

Most persons using integral tables are aware of errors, which are common to many tables of integrals, such as the following.

The first type is illustrated by the example: $\int \frac{dx}{x} = \log x$. A correct form for this integral would be $\int \frac{dx}{x} = \log |x|$. In this latter form, negative values of x may be used.

The second type is illustrated by the example: $\int \frac{dx}{\sqrt{a^2 - x^2}} = \sin^{-1} \frac{x}{a}$. This form is not valid for $a < 0$. A form which is valid for all $a \neq 0$ may be obtained from this form by replacing the a by $|a|$.

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243.—E. JAHNKE & F. EMDE, *Tables of Functions*. Fourth Edition, 1945, New York and earlier editions.

On p. 262, for $h_1(0.1) = 6.118$ read $h_1(0.1) = 6.342$.

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Remark: Errors in this volume have been noted earlier in *MTAC* as follows: v. 1, p. 198, 390; v. 2, p. 47, 350; v. 3, p. 41, 314, 364 (review), 423; v. 6, p. 196 (review 990[L]), 237.

240.—See item 2 of the Corrigenda.

NOTES

A Conference on Mathematical Tables

A conference on mathematical tables was held at the Massachusetts Institute of Technology on September 15 and 16, 1954, under the leadership of Professor P. M. MORSE. The following excerpts from his summary will be of interest to readers of *MTAC*. They were written by Professor MORSE.

This conference, under the joint auspices of the National Science Foundation and the Massachusetts Institute of Technology, was held to discuss the needs, in this country, for Tables of Mathematical Functions, in the light of recent developments in high-speed computers. Twenty-eight persons attended the two-day sessions and took part in round-table discussions on the general topics: Future Need for Tables; What Form Should Tables Have?; What Functions Need Tabulating?; and What Should Be Done About It?

General Conclusions

Still Need for Tables. There was general agreement that the advent of high-speed computing equipment changed the task of table making but definitely did not remove the need for tables. There are still many scientists and engineers who have no more than desk computing machines to help in their calculations, and even where electronic computers are easily available many calculations, exploratory and otherwise, still have to be made "by hand." Here tables of usual type and format are still needed.

Need for a Handbook for the Occasional Computer. There was a general agreement that an outstanding need is for a "Computer's Handbook," with four- or five-place tables of usually encountered functions, together with a discussion of their analytic properties and a set of formulas and tables for interpolation and other techniques useful to the occasional computer. (This volume was characterized by several as an "enlarged and up-to-date JAHNKE-EMDE.") The National Bureau of Standards for several years has planned such a volume but has not been able to afford the five to ten man-years required to prepare, edit, and publish it. The present conference strongly recommended that the Bureau produce such a volume and suggests that it request the National Science Foundation for financial aid to achieve this end.

Publication of Specialized Tables. It was also agreed that computing machines now produce many tables of functions, incidental to the solution of specific problems, which would be of use to other workers but which remain in manuscript form or in a few copies. The National Research Council publication *Mathematical Tables and other Aids to Computation (M.T.A.C.)* publishes announcements of many such tables and keeps copies, which it will loan to interested persons. It was agreed by the conference that these tables would be much more useful if they were published, even if the publication were by photo-offset or similar process. It was recommended that *M.T.A.C.* extend its services by publishing yearly (or biannually) a selection of tables submitted to it. Accuracy of the tables would be the responsibility of the producer; the *M.T.A.C.* editors would exercise the sort of supervision over form and content which is done for the usual contribution to a scientific journal. The conferees are of the opinion that such a publication would eventually pay its way if the printing costs could be held down, but that initial cost should be defrayed by the National Science Foundation or by the N.R.C. and the Mathematical Societies Tables fund. It is suggested that the editorial board of *M.T.A.C.* (or the National Research Council Mathematical Tables Committee) be enlarged to provide assistance in this work; some of the additional members should represent tables users as well as table producers.

"Tables" for Electronic Computers. It was generally agreed that users of digital computing machines did not need mathematical tables of the usual form. However, those of the conferees familiar with the use of such equipment suggested that a collection of algorithms, from which subprograms could be devised for the computation of various known functions, when they are needed in a general machine program, would be of value. Such formulas or procedures could, perhaps, be collected and published by *M.T.A.C.* or by N.B.S. Computation Laboratory from time to time. There also was a present and continuing need for small, high-

accuracy tables of key values of functions used by machines for starting series expansions or interpolation formulas which could be incorporated into machine programs.

Additional Suggestions. There seemed to be some demand for a collection of tables in punched-card form which can be duplicated or tabulated on request. It was not clear, however, whether the present and proposed collection at Watson Laboratories and at U.C.L.A. are likely to be sufficient or not. Further study is suggested.

The need for a continuing Index of Tables was stressed. A new Index will shortly be published in England, an up-to-date revision of the *Index of Mathematical Tables*, by FLETCHER, MILLER, and ROSENHEAD. It was suggested that *M.T.A.C.* publish yearly supplements thereafter. The *M.T.A.C.* editorial board will take this suggestion under advisement.

The rest of the discussion took up the problems of machine production of tables, standards of accuracy, format, interpolation techniques, and the kinds of functions needing tabulation, reaching conclusions which will be of interest to table makers and to organizations supporting table publishing, but which cannot now be formulated as specific recommendations.

Executive Committee. Finally, it was proposed that a committee be formed to help implement the recommendations of this report, to cooperate with agencies that desire to carry the proposals forward, and to call other conferences if this appears desirable. This committee has the following composition:

- PHILIP M. MORSE, Chairman, Dept. of Physics, Mass. Inst. of Tech.
- M. ABRAMOWITZ, Div. 11.2, Nat. Bur. of Stand., Washington 25, D. C.
- J. H. CURTISS, 80 Waterman St., Providence 6, R. I.
- R. W. HAMMING, Bell Telephone Labs., Murray Hill, N. J.
- D. H. LEHMER, Dept. of Math., Univ. of Cal., Berkeley 4, Cal.
- C. B. TOMPKINS, Num. Anal. Research, Univ. of Cal., Los Angeles 24, Cal.
- J. W. TUKEY, Fine Hall, Box 703, Princeton, N. J.

Correspondence concerning this report should be addressed to one of these persons.

International Analogy Computation Meeting

The Belgian Society of Telecommunications and Electronic Engineers announced plans to hold an "International Analogy Computation Meeting" in Brussels between September 27 and October 1, 1955. Detailed information may be obtained from the Secretary of the Organizing Committee, P. GERMAIN, Institut de Physique appliquée, Université libre de Bruxelles, 50, avenue Franklin Roosevelt, BRUSSELS (Belgium).

The Royal Society Depository for Unpublished Mathematical Tables

The Mathematical Tables Committee of the Royal Society from time to time furnishes lists of tables accepted into its Depository of Unpublished Tables, and these lists along with short descriptions of the tables are published in the *Philo-*

sophical Magazine and the *Journal* of the London Mathematical Society. The list of tables accepted up to the end of 1953 may be found in the *Phil. Mag.*, s. 7, v. 45, 1937, p. 599–609, and in the *London Math. Soc., Jn.*, v. 29, 1954, p. 504–512.

Note on Arrangement of Material

The Editorial Committee is attempting to arrange the contents to make reference easier. Generally, the contents will consist of seven sections:

- Papers
- Technical Notes and Short Papers
- Reviews and Descriptions of Tables and Books
- Table Errata
- Notes
- Queries and replies
- Corrigenda.

In each section material will be grouped according to content approximately in order of the Classification of Tables used by *MTAC*.

The most radical change will be the grouping of reviews and notes concerning unpublished tables; this grouping is tried as a means of making reference more convenient, but it is somewhat influenced by the increasing difficulty of telling what has been “published” and what is “unpublished” but widely distributed.

Another change is the absorption of the portions of the journal devoted to automatic computing into the sections listed above.

No major change in editorial policy is contemplated and none should be deduced from the material in this issue.

C. B. T.

CORRIGENDA

V. 8, p. 226, l. –13, for M. W. WILKES read M. V. WILKES.

$$1. -10, \text{ for } \text{Ch}(x, \chi) = x \sin \chi \int_0^x \exp(\chi - x \sin \chi / \sin \lambda) \text{cosec}^2 \lambda d\lambda$$

$$\text{read } \text{Ch}(x, \chi) = x \sin \chi \int_0^x \exp(x - x \sin \chi / \sin \lambda) \text{cosec}^2 \lambda d\lambda.$$

1. –4, for 70° read 90° .

$$1. -3, \text{ for } \text{Ch}(x, \chi) + \text{Ch}(x, \pi - \chi) = 2 \exp(\chi - x \sin \chi) \text{Ch}(x \sin \chi, \frac{1}{2}\pi)$$

$$\text{read } \text{Ch}(x, \chi) + \text{Ch}(x, \pi - \chi) = 2 \exp(x - x \sin \chi) \text{Ch}(x \sin \chi, \frac{1}{2}\pi).$$

V. 8, p. 227, l. –15, last column, for .7626582 read .7627582.