$$\phi_n(x) = \left[\int_{-n-1}^{n+1} \beta(\xi; n, \alpha)\, d\xi\right]^{-1}\left[\frac{1}{2} + \frac{1+n-|x|}{2\,|1+n-|x||}\right]\beta(x; n, \alpha),$$

and the normalizing factor $\int_{-n-1}^{n+1} \beta(\xi; n, \alpha)\, d\xi$ is tabulated to 5D for $n = 0, 0.1, 0.5, 1, 2, \infty$.

Two computer plots are also included: one of $\beta(x; n, \pi/4)$ for the tabular arguments; the other of $\beta(x; 0, \alpha)$ for $\alpha/\pi = 0.05(0.05)0.25$ and $-1 \leqq x \leqq 3$.

J. W. W.

37 [9].—M. LAL, C. ELDRIDGE & P. GILLARD, *Solutions of* $\sigma(n) = \sigma(n + k)$, Memorial University of Newfoundland, May 1972. Plastic bound set of 88 computer sheets (unnumbered) deposited in the UMT file.

The function $\sigma(n)$ is the sum of all positive divisors of n. Table 2 contains 50 separate tables. The kth of these gives all $n \leqq 10^5$ such that

(1) $\sigma(n) = \sigma(n + k)$.

Also listed here are $n + k$ and $\sigma(n)$.

Table 1 gives the number of solutions above for each k. Thus, $k = 1$ has 24 solutions, the first being $n = 14$ and the last being $n = 92685$.

An earlier table, apparently unpublished, was by John L. Hunsucker, Jack Nebb, and Robert E. Stearns, Jr. of the University of Georgia. This larger table listed all 113 solutions for $k = 1$ and $n \leqq 10^7$. Their last is $n = 9693818$. They had the same 24 solutions $< 10^5$. They also computed (1) for all $1 \leqq k \leqq 5000$ and $n + k \leqq 2 \cdot 10^5$, and so should include everything here deposited. I have not seen this larger table.

In their larger range of n there are still only two solutions for $k = 15$: $n = 26$ and $n = 62$. Won't someone please prove that there are only two? Or are there others?

D. S.

38 [9].—SOL WEINTRAUB, *Four Tables Concerning the Distribution of Primes*, 23 pages of computer output deposited in the UMT file, 1972.

Tables 2, 2A and 2B (6 pages each) are very similar to Weintraub's earlier [1]. See that review for the definitions of GAPS, PAIRS, ACTUAL, and THEORY. For the same variable $k = 2(2)600$, Table 2 lists these four quantities for the 11078937 primes in $0 < p < 2 \cdot 10^8$; Table 2A for the (unstated number of) primes in $10^{16} < p < 10^{16} + 25 \cdot 10^5$; and Table 2B for the 255085 primes in $10^{17} < p < 10^{17} + 10^7$. Nothing extraordinary occurs in these tables that requires special mention. The largest gap here is a case of $k = 432$ in Table 2A. ACTUAL and THEORY agree very well, as expected.

Table A (5 pages) covers the same range as Table 2 does. For $n = 1(1)200$ it first lists

$$\pi(n \cdot 10^6) \quad \text{and} \quad \pi(n \cdot 10^6) - \pi((n - 1) \cdot 10^6),$$
$$R(n \cdot 10^6) \quad \text{and} \quad \text{DIF}(n \cdot 10^6),$$

where

$$R(X) = \sum_{m=1}^{\infty} m^{-1}\mu(m) \operatorname{li}(X^{1/m}) \quad \text{and} \quad \text{DIF}(X) = \pi(X) - R(X).$$

Except for rounding differences in $R(X)$, this part of Table A coincides with one-fifth of Mapes' [2] which goes to $n = 1000$. (The two authors are performing very different calculations for their $\pi(n \cdot 10^6)$, since Weintraub counts the actual primes while Mapes is using an elaborate recursive formula.)

Table A continues with the number of twin pairs in these intervals, and cumulatively. These counts agree, where they overlap, with those in [3] and [4]. Table A concludes with the maximal gap in each million—its size and location. Compare [3] and [4].

Which is the first million containing more primes than its predecessor? The thirty-third. Which is the first million with more twins than its predecessor? The eighth.

D. S.

1. Sol Weintraub, *Distribution of Primes between* 10^{14} *and* $10^{14} + 10^8$, UMT 27, *Math. Comp.*, v. 26, 1972, p. 596.
2. David Mapes, UMT 39, *Math. Comp.*, v. 17, 1963, p. 307.
3. D. H. Lehmer, UMT 3, *MTAC*, v. 13, 1959, pp. 56–57.
4. F. Gruenberger & G. Armerding, UMT 73, *Math. Comp.*, v. 19, 1965, pp. 503–505.

39 [13.15].—Norman S. Land, *A Compilation of Nondimensional Numbers*, NASA SP-274, National Aeronautics and Space Administration, Washington, D. C., 1972, 122 pages, softcover. Price $0.70.

All applied mathematicians know of the Mach number, the Reynolds, the Froude. But do you know the Jeffrey, the Jacob, and Jakob, the Hersey, the Hartmann, etc.?

All such technical numbers, together with others not named after investigators, such as "magnetic force number," are listed alphabetically in 97 pages of this booklet in the following format: Name, formula, explanation of symbols, technical field in which it occurs, reference. Usually, there is also a characterization of its nondimensionality as a ratio of like quantities, such as

$$\frac{\text{heat radiated}}{\text{heat conducted}} \quad \text{or} \quad \frac{\text{vibration speed}}{\text{translation speed}}.$$

There are 34 references and a shorter list of books on dimensional analysis, similitude, and units. The five-page index relists these numbers by subject matter; e.g., under *Surface Waves*, one finds the Boussinesq, Froude, Russell, and Weber. *Heat transfer* and others have much longer lists.

Some names mean the same thing: Crocco = Laval; others are related: Cauchy = Mach^2. The reviewer is unfamiliar with most of these numbers and has no comment on the accuracy here. He has been told, for instance, that Ekman should be