L. N. Bolshev and V. N. Smirnov, *Mathematical Statistical Tables* (in Russian). V. A. Steklova Mathematical Institute, Academy of Sciences, Moscow, USSR, 1965. 464 pp. + partial page of errata. 3 rub. 50 kop.

Review by D. B. Owen

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It will be convenient to compare and contrast the volume under review (abbreviated MST) with *Biometrika Tables for Statisticians* (abbreviated BTS), Volume I, by E. S. Pearson and H. O. Hartley. It will be assumed that the reader is already familiar with the BTS volume. MST contains 170 pages of introduction, including the table of contents and the references. The pages in MST are roughly the same size as those in BTS. BTS has 112 pages of introduction, including the table of contents and the references. There is no index in MST such as occupies the last two pages of BTS. There are 136 pages of tables in BTS vs. 292 pages of tables in MST.

The tables of Section 1 of MST are of the normal cumulative, direct and inverse, the density and its derivatives. These tables are given to six decimal places, but it appears that the last place may be in error. For example, the reviewer chose the entry for the normal density at $x = 0.1$ which is given as 0.396952 whereas the correct value is 0.396953. At $x = 0.18$ MST gives 0.392532 for the density whereas 0.392531 is the correct value. These were found by choosing a few points at random to check. There are undoubtedly other errors in this table.

Section 2 of MST is devoted to chi-square, direct and inverse. Again making a random check one finds on p. 228, under $Q = 99.5\%$:

n	8	9	10	11	12	13	14
MST value	1.443	1.537	2.651	2.306	3.470	3.565	4.570
Correct value	1.344	1.735	2.156	2.603	3.074	3.565	4.075

n	15	16	17	18	19	20	21
MST value	4.106	5.241	5.796	6.562	6.448	7.434	8.430
Correct value	4.601	5.142	5.697	6.265	6.844	7.434	8.034

n	22	23	24	25	26
MST value	8.346	9.062	9.688	10.025	11.061
Correct value	8.643	9.260	9.886	10.520	11.160

Entries before and after those above are correct. Again, this was a random check and other discrepancies may occur.

Section 3 of MST is devoted to other distributions derived from the normal, starting with Student's t-distribution, direct and inverse. Table 3.1a looks like it was copied from Table 9 of BTS, except the MST ends with degrees of freedom equal to 20 and has a table of differences between the Student t-cumulative and the normal cumulative for degrees of freedom equal to 20, 24, 30, 40, 60, and 120. Again a random check in the inverse table turns up a last digit discrepancy. For $Q = 0.5\%$, $n = 5$, MST gives 4.0321 ($p.$ 240) whereas the correct value is 4.0322. Other discrepancies in the last digit also exist. The tables of the percentage points of the incomplete beta distribution which follow appear to be copies of Table 16 in BTS with some additions which were recently published in *Biometrika*. Table 3.5 of MST (F-distribution) also appears to be copied from *Biometrika*, although BTS Table 18 is a rounded version. The entry for $Q = 10\%$, $\nu_1 = 15$, $\nu_2 = 4$ in MST (p. 273) is 3.8703 whereas the *Biometrika* publication (Vol. 33, pp. 73–88) gave 3.8689. The reviewer believes the correct value is 3.8704.

Table 3.8a of MST appears to be a copy of Table 23 of BTS, probability integral of the range in normal samples. This general pattern follows through the rest of the book (seven sections). The tables appear to be copies of tables given in BTS or from other sources easily accessible to the English speaking peoples of the world. Even the random number tables, pp. 428–432, are copies of the random number tables given in Dixon and Massey's *Introduction to Statistical Analysis*, which Dixon and Massey attribute to the RAND Corporation. The same is true of tables of random normal numbers with $\mu = 0$, $\sigma = 1$. Page for page the same numbers appear (pp. 433–437), except MST gives only every other page that Dixon and Massey, first edition, gives.

The reviewer could not find any tables in the MST collection not already published widely in the West, and there were numerous typographical errors (in addition to those noted above) which would make anyone uneasy in using these tables. MST cannot be recommended to the general user, but might be of interest to persons preparing tables since the collection is larger than BTS and therefore contains some tables which could be considered for Volume II of BTS or other table collections.