

throughout, corresponding generally to six or seven significant figures in the actual solutions and their first x -derivatives. Modified second differences, and, where necessary, modified fourth differences, are provided for interpolation in the x -direction. The tables were reproduced photographically from copy prepared on a card-operated typewriter and the printing is quite clear.

One of the difficulties of this project, described in the Introduction to the tables, was the choice of standard solutions of the differential equation. In addition to the usual criteria for numerically satisfactory solutions of linear differential equations in exponential or oscillatory regions, a further physical desideratum is that interpolation should be feasible in the a -direction. This last requirement could be fulfilled only partially.

The Introduction also describes the computation of the tables at the National Physical Laboratory, and includes worked examples of x -wise and a -wise interpolation. Furthermore, many mathematical properties of the chosen solutions are derived, including expressions in terms of confluent hypergeometric functions and the N. B. S. Coulomb wave functions; recurrence relations; convergent expansions in series of powers of x and series of Bessel functions; asymptotic expansions for large x , large $|a|$, small $|a|$, and large L .

F. W. J. OLVER

National Bureau of Standards,
Washington, D. C.

1. NATIONAL BUREAU OF STANDARDS, *Tables of Coulomb Wave Functions*, Vol. I, Applied Mathematics Series 17, U. S. Government Printing Office, Washington, D.C., 1952.
2. NATIONAL BUREAU OF STANDARDS, *Handbook of Mathematical Functions*, Chapter 14, Applied Mathematics Series 55, U. S. Government Printing Office, Washington, D.C., 1964.

47[L].—M. A. FISHERKELLER & W. J. CODY, *Tables of the Complete Elliptic Integrals K , K' , E , and E'* , Argonne National Laboratory, Argonne, Ill., ms. of 14 typewritten pages deposited in the UMT File.

The authors tabulate K , E , K' , and E' to 17S for $k = 0(0.005)1$ and for $k^2 = 0(0.005)1$. In a two-page introduction we are informed that the underlying computations were performed on a CDC-3600, using 25S, and the results were checked to at least 20S by means of Legendre's relation, before rounding to 17S. Accordingly, the tabulated values are believed to be accurate to within one-half a unit in the least significant figure.

Reference is made to some specialized tables of Airey [1] relating to values of K and E to 12 and 13D when k^2 approaches 1, and to the tables of Spenceley and Spenceley [2], wherein the argument is the modular angle. It seems appropriate to mention here that the WPA Project for the Computation of Mathematical Tables [3] in 1942 prepared manuscript tables of the Jacobi elliptic functions, which included as an auxiliary table values of K to 17S for $k^2 = 0(0.01)1$, that is, at twice the subinterval in k^2 appearing in these tables.

J. W. W.

1. J. R. AIREY, "Toroidal functions and complete elliptic integrals," *Philos. Mag.* (7), v. 19, 1935, pp. 177-188.
2. G. W. SPENCELEY & R. M. SPENCELEY, *Smithsonian Elliptic Functions Tables*, Smithsonian Institution, Washington, D. C., 1947. [See *MTAC*, v. 3, 1948/1949, pp. 89-92, RMT 485.]
3. *MTAC*, v. 1, 1943/1945, pp. 125-126, UMT 12.