In addition to these tabular errata a significant number of serious typographical errors (in addition to obvious ones) appear in the formulas and text. For example, on p. 23, in the expression for the second root of the cubic equation, read $A - B$ instead of $A - 3$, and in the following line $d^2/27$ should be replaced by $d^3/27$. On p. 34 the constant e is inadvertently represented as the sum of a terminating series. On p. 51, in formula 194 an extraneous minus sign obtrudes in the integrand, and in the last line on p. 61 it is clear that $E(n \pm \phi)$ should be replaced by $E(n\pi \pm \phi)$. In the table of torsional deflection constants (p. 93) the symbol k should be replaced by K, and in formula 4 we should read $q = a_i/a_0 = b_i/b_0$. Also, the reader may be confused by formula 7 because the quantities a and b therein actually represent the lengths of the half-sides of the rectangular cross-section, which differs from the notation adopted in related formula 5.

Finally, it should be mentioned that although the authors state in the preface that they consulted several source books, reference books, and handbooks while selecting the present tables, they do not identify these sources nor do they include a bibliography to assist those users who may desire information regarding more extensive tables.

A careful emendation of these tables is clearly required before their overall reliability can match their evident utility.

J. W. W.

1. A. Fletcher, J. C. P. Miller, L. Rosenhead & L. J. Comrie, *An Index of Mathematical Tables*, Second edition, Addison-Wesley, Reading, Mass., 1962. (See v. II, p. 791.)

42[8].—Charles E. Land, *Tables of Critical Values for Testing Hypotheses about Linear Functions of the Normal Mean and Variance*. II, Department of Statistics, Atomic Bomb Casualty Commission, Hiroshima, Japan 730. Ms. of 69 computer sheets (reduced) deposited in the UMT file.

The calculation of these unpublished tables was carried out by the author while he was a member of the Department of Statistics at Oregon State University.

They represent expanded versions of similar 3D tables [1] previously deposited by the author in the UMT file. The tabular precision and the tabulated significance levels α in [1] remain unchanged, but the number of degrees of freedoms listed in Table 1 (one-sided tests) is now

$$\nu = 3(1)30(5)50(10)100(20)200(50)500(100)1000,$$

while in Table 2 (two-sided tests) $\nu = 2(2)20$. Furthermore, the range of the parameter ξ has now been extended beyond $\xi = 100$ for $\nu \leqq 14$ in Table 1, so that the upper limit of ξ progressively increases (at intervals varying from 10 to 500) with decreasing ν until it attains the value 5000 when $\nu = 3$. Similarly, in Table 2 the upper limit of ξ ranges from 100 for $\nu \geqq 16$ to 4000 when $\nu = 2$. Also, the interval $0 \leqq \xi \leqq 0.1$ has now been divided into 10 subintervals. However, as in the earlier version of Table 2, the critical values corresponding to ξ between 0.01 and 0.2 have been progressively omitted as ν increases to 14, because of corresponding loss of precision in the calculations.

Expansion of these tables was necessary in order to obtain the author's new tables of standard confidence limits, which will be described in a subsequent review.

J. W. W.

1. CHARLES E. LAND, *Tables of Critical Values for Testing Hypotheses about Linear Functions of the Normal Mean and Variance*, Department of Statistics, Oregon State University, Corvallis, Oregon, ms. deposited in the UMT file. (See *Math. Comp.*, v. 25, 1971, p. 941, RMT 44.)

43 [9].—JACK ALANEN, *Empirical Study of Aliquot Series*, Report MR 133, Stichting Math. Centrum, Amsterdam, x + 121 pp., July 1972.

This is essentially a reprint of Alanen's Yale thesis. The introduction discusses the use of the computer in attacking number-theoretic problems. He is concerned with the construction and proof of algorithms, and quotes Dijkstra: "Testing shows the presence, not the absence, of bugs." An aliquot sequence ("series") is $s^0(n) = n$, $s^k(n) = s(s^{k-1}(n))$, where $s(n) = \sigma(n) - n$ is the sum of the aliquot parts of n, the divisors of n apart from n itself. He classifies aliquot sequences as purely periodic ("sociable numbers of index k"), ultimately periodic, and unbounded. He lists the 13 purely periodic sequences then known with period ("index") greater than 2. These are due to Poulet ($k = 5, 28$), Borho, Cohen and David ($k = 4$). Further 4-cycles have since been found by David and by Root. He defines $s(0) = 0$ and so includes among the ultimately periodic sequences those called terminating by the reviewer and Selfridge [1]. He lists the six known candidates (276, 552, 564, 660, 840, 966) for "main" n sequences with $n < 1000$ which may remain unbounded; the reviewer, D. H. Lehmer, Selfridge and Wunderlich [2] have now pursued these to terms 433, 181, 265, 168, 195, and 184, which contain 36, 35, 31, 33, 31, and 32 digits.

He gives properties of $s(n)$ and points out that it induces a digraph on the nonnegative integers as vertices. There is part of the drawing of the diagraph containing the perfect number $P = 8128$. He gives the members of the monotonic sequence $s^k(3P)$, $0 \leqq k \leqq 48$. (The sequence $s^k(9336)$ leads into this $s^k(3P)$ at $s^4(9336) = s^3(3P) = 9P$, and, in [2], $s^k(3P)$ was thereby continued until

$$s^{95}(3P) = 22\ 14196\ 97766\ 28194\ 23647\ P,$$

where it is still monotonic. The theory of $s^k(n P)$ with n odd and P perfect has been given by te Riele [3]. For large P and $n = 27$ the sequence has been continued to $k = 136$ [3], [4].)