

computers had been reduced to 250. Since the WPA is to be liquidated on 1 February 1943 the New York Mathematical Tables Project is also to be terminated by that date. Had all the computers in the Project been dispersed, the loss to scientific research would have been irreparable. We learn, however, that 47 members of the group have been taken over by the U. S. Bureau of Standards and by the Hydrographic Office.

Unless a much more adequate nucleus of the present Project is preserved, with calculating machines, a large number of mathematical tables now in process may never come to publication.

R. C. A.

### QUERIES

1. TABLES TO MANY PLACES OF DECIMALS.—Various tables, computed to from 15 to 60 or more places of decimals, have been published in the distant past, and continue to appear in recent times; several tables of this kind are referred to in this issue of *MTAC*. In what specific problems of research do their solutions make such tables highly desirable? There are doubtless many problems of this kind which might be formulated by the specialists in different fields. An appeal for contributions of such formulations is herewith made. Professor Lehmer, a specialist in the theory of numbers, makes an interesting start in this direction in QR 1, extracted from a personal letter dated 7 November 1942.

R. C. A.

### QUERIES—REPLIES

1. TABLES TO MANY PLACES OF DECIMALS.—As to the sort of problems in which great accuracy in logarithms is helpful, you cannot draw the line between 20 figure problems and over 100 digit problems. I could not pretend to describe all such problems but those with which I have had something to do are of the following type: There is defined some numerical function whose value is an integer for each integer value of the variable. Quite often the function is defined by words (such as the number of ways that such and such a thing can be done). It often happens that when the argument of the function is only fairly large the value of the function is extravagantly large. Even so, this value is an integer and it is either even or odd (or perhaps we should like to know if it is divisible by 23 to check up on a conjecture). Perhaps there is no workable formula with which to calculate an isolated value of the function. Perhaps even a recursion formula for calculating a complete table of the function is not feasible. Then we may turn to an approximate formula, a series consisting of infinitely many terms which are values of an analytic function [often a Bessel function]. If enough terms of this series are taken so that the sum of the remainder terms is less than  $1/2$  in absolute value then the integer we are looking for is the nearest integer to the value we get from the series. Since these terms must add up to an extravagantly large amount some terms must be calculated with extreme accuracy. We do not have tables of Bessel functions to say 100