as well as a considerable background in "classical" mathematical statistics. It should be stated, however, that all necessary theorems are stated and discussed, if not always proved.

The text is greatly enriched by some very valuable time-saving features, such as footnotes that immediately relate an outside source to the point under discussion, and annotated lists of references, appearing at the close of each chapter and frequently summarizing a paper in a single sentence, thereby giving the reader a bird's-eye view of the latest pertinent papers as well as of the earlier literature. Furthermore, for each section a set of substantial exercises, totalling over 200, is provided. Many of these are accompanied with outlines of solutions, and provide introductions to additional topics.

Attention to estimation as a special case of hypothesis testing is essentially limited to confidence sets, point estimation receiving very little consideration. For the sake of completeness one would like to have seen some treatment of the Cramèr-Rao inequality and its modern development by Bhattacharya and others, as well as minimum-variance estimation on which so much practical work is based. This, however, is hardly a criticism, since treatment of estimation is not a main purpose.

While not designed as a "cookbook" in the analysis of actual data, because of its advanced nature the book does give a deep understanding of the many tests and their relationships to a unified theory. As such, and in view of its time-saving features, the book is well worth the price, and should be in the possession of the advanced worker in mathematical statistics and others having the requisite background.

JULIUS LIEBLEIN

Applied Mathematics Laboratory
David Taylor Model Basin
Washington, 7, D. C.

32[L].—L. N. KARMAZINA & É. A. ĈHISTOVA, *Tabliŝy funkŝiĭ Besseliâ ot mnimogo argumenta i integralov ot nikh* (*Tables of Bessel functions of imaginary argument and of integrals involving them*). Izdatel'stvo Akademii Nauk SSSR (Press of the Academy of Sciences of the USSR), Moscow, 1958, 328 p., 27 cm. Price 37 rubles 15 kopecks.

This volume in the series of Mathematical Tables from the Computational Center of the Academy of Sciences is a continuation of earlier work [1] on Bessel functions of real argument.

The present tables were prepared on the electronic computer STRELA. In the main table (pages 19–328), the values of the following seven functions are given for $x = 0(.001)5(.005)15(.01)100$:

$$e^{-x}I_0(x), \quad e^{-x}I_1(x), \quad e^{-x}\int_0^x I_0(u)\,du,$$

$$e^{x}K_0(x), \quad e^{x}K_1(x), \quad e^{x}\int_x^\infty K_0(u)\,du, \quad \text{and} \quad e^{x}.$$

The values are given here to 7D except near the origin, where they are to 7S; no differences are given. Near the origin, the following auxiliary functions are given:

$$I_0(x) \quad \text{and} \quad E_0(x) = K_0(x) + \ln x\, I_0(x)$$

for $x = 0(.001).15$ to 7S and 7D, respectively;

$$I_1(x) \quad \text{and} \quad E_1(x) = x[K_1(x) - \ln x\, I_1(x)]$$

for $x = 0(.001).2$ to 7D. By means of the formulas given on page 11, a number of related integrals can be evaluated by using the present tables.

W. H. REID

Brown University
Providence, Rhode Island

1. Ê. A. ĈHistova, *Tablitŝy funkŝiĭ Besseliâ ot deĭstvitel'nogo argumenta i integralov ot nikh* (*Tables of Bessel functions of real argument and of integrals involving them*). Izdatel'stvo Akademii Nauk SSSR (Press of the Academy of Sciences of the USSR), Moscow, 1958. *Math. Comp.*, v. 14, 1960, p. 79–80.

33[L].—F. A. PAXTON & J. E. ROLLIN, *Tables of the Incomplete Elliptic Integrals of the First and Third Kind*, Curtiss-Wright Corporation, Research Division, Quehanna, Pennsylvania, June 1959, 436 p., 28 cm.

This large table gives values of the elliptic integral of the third kind, which in the notation of the authors is

$$\Pi(\phi, \alpha^2, k) = \int_0^{\phi} \frac{d\theta}{(1 - \alpha^2 \sin^2 \theta)\sqrt{1 - k^2 \sin^2 \theta}}$$

including, as a special case, the elliptic integral of the first kind, $F(\phi, k) = \Pi(\phi, 0, k)$. Values are tabulated to 7D without differences for $\phi = 0(1°)90°$, $\alpha^2 = 0(.02)1$, $k^2 = 0(.02)1$. The values were computed on an IBM 704 by Simpson's rule. The authors appear to claim general accuracy within 10 final units, except possibly for $\sin \phi$, α^2, and k^2 near unity. The reviewer has encountered nothing which invalidates the general claim, but the exception is certainly to be noticed.

There are several ways in which certain values, especially of the complete integrals ($\phi = 90°$), may be checked from existing tables with little or no arithmetic. Using for brevity the references of *MTAC*, v. 3, 1948, p. 250, let us consider four checks:

(i) Values of $F(90°, k) = K$ with argument k^2 are given to 10–12D in Hayashi 1. They show that the values of Paxton and Rollin are systematically too small; the error rises from 4 final units at $k^2 = .02$ to 11 final units at $k^2 = .98$. These errors are practically within the claimed limits. The machine value at $k^2 = 0$, which should equal $\frac{1}{2}\pi$, is 6 final units too small, but has been corrected by hand.

(ii) Values of $F(\phi, k)$ for $\phi = 0(1°)90°$, $k^2 = \frac{1}{2}$ (modular angle $= 45°$) are given to 10D in Legendre 3, 5, 6, 7, 8 (also to 12D in Legendre 3, 5). They show no errors in Paxton and Rollin exceeding 5 final units.

(iii) Values of

$$\Pi(\phi, 0, 1) = \int_0^{\phi} \sec \phi \, d\phi,$$

the inverse gudermannian, are given to 9D in Legendre 3, 5, 6, 7, 8 (also to 12D in Legendre 3, 5). They show that the later values of Paxton and Rollin are systematically too small, for example by about 1, 11, 45, 141 final units at $\phi = 45°$,