plane. It is a distinct digression from the rest of the book, and is quite elementary. It was introduced to make the later appendices intelligible, but the treatment in these applications is so condensed that it can be of little value to a reader not having much more familiarity with conformal representation than that provided in the first appendix.

The second, of 20 pages, on the Tschirnhausen transformation, includes a detailed treatment of the reduction of the quintic to the Bring-Jerrard normal form; otherwise it is rather similar to the corresponding portion of Weber's Algebra.

The third appendix of 20 pages considers the solution of the icosahedron equation. The first half gives a very rapid survey of the Schwarzian derivative, the hypergeometric series, and the expression of the constants of transformation by means of gamma functions. The subject proper of this appendix is the working out of the problem suggested in Klein's Ikosaeder, page 139, *i. e.*, to start with the general binary quintic and deductively obtain the solution in terms of modular functions. The discussion is followed by a numerical illustration which greatly adds to its clearness.

The last appendix, of 40 pages, is concerned with linear transformations of elliptic theta functions and modular functions. As in the two preceding appendices, the amount of presupposed knowledge is much greater than in the book proper. The treatment is entirely transcendental, and has nothing in common with the preceding portions of the work. Numerous references show the relations between the present development and the existing literature, but it is not clear why this subject should be treated in a book on algebraic invariants.

VIRGIL SNYDER.

Table de Caractéristiques relatives a la Base 2310 des Facteurs premiers d'un Nombre inférieure a 30,030. By ERNEST LEBON. Paris, Delalain Frères, 1906. 32 pp.

IN this pamphlet the author has published a table of "characteristics with respect to the base 2310" by means of which any number between 1 and 30,030 can be readily factored. The first twelve pages are devoted to an explanation of the simple theory upon which the usefulness of the table is based, and to a description of the devices by means of which the characteristics are calculated. The last twenty pages contain the table itself. In a recent number of the BULLETIN, Professor

Fite has translated another article by Lebon in which the computation and use of a larger table, with base $30,030 = 2 \cdot 3 \cdot 5 \cdot 7 \cdot 11$ instead of 2310, are described.*

In the factor tables of Glaisher, the numbers are listed and opposite to each is given the smallest prime divisor of the number. Lebon's idea is to divide the numbers prime to a given base B, *e. g.*, $B = 30,030$, into classes of the form

$$KB + I \qquad (K = 0, 1, 2, \cdots)$$

according to the values of their residues I with respect to B. The possible prime divisors D less than B are listed, and opposite to each and under each I is placed the characteristic k, if there is any, which specifies the smallest number divisible by D of the class belonging to I. It can then be readily discovered whether or not any other given number in the I-class is divisible by D, since for such a number $K - k$ must be divisible by D.

In the article which is the subject of this review, the characteristics with respect to the base 2310, for prime divisors from 13 to $\sqrt{30,030}$ have been listed, so that the table can be applied to the factorization of numbers between 1 and 30,030. If the characteristics for prime divisors up to 2310 had been given, the table would have been applicable to numbers as large as $(2310)^2 = 5,336,100$. The table described in the article translated by Professor Fite could be used to factor numbers between 1 and $(30,030)^2 = 901,899,900$. The factor tables already published by others, according to Lebon's statement in his introduction, give the factors of numbers from 1 to 10,000,000. All except those by Glaisher for the fourth, fifth, and sixth millions are out of print.

G. A. Bliss.

Serret's Lehrbuch der Differential- und Integralrechnung. Dritte Auflage, neu bearbeitet von Georg Scheffers. Zwei Bände: I, xvi + 624 pp.; II, xiv + 585 pp. Leipzig, B. G. Teubner, 1907.

Serret's name, which is in the title of this well known work, bears about the same relation to the edition under review that Webster's name bears to the latest edition of Webster's dictionary.

* "Theory and construction of tables for the rapid determination of the prime factors of a number," Bulletin, vol. 13 (1906–7), p. 74. The original article appeared in the *Comptes Rendus*, vol. 151 (1905), p. 78.