	V_n	n
$3 \cdot 347 \cdot 1270083883$	1322157322203	58
$2^2 \cdot 19 \cdot 199 \cdot 991 \cdot 2179 \cdot 9901 \cdot 1513909$	4895267005239686661124	99
$2 \cdot 3^2 \cdot 227 \cdot 29134601 \cdot (5608975608563)$	667714778405043259651218	114
$2^2 \cdot 19 \cdot 79 \cdot 521 \cdot 859 \cdot (1052645985555841)$	2828485190904971853895196	117

(**b**) On p. 22 of v. 2, line 13, the author noted the following corrections:
p = 1031, *for* $2 \cdot 5 \cdot 103$ 1030, *read* $2 \cdot 5 \cdot 103$ 206;
p = 1231, *for* $2 \cdot 3 \cdot 5 \cdot 41$ 1230, *read* $2 \cdot 3 \cdot 5 \cdot 41$ 410.

UNPUBLISHED MATHEMATICAL TABLES

Reference has also been made to Unpublished Tables in RMT **485** (Glaisher), **491** (Gloden); Q**24** (Wrench).

67[F].—P. Poulet, "Suites de totalics au depart de $n \leq 2000$." Hectographed copy on one side of each of 56 leaves, in possession of D. H. L. 20 × 24.8 cm.

By a "totalic series" or "aliquot series" is meant a sequence of positive integers, each term of which is the sum of the proper divisors of its predecessor. Two simple examples are

18, 21, 11, 1

1420, 1604, 1210, 1184, 1210, 1184, ⋯.

The first of these terminates with its fourth term; the second ultimately becomes periodic of period two. It has been conjectured[1] that aliquot series either terminate or become periodic. The present tables show this to be the case for all such sequences whose "leaders" (first terms) do not exceed 2000, with the possible exception of about 25 series which are left unfinished. For each such leader are given those terms of the sequence which are $\leq n$. When a term n_1 finally falls below n, the reader is referred to the previous series whose leader is n_1. When the leader is a term of a previous series, reference is made to the leader of this series. Prime leaders are of no interest and are omitted. Beyond $n = 200$ only abundant leaders n are listed. Other leaders would have given second terms not greater than the leaders.

Some leaders generate unusually long sequences. The longest completed series is

936, 1794, 2238, 2250, ⋯, 74, 40, 50, 43, 1

and runs to 189 terms, the largest term being

$$3328\ 91620\ 99526 = 2 \cdot 25943 \cdot 641582741.$$

Thus the three dots of this series represent a formidable calculation. It is due to B. H. Brown who (since 1940) also contributed many terms to several of the other still incomplete series. The incomplete series with the smallest leader is

276, 396, 696, 1104, ⋯, 5641400009252, ⋯ (58 terms).

Besides giving the terms in their decimal representation, the author gives their canonical factorization into primes. This table is an extension of a previous table of Dickson[2] for leaders ≤ 1000.

D. H. L.

[1] L. E. Dickson, *History of the Theory of Numbers*, v. 1, Washington, Carnegie Institution, 1919; offset print, New York, Stechert, 1934, p. 48–49.

[2] L. E. Dickson, "Theorems and tables on the sum of the divisors of a number," *Quart. Jn. Math.*, v. 44, 1913, p. 267–272. For additions and corrections see P. Poulet, *La Chasse aux nombres*, Brussels, v. 1, 1929, p. 69–72; v. 2, 1934, p. 187–8.

68[G].—Herbert E. Salzer, *Chebyshev Polynomials*, ms. in possession of the author at NBSCL.

C. Lanczos, in his "Trigonometric interpolation of empirical and analytical functions," *Jn. Math. Phys.*, v. 17, 1938, p. 140, gave the coefficients of the Chebyshev polynomials $C_n(x)$ adjusted to the range [0, 1], up to $n = 10$. Due to their importance, these coefficients were extended by the writer up to $n = 20$. Incidentally this also gives the numerical values of the coefficients of $C_n(x)$, range $[-1, 1]$, for n even, up to $n = 40$. For the coefficients of $C_n(x)$, range $[-1, 1]$, up to $n = 20$, see JONES, MILLER, CONN, & PANKHURST, R. Soc. Edinb., *Proc.*, v. 62A, p. 190 (*MTAC*, v. 2, p. 262). For x^n in terms of $C_m(x)$, for either the range $[-1, 1]$ or $[0, 1]$, only binomial coefficients are needed (readily available up to $n = 50$ in J. W. L. GLAISHER, *Mess. Math.*, v. 47, 1917, p. 97–107).

H. E. SALZER

AUTOMATIC COMPUTING MACHINERY

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TECHNICAL DEVELOPMENTS

The leading article of this issue of *MTAC*, "A Bell Telephone Laboratories' Computing Machine—II," by Dr. FRANZ L. ALT, is our current contribution under this heading.

DISCUSSIONS

Applications of Large-Scale High-Speed Computing Machines to Statistical Work

This discussion is essentially the reproduction of a talk given by Mr. J. L. MCPHERSON of the Census Bureau, Washington, D. C. See under NEWS.

The construction and use of high-speed computing machines is a comparatively new art. This art is old enough, however, to have developed some specialized meanings for certain words. The terms defined in the following short glossary are used in their technical sense in this discussion.

1. Memory:	A device into which code can be entered, and then abstracted at a later time.
2. Word:	A group of digits (usually the equivalent of 10 or 12 decimal digits) stored in coded form in a single memory position.
3. Memory Position:	One of N possible positions which a word may occupy in the memory.
4. Message:	A group of words, usually that group of words required to describe one statistical observation.
5. Instruction:	A word directing the machine to perform a particular operation.
6. Program:	A series of instructions directing a sequence of operations.

The very newness of the art makes it rather difficult to talk about statistical applications for high-speed computing machines. At present, there are but a few such machines in existence. To date, these machines have been used on problems not particularly representative of the statistician's work. Therefore, it must be kept in mind that these remarks refer to proposed machines. The features and characteristics discussed should be interpreted as performance specifications. Competent experts at the National Bureau of Standards are optimistic about the possibility of building machines to meet these specifications. However, a sound knowledge of the statistical applications of such machines must be based on actual use. Accurate and detailed