Tables of Elliptic Functions, Smithsonian Miscellaneous Collections, Vol. 74, No. 1, Washington, D. C., 1922 (or later edition);

Statistics Manual, NAVORD Report 3369, Naval Ordnance Test Station, China Lake, California, 1955.

Several minor points may be noted with regard to the numerical tables in Appendix F. To the eleven numerical constants listed should be added Euler's constant, which occurs in a number of places in the text. There is space for increasing the number of decimal places shown to at least 10; this should be done to increase their usefulness. The typographical layout for several of the tables is hard on the eyes because little or no space is allowed between entries in adjacent columns. The columnar lines alone do not provide effective separation, so that the entries running across the page merge into one another. This applies to all or part of the tables for squares, integral sine and cosine, χ^2 distribution, and F distribution. This can be remedied either by use of smaller type or by printing the tables along the length rather than the width of the page, as is done with some of the other tables, resulting in much greater legibility.

Much of the material of the book is necessarily gathered from other sources. In a number of places, especially the figures, the source is cited from among the references at the end of the chapter. It would be helpful if such citation (admittedly laborious) could be done more systematically, as this could save a great deal of time and effort spent in searching through the listed references in order to follow up a particular theorem or development.

As regards the physical aspects, one would wish that a book of such utility could be constructed in such a manner as to better be able to withstand the great amount of handling it is bound to receive, perhaps by being issued in the almost indestructible form achieved by the binders used in the tax and accounting services.

Even with the minor shortcomings indicated here, this mathematical handbook is of such unique value that it can be unhesitatingly recommended for the intimate possession of everyone with a serious interest in the theory or application of virtually any aspect of mathematics.

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89 [E, L].—L. N. NOSOVA, *Tablitsy funktsiĭ Tomsona i ikh pervykh proizvodnykh* (*Tables of Thomson Functions and their First Derivatives*), Izdatel'stvo Akademiĭ Nauk SSSR, Moscow, 1960, 422 p., 27 cm. Price 49 Rubles.

This new addition to the series of tables prepared at the Computation Center of the Academy of Sciences, USSR, consists of two main tables. The first of these presents values of the Thomson (or Kelvin) functions ber x, bei x, ker x, kei x, and of their first derivatives to 7S for $x = 0(.01)10$. The second principal table gives values of modified functions consisting of the Kelvin functions of the first kind (ber, bei) and their first derivatives, each multiplied by $e^{-x/\sqrt{2}}$, and the functions of the second kind (ker, kei) and their first derivatives, each multiplied by $e^{x/\sqrt{2}}$. These data are also given to 7S, for $x = 10(.01)100$. Corresponding values of $e^{x/\sqrt{2}}$ are tabulated in an adjoining column to 7S. The entries throughout appear as 7-digit integers multiplied by an appropriate power of 10.

The book closes with two smaller tables: the first consists of 7S values of exp $(m \cdot 10^{-5}/\sqrt{2})$ for $m = 1(1)1000$; the second gives exact values of $t(1 - t)/2$ for $t = 0(.001).500$, for use in interpolation with second differences, which are given throughout the main tables.

We are informed in the Preface that the underlying computations were performed on the electronic computer STRELA, using the well-known power series and asymptotic series for these functions. These details, as well as a discussion of the arrangement of the tables and their use, are presented in the Introduction. It is there stated that the tabular entries are each correct to within 0.6 of a unit in the last place shown.

The reviewer carried out a partial check of the correctness of this statement concerning the accuracy of these tables, by comparing several entries in them with corresponding data in the recent tables of Lowell [1] which give values of the Kelvin functions and their first derivatives for $x = 0(.01)107.50$ to between 9 and 14 significant figures. Comparison of the two tables revealed that the values given by Nosova for functions of the first kind and their derivatives are correct to within a unit in the last place for the range $x = 0(.01)10$. However, in the vicinity of zeros of the functions of the second kind and of their derivatives the Russian tabular values err by as much as 6 to 8 units, as, for example, kei x when $x = 8.24(.01)8.47$ and kei$'(x)$ when $x = 9.38(.01)9.43$. The reviewer has verified, moreover, that ker$'x$ is in error by 9 units when $x = 7.16$ and 7.18, and that ker$'$ 7.17 is too low by 86 units, which is explainable by virtue of the fact that this last tabular entry is only one-tenth its neighbors, and all three are subject to a nearly constant absolute error.

This same difficulty in attaining the stated accuracy occurs in the second table in the book under review. Egregious examples of just a few of the large relative errors that were discovered occur in $e^{x/\sqrt{2}}$ kei x when $x = 97.19$ (tabular value too low by 335 units), in $e^{-x/\sqrt{2}}$ bei x when $x = 98.30$ (too high by 1027 units), and in $e^{x/\sqrt{2}}$ ker x when $x = 99.41$ (too high by 363 units). It should be stated here that the table of $e^{x/\sqrt{2}}$ was also checked at several places, and no errors were found.

The arrangement of the material is very convenient, all functions of a given argument being found on facing pages. It is indeed unfortunate that the attractiveness and convenience of these tables could not have been matched by acceptable accuracy. This accuracy could have been attained throughout by use of computer routines employing double-precision arithmetic, such as were used by Lowell.

J. W. W.

1. Herman H. Lowell, *Tables of the Bessel-Kelvin Functions Ber, Bei, Ker, Kei, and their Derivatives for the Argument Range 0(.01)107.50*, Technical Report R-32, National Aeronautics and Space Administration, Washington, D. C., 1959. See *Math. Comp.* v. 14, 1960, p. 81 (Review 9).

90[H, S, X].—A. L. Loeb, J. Th. G. Overbeek & P. H. Wiersema, *The Electrical Double Layer Around a Spherical Colloid Particle*, The Technology Press of M.I.T., Cambridge, Mass., 1961, 375 p., 26 cm. Price $10.00.

These tables give the numerical solution of the Poisson-Boltzmann equation

$$r^{-2}\frac{d}{dr}\left(r^{2}\frac{d\psi}{dr}\right) = -\frac{4\pi e}{\epsilon}\left[n_{+}z_{+}\exp\left(-\frac{z_{+}e\psi}{kT}\right) - n_{-}z_{-}\exp\frac{z_{-}e\psi}{kT}\right]$$

where ψ is the electric potential at radius r from the center of a charged, spherical