REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the indexing system printed in Volume 22, Number 101, January 1968, page 212.

42 [1].—JOSEPH A. SCHATZ, *A Mathematics Citation Index*, Sandia Laboratories, Albuquerque, New Mexico, Research Report SC-RR-70-910, xi + 580 pp., $8\frac{1}{2}'' \times 11''$, December, 1970.

About a decade ago, the Institute for Scientific Information, Inc., Philadelphia, Pa., a private concern, began the publication of a Science Source and Citation Index (SSCI for short). A source index is essentially an author index of research articles. Consider the references given in a source article. These are the items cited by the source document. A citation index is a directory of cited references, each of which is accompanied by a list of citing source documents. Whereas most retrieval systems are retroactive in nature, a citation index provides a method of moving forward in time and so gives a technique for updating aging information.

The SSCI covers many fields of science. In 1964, it covered about 31 mathematics journals and, in 1971, this number had grown about fourfold. An examination of the 1972 index for *Mathematical Reviews* indicates that it covers about 1100 publications. It is apparent that the SSCI covers only a small fraction of the mathematical literature surveyed by *Mathematical Reviews*.

The Mathematics Citation Index (MCI for short) was compiled from the bibliographies of over 25,000 source papers which appeared in 48 serial publication during the period 1950–1965. According to the author this represents about 20 per cent of the serial literature for the period covered.

The manner of obtaining and using a citation index is described in the introduction. The author's discussion of techniques for using a citation index is somewhat abbreviated. He states "it is a matter of observation that after about ten minutes of use, mathematicians are able to devise novel ways of using a citation index." Basically, the statement is true. However, in the present instance, it took some elementary but time consuming detective work to figure out the meaning of abbreviations used in the index. All this and other valuable information necessary to facilitate use of the index is conspicuous by its absence. We next turn our attention to these items.

The volume under review obviously covers much ground. Since only a fraction of the literature was examined, it would be helpful to have a ready list of the names of the journals surveyed so that an individual can readily estimate the bias of the index with respect to his field of interest. I found a few references to the journal *Numerische Mathematik* but only one reference to the journal *Mathematics of Computation*. It appears that the index is of very limited use to a numerical analyst.

Only initials of journals are used in the entries and there is no glossary. The reader might try his hand at deciphering PRSESA, PMIHAS, CRASP, PNAS and PNASUSA. Where applicable, information is given where an item is reviewed in *Mathematical Reviews*. Thus, the source journal can usually be determined. Obviously, this is no excuse for not providing the reader with adequate information. MR 21-2891 means *Math. Rev.*, v. 21, No. 2891, while MR 19P428(5) means *Math. Rev.*, v. 19, p. 428, item 5 on that page.

Another source of irritation is that only the first five letters of an author's surname are given. That one may have a qualm as to the wisdom of such a procedure for the ostensible purpose to save space is secondary. Most certainly, the reader is entitled to the courtesy of being informed of such a practice.

How valuable MCI will be to a research worker remains to be seen. I can offer no opinion on the subject since so little of my interests are covered.

If the journals surveyed thoroughly cover a particular segment, say algebraic topology, then it would seem that MCI will be an asset. Whether the concept is the complete answer to the problem of information retrieval is another matter.

The construction of an MCI is simple and requires no mathematical sophistication. It can be accomplished with clerical help only. This is in contrast to the recently published volume by Y. L. Luke, J. Wimp and W. Fair, *Cumulative Index to Mathematics of Computation—Volumes 1–23, 1943–1969*, American Mathematical Society, Providence, R. I., 1972, which is a systematic classification by subject matter and by author of all the contents in the journal *Mathematics of Computation* since its inception in 1943 when it was known as *Mathematical Tables and other Aids to Computation.* The importance of the volume under review and of the one mentioned above is that they break new ground for information retrieval of mathematical literature. The direction of future efforts along these lines will be conditioned by the usefulness of the indices. I am sure all authors will welcome comments and suggestions from users.

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43 [2, 3, 4, 5, 7.105, 8.50].—R. S. Burington, *Handbook of Mathematical Tables and Formulas*, Fifth edition, McGraw-Hill Book Co., New York, 1973, x + 500 pp., 21 cm. Price $5.50.

This new edition of a widely used mathematical handbook differs from the fourth edition [1] in the considerable enlargement of Part One (Formulas, Definitions, and Theorems from Elementary Mathematics) through the addition of new sections on linear algebra, numerical analysis, differential equations, Legendre polynomials and Bessel functions, Fourier series and transforms, Laplace transforms, and functions of a complex variable.

The table of indefinite integrals remains unchanged; however, the table of definite integrals has been extended to include several integrals involving the Dirac δ-function, formulas for the derivative of a definite integral, and statements of the Law of the Mean for integrals and of Green's Theorem.

In Part Two (Tables) we find fewer changes. Six of the 39 tables in the fourth edition have not been retained. Those omitted include 7D mantissas of the common logarithms of integers between 10^4 and $12 \cdot 10^3$, 10D common logarithms of primes less than 1000, natural secants and cosecants to 5S for every minute of the quadrant, natural trigonometric functions to 5S for decimals of degrees, factors for computing probable errors, and 4D common antilogarithms. On the other hand, additions to