, algebraic analysis, exercises in algebra, elementary geometry, exercises in geometry ; Scarpis's theory of numbers ; and translations of Ball's mechanics and Lockyer's astronomy.

EDGAR ODELL LOVETT.

Lectures on Elementary Mathematics. By JOSEPH LOUIS LAGRANGE. Translated by THOMAS J. MCCORMACK. Chicago, The Open Court Publishing Company, 1898. xvi + 156 pp.

THE English language is notably deficient in translations into it of standard or classical mathematical works, ancient

and modern, first published in other tongues. To mention only one out of many, Gauss's masterpiece, the Disquitiones Arithmeticæ, which has been extant for some time in excellent translations into French and German, still seeks a translator into English. Lagrange himself (p. 58 of the above translation) pointed out the need of translations of the mathematical works which the Greeks have left us. Since Lagrange's time quite a little has indeed been done to meet this want by translations into modern languages, but here also English lags far behind. It is therefore gratifying to note somewhat of a willingness springing up among American mathematicians to enrich the mathematical literature in English, by translations. Among those which have appeared or have been announced in recent years, not the least welcome is that which we shall consider a little more in detail in the following lines. We note also in passing (p. 152) that a translation (by Professors Beman and Smith) of Fink's Geschichte der Elementar-Mathematik (Tübingen, 1890) is soon to appear ; while Fink's little book cannot claim rank as a standard work, it still sketches the development of mathematics in a clear and attractive style, and a translation may well find room in our language, and be of distinct service in stimulating that interest in the history of mathematics, and in the careful study of the development of its theories, which the straws upon the current of the mathematical stream indicate to be gaining a foothold among us.

The translation before us is made from the " Leçons élémentaires sur les mathématiques," delivered in the year 1795 at the École Normale. A well-written and interesting biographical sketch of Lagrange by the translator (7 pp.) precedes the work proper whose contents and scope may be sufficiently delineated by giving the titles of the various lectures :

I. "On arithmetic, and in particular fractions and logarithms ;" II. "On the operations of arithmetic ;" III. "On algebra, particularly the resolution of equations of the third and fourth degree ;" IV. "On the resolution of numerical equations ;" V. "On the employment of curves in the solution of problems."

It is only necessary to note in addition that both the questions taken up and their treatment are elementary even from the standpoint of a century ago, when the algebraic unsolvability of equations of degree greater than four was not yet proved, and when the powerful theory of substitution groups, towards which Lagrange himself was tending, was

still unknown. Of course, these lectures are most interesting to those to whom the subject matter is already quite familiar ; still there is little, if any, demand made upon the store of mathematical knowledge of the reader which a good and thorough high school course would not supply. Nevertheless, the presentations of even elementary topics by master minds are always instructive, and in this case unusually attractive as well. Historical and methodological remarks abound, and are so woven together with the mathematical material proper, and the whole is so vivified by the clear and almost chatty style of the author as to give the lectures a charm for the reader not often to be found in mathematical works. The translation is well done, the publishers have presented it in appropriate form, and the work deserves a wide circle of readers. A short note by the translator on the origin of algebra, and a good index close the work, which bears a portrait of Lagrange as frontispiece.

It is to be hoped that translations into English of Lagrange's larger work on equations ("Traité de la résolution des équations numériques de tous les degrés," first edition, 1798, third edition, with analysis of the work by Poinsot, approved by Lagrange, 1826) and of Euler's Algebra with Lagrange's annotations, may follow.*

J. W. A. YOUNG.

L'Enseignement Mathématique is the title of a new journal of which the first number has just appeared in Paris. The editors are MM. C. A. Laisant of Paris and H. Fehr of Geneva ; the publishers are Carré and Naud, 3 rue Racine, Paris. There will be six numbers a year, each containing about 80 pages octavo; the annual subscription price is 15 francs within the postal union.

While published entirely in the French language, this magazine is given an international character by a "comité de patronage" consisting of twenty mathematicians representing fifteen different nationalities. The object of the new journal is to contribute to the improvement of mathematical instruction by making more widely known its organization in different countries, by discussing methods of

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* *Editorial Note.*—A translation of Euler's Elements of Algebra with notes of Bernoulli and additions of Lagrange was published by Rev. John Hewlett. The fifth edition (Longmans, Green & Co.) bears the date 1840. The preface explains that the translation was mainly due to Francis Horner. The book seems to be rare, and a new edition may be desirable.