errors in MTE **293** previously on pp. 2, 24, 149, 186, 274, 301, 303 together with the erroneous values of Euler's constant and B_{34}.

Particularly charming, and in a way a lesson to us all, is the erroneous

$$\prod_{k=1}^{\infty} \Gamma\left(\frac{k}{3}\right) = \frac{640}{3^6}\left(\frac{\pi}{\sqrt{3}}\right)^3$$

on p. 938. The upper limit of the product should be 8, not ∞. The persistence of this error should be an inspiration to everyone. For many years it continued as a misprint in Whittaker and Watson, and though it was finally corrected there, and referred to in MTE **293**, it has managed to elude the combined scrutiny of Ryzhik, Gradshteyn, Geronimus, Tseytlin, Lapko, Scripta Technica, and Jeffrey, and that, in spite of the fact that it is so blatantly false that no mathematician examining it with even casual attention should fail to note that an error is present.

In summary, then, we have a mass of useful information here, but the editing was not of that quality which it deserved.

D. S.

86[F].—Carl Friedrich Gauss, *Disquisitiones Arithmeticae*, Yale University, New Haven, Connecticut, 1966. Translated into English by Arthur A. Clarke, S.J., xx + 472 pp., 24 cm. Price $12.50 (paperback $2.95).

Several years ago [1], the reviewer had occasion to emphasize that Gauss's *Disquisitiones* was still not available in English. At the suggestion of Dr. Herman Goldstine, Professor Arthur A. Clarke, S.J., now offers us a translation, and thus somewhat rectifies this 165-year-old anomaly. For this, English-speaking mathematicians will be somewhat grateful. We say only "somewhat," however, since the translation has unfortunately many defects: peculiar and inaccurate terminology, awkward and undesirable notation, some serious typographical errors, and frequent confusing and inadequate translations. Of course, these are serious charges—which must therefore be documented. Here are some samples.

On p. 168, instead of *convergent fractions*, we find first *approaching fractions*, and two lines later, *approximating fractions*. On p. 342, *trigonal* numbers replace the usual *triangular* numbers, and on p. 360 we find *middle* determinants instead of *mean* determinants. Many similar peculiarities exist.

On p. 240, we find *equation* (I) referring to four equations; on p. 360 *only one class* means *only one genus*; and on pp. 373–374 one finds two examples with inexplicably contradictory terminology: the first, which (correctly) has *four positive genera*, is immediately followed by the second with *eight positive categories*.

For awkward symbolism see f''''''' on p. 162, the undisplayed (I): (1), (3), (5), $\cdots L \cdots$ on p. 170, etc. Unlike Gauss, and (all?) modern writers: Mathews, Dickson, Cohn, etc., Clarke (p. 265) uses $+$ instead of $\times$ to represent the operation on classes called *composition*, and thus, for example, he writes $2K$ instead of K^2 for the *duplication* of a class. This is not only historically wrong, and at variance with customary usage, and in contradiction to earlier symbolism on, say, p. 258, where F *is transformable into* ff', but it is intrinsically wrong, since, again on p. 258, if a is represented by f and a' by f' then their *product* aa' is represented by the composition class F. Further, this unfortunate symbolism destroys the artistry of Gauss's presentation, since he is clearly suggesting an analogy between the classes of forms under composition with the earlier residue classes under multiplication modulo m—with analogous primitive roots, order of the groups, etc.

Typographical errors that could well cause difficulties are, say, $D = 850/2$, $1550/2$, etc. instead of $850\frac{1}{2}$, $1550\frac{1}{2}$, etc. on p. 359, and $m\sqrt{(D - n)}$ instead of $m\sqrt{D} - n$ on p. 364.

For inadequate, false, and/or confusing translations, try these: "unless the congruence" and "But this omission," at the top of p. 4; and "vague computations," at the bottom of p. 5. Again, the statement of the reciprocity law on p. 87: "which, taken positively," etc. is certainly ambiguous. Garbled, and quite misleading, is "That is, there is only a small number . . . " on p. 363.

Beside these many new defects, nothing is done to correct Gauss's own rare notational discrepancies, or his even rarer actual errors. Thus we find $AX^2 + 2BXY + CY^2 \cdots F$, $Ax^2 + 2Bxy + Cy^2 \cdots (F)$, and $F = ax^2 + 2bxy + cy^2$, on pp. 116, 123, and 220. On p. 363, Gauss's error stating that there are 27 determinants with classification IV,1 is still present. Actually, there are 26, and Gauss is presumably classifying 99 as IV, 1 instead of the correct IV, 2.

On the positive side, the volume is very nicely printed on good paper, and it includes many additional notes by the translator, mostly consisting of the exact titles of Gauss's many references. He also includes *Gauss's Handwritten Notes*, which are not given in the French edition [2]. These indicate the dates of Gauss's many discoveries first published in his book. Finally, there is a *List of Special Symbols* and a *Directory of Terms*, but these, again, are not as well done as would be desirable.

For all that, any translation is better than none, and no doubt this volume will introduce many students to Gauss's work. The reviewer must say that he is pleased to own a copy, even with its many defects. It can be best used if the reader also has access to a European translation, say [2], for purpose of comparison.

Anyone interested in Gauss's work would do well to examine Mathew's *Theory of Numbers* [3], since, of all textbooks in English, this is the one most in harmony with Gauss's subject matter and treatment. Also of value here is the chapter by G. J. Rieger in the *Gauss Gedenkband* [4]. Free tip to publishers: This last volume should (also) be translated into English. As luck would have it, this may well be a perfect translation, and appear in much less than 165 years.

D. S.

1. DANIEL SHANKS, *Solved and Unsolved Problems in Number Theory*, Vol. 1, Spartan, Washington, D. C., 1962, p. 62.
2. CH. FR. GAUSS, *Recherches Arithmétiques*, reprinted by Blanchard, Paris, 1953.
3. G. B. MATHEWS, *Theory of Numbers*, reprinted by Chelsea, New York, 1961.
4. GEORG JOHANN RIEGER, "Die Zahlentheorie bei C. F. Gauss," *C. F. Gauss Gedenkband Anlässlich des 100. Todestages am 23. Februar* 1955, Teubner, Leipzig, 1957, pp. 37–77.

87[F].—MARVIN WUNDERLICH, *Tables of Fibonacci Entry Points*, edited by Brother U. Alfred, published by The Fibonacci Association, San Jose State College, San Jose, California, January 1965, vii + 54 pp., 28 cm. Spiral bound. Price $1.00.

88[F].—DOUGLAS LIND, ROBERT A. MORRIS & LEONARD D. SHAPIRO, *Tables of Fibonacci Entry Points, Part Two*, edited by Brother U. Alfred, published by