Here $r_{1,2} = (a^2 + r^2 \pm 2ar \cos\theta)^{1/2}$, and

$$I(r, B) = r \int_{\theta=0}^{\pi/2} (1 - e^{-B\alpha})(1 - e^{-B\beta})(1 - e^{-B\gamma})d\theta$$

$$J^*(B) = B^{-5/2} \int_{r=0}^{\infty} I(r, B)dr$$

$$J(r) = \int_{B=0}^{\infty} B^{-5/2}I(r, B)dB$$

$$K = \int_{r=0}^{\infty} J(r)dr = \int_{B=0}^{\infty} J^*(B)dB.$$

Behavior of $J^*(B)$ for small and large positive values of $B$ is discussed, and the method of computation is described.

The integrals are of interest in studies of cosmic rays.

C. B. T.

## TABLE ERRATA

In this issue references have been made to errata in Review **80**, Review **81**, and Review **89**.

In *MTAC*, 9, July 1955, reference was made to errata in Review **55** and Review **59**.

**245.**—E. Jahnke & F. Emde, *Tables of Functions*. Dover edition, 1945.

On p. 211, section 9, chapter VIII, *the left side of the last formula should read* — $\Omega_p(z) + N_p(z) \cdots$ *instead of* $\Omega_p(z) + N_p(z) \cdots$.

Henry E. Fettis

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**246.**—Robert E. Greenwood, "Coupon Collector's Test for Random Digits," *MTAC*, 9, 1955, p. 3.

Entry for $n = 13$ *should read* .00800 8315 2 *instead of* .0080 9315 2.

Robert E. Greenwood

The University of Texas
Austin, Texas

## NOTES

### R. C. Archibald

Professor Raymond C. Archibald, who founded *Mathematical Tables and Other Aids to Computation* and who was always one of its principal contributors and the most valued adviser to the Editorial Committee, died on July 26, 1955 at Sackville, New Brunswick, Canada.

Professor Archibald was the Chairman of the Editorial Committee from the first issue of the journal in 1943 through 1949.

A short history of some of Professor Archibald's professional and personal accomplishments will appear in *MTAC* shortly.

There can be no adequate statement of the loss felt by the Editorial Committee and other people interested in mathematical tables, computation, and related topics on learning of Professor Archibald's death.

C. B. T.

## Postdoctoral Research Associates of the National Bureau of Standards

The National Academy of Sciences, the National Research Council, and the National Bureau of Standards announced a plan for postdoctoral research associates at the National Bureau of Standards in October 1954. The program is intended to provide advanced training, through Bureau sponsored research and through close association with outstanding members of the staff of the Bureau, to a few carefully selected young scientists.

This program is directed by Dr. WALLACE R. BRODE, Mr. JOSEPH HILSENRATH, and Dr. DAVID E. MANN of the National Bureau of Standards.

Three appointments for the current year are in numerical analysis or closely related fields.

Dr. RICHARD J. PROSEN plans to apply the computer SEAC to an investigation of crystal structure, with particular emphasis on problems of atomic arrangement. He hopes to answer the question, "How much and how well can an electronic computer be used in such problems?" (Mr. HOWARD R. MCMURDIE, NBS advisor.)

Dr. MORRIS KRAUSS plans a theoretical quantum mechanical study of the relationship between electron energy levels and molecular structure. Such calculations may help explain certain basic problems that are important in other fields such as mass spectrometry. SEAC will be the primary tool used in the study. Dr. KRAUSS will attempt to answer two questions: "How do you go about solving such a highly complex problem?" and "Of what value are known methods?"

## National Simulation Conference

The Dallas-Fort Worth Chapter of the Institute of Radio Engineers Professional Group on Electronic Computers (PGEC) will sponsor a National Simulation Conference in Dallas, Texas, on 19–21 January 1956.

The Conference will be devoted to simulation and associated computing techniques, and will include topics in (a) general simulation (mathematical, physical, logistic, etc.); (b) advances in computer design, techniques, and applications; and (c) methods of determining and improving the accuracy of analog solutions.

While the I.R.E. does not sponsor meetings requiring military security clearance, an attempt will be made to arrange such a session on an "associated" basis if interest warrants.

It is planned to publish "proceedings" of the Conference.

Further information regarding the Conference can be obtained from

Mr. J. R. Forester
2104 Huntington
Arlington, Texas.

### The Second Regional Graduate Summer Session in Statistics
### held at the University of Florida
### in June and July 1955

At the request of the Southern Regional Education Board's Advisory Commission on Statistics, the University of Florida, Virginia Polytechnic Institute and North Carolina State College agreed to initiate a continuing program of graduate summer sessions in statistics to be held at each of the three institutions in rotation, beginning in the summer of 1954. At the first session held at Virginia Polytechnic Institute eighty-nine students were enrolled, and at the second session ninety-six students were enrolled. The third session will be held at North Carolina State College in Raleigh in the summer of 1956.

It is the purpose of this program to serve: (1) research and professional workers who want intensive instruction in basic statistical concepts and modern statistical methodology; (2) teachers of elementary statistical courses who want formal training in modern statistics; (3) graduate students in other fields who desire supporting work in statistics; (4) prospective candidates for graduate degrees in statistics, and (5) professional statisticians who wish to keep informed about advanced specialized theory and methods.

Each of the summer sessions will last six weeks and each course will carry approximately three semester hours of graduate credit.

### Sponsorship by the Office of Naval Research, the National Bureau
### of Standards, the National Science Foundation,
### and various other organizations

Much of the editorial and refereeing work for this and for earlier volumes of *Mathematical Tables and Other Aids to Computation* has been done under the sponsorship of the Office of Naval Research and the National Bureau of Standards as part of their program for the development of numerical analysis and research connected with numerical analysis. Considerable help has been given to the Editorial Committee by various committees sponsored by the National Science Foundation and several learned societies in connection with mathematical and statistical tables. Finally, the members of the Editorial Committee who are members of University faculties and the referees of papers submitted to the journal have carried out their work for *Mathematical Tables and Other Aids to Computation* as part of their University research assignment. The contributions of all these organizations to the publication of this journal are gratefully acknowledged.

### Index

In this issue the Editorial Committee has decided to try to set a format for a more useful index of reviews and other notices of literature available. In particular, we try here to furnish a classified list of tables which will help readers who wish to use *Mathematical Tables and Other Aids to Computation* as a supplement to existing indices of tables, or who are looking for some particular table.

It is not feasible to repeat enough of the review to make the index compete with such works as "An Index to Mathematical Tables" by Fletcher, Miller, and Rosenhead; however, in order to make the index as convenient as is feasible all entries are given by full title as published in the review indexed. In the review the reader is likely to find a description of the table including:

(1) the precision (a number followed by D indicates the number of digits to the right of the decimal point listed, a number followed by S indicates the number of significant decimal digits listed);

(2) the range of the arguments and their increments (in a standard notation the first number listed is the smallest value of the argument, the standard increment following this smallest value is listed in parentheses, then the largest value attained by steps of this increment is listed, then the next increment is listed in parentheses, and so on);

(3) other pertinent information including uses, related tables and works, and so on.

The index of reviews will not be limited to tables. It is divided into several principal sections in the following order (in this volume):

> General Works on Numerical Analysis
> Number Theory
> Algebra
> Analysis
> Statistics
> Physical Sciences
> Automatic Computation

The entries under Analysis are the most voluminous. These include all the mathematical tables which would normally be listed in "An Index of Mathematical Tables" by A. Fletcher, J. C. P. Miller, and L. Rosenhead, Scientific Computing Service, London, 1946, except those in number theory or algebra. In addition, some tables whose entries are restricted by physically measured quantities but which otherwise are analytical in nature may be included.

The classification of the tables indexed under Analysis has followed that of the work cited above through the first digit to the right of the decimal point. No further subdivision has been attempted. In a few cases new subdivisions have been added where no appropriate subdivision was found to exist in the earlier work. The sections are in the same order as the ones listed in the cited work, but the numerical headings have been omitted. The verbal headings of the sections in this work have been retained more or less intact; however, they have been expanded in some cases so that they seem to be self-sufficient without the necessity of including the whole indexing scheme. The Editorial Committee has corresponded with Messrs. Fletcher, Miller, and Rosenhead about this index and we are pleased to acknowledge the cooperation of these authors in our indexing work.

The only major deviations from the usage in the *Index* of Fletcher, Miller, and Rosenhead have resulted from the recent popularity of numbers of non-decimal radix, particularly in connection with automatic computers, and the

addition to the index of approximations, such as the "Approximations for Digital Computers" by C. Hastings, Jr., J. T. Hayward, and J. P. Wong, Jr., Princeton, 1955. References to numbers expressed in common integral bases (such as base two) or expressed symbolically without reference to base (such as some of the approximations cited above) have been made under headings which might have been restricted to decimal headings in the *Index* copied. However, logarithms to bases which are non-decimal have been assigned a special section, not used by Fletcher, Miller, and Rosenhead, and immediately following the section dealing with the corresponding decimal logarithm.

The classification of the tables relating to Number Theory has been carried out in the same way with reference to the "Guide to Tables in the Theory of Numbers" by D. H. Lehmer, The National Research Council, Washington, D. C., 1941. The full detailed classification employed by Lehmer has been used here. Again, only the verbal headings have been repeated, with some augmentation when this seemed desirable to make them stand alone with meaning, and the numbering symbols have been omitted. The order of the listings is the same as that of Lehmer. The Editorial Committee acknowledges the cooperation of Professor Lehmer in granting permission to use his classification.

The classification of tables in Statistics has been done largely by Dr. Bernard Sherman using a complete outline kindly furnished to the Editorial Committee by Professor H. O. Hartley, who is using it in his work on indexing Statistical Tables; we are pleased to acknowledge his help in making his index headings available to us. Tables which might be classified in the Algebra or Analysis sections (some tables which might relate to block designs of experiments and some tables of functions which—like the hypergeometric function—are analytic in origin but have considerable applications in statistics) may not always be included in the Statistics index; however, no attempt has been made to avoid multiple listings, and such omissions are oversights. Tables of quality control have been listed under the miscellaneous heading of the normal distribution.

Adequate listings for the other classifications seem not to be obtainable. At the moment, the number of entries is sufficiently sparse to lead to a belief that the reader will have little difficulty scanning the headings and finding those which seem likely to hold material of interest to him in his particular search.

It should be noted that the headings used are not the only ones which will be used in later indices. In particular, it seems likely that a new category of Social Sciences will be introduced in the next volume.

With regard to many of the more elementary functions, it should be noted that the policy of *MTAC* does not include review of tables of the most common functions. Hence, those included in this index are only those found in more comprehensive books of tables reviewed, and the sections of the index relating to the most common functions should not be considered as even approximately indicating the range of publications including values of these functions during the period reviewed.

The Editorial Committee hopes to be able to assemble a complete index of reviews for the first ten volumes of *MTAC* shortly after the tenth volume has been completed. It will be appreciated if authors of works reviewed and others will suggest proper categories for these works without further solicitation. Com-

ments on the utility of this index and corrections to the present listing will be appreciated if they are sent to the Chairman of the Editorial Committee.

Except for the help cited and considerable advice from Drs. T. H. Southard and M. Melkanoff, the index has been arranged completely by the Chairman of the Editorial Committee, for the first attempt seemed necessarily a job to be undertaken in one place. Mistakes and errors of judgment are wholly his.

C. B. T.

## CORRIGENDA

ROBERT E. GREENWOOD, "Coupon Collector's Test for Random Digits," *MTAC*, v. 9, p. 1, *the displayed relation for $p_n$ should read*

$$p_n = \frac{1}{10^{n-1}} \sum_{j=0}^{9} (-1)^j \binom{9}{j} (9-j)^{n-1},$$

*instead of*

$$p_n = \frac{1}{10^{n-1}} \sum_{j=0}^{q} (-1)^j \binom{q}{j} (q-j)^{n-1}.$$