Fourier Integrals for Practical Applications. By George A. Campbell and Ronald M. Foster. (Bell Telephone System Technical Publications, Mathematical Physics, Monograph B-584.) New York, Bell Telephone System, 1931. 177 pp.

This book develops a method for determining transients in physical systems and especially transient effects due to suddenly applied forces in electrical networks. The application of Fourier integrals to problems of this sort is not new but has not been emphasized before, largely because of the difficulty of evaluating the definite integrals involved. The treatment given is rather condensed and without proofs, and would seem to be worthy of more completeness and detail, especially if the method is to be used by any but mathematicians.

In addition to the explanatory text the book contains two tables. The first table, called *A Table of Fourier Integrals*, is primarily a list of paired coefficients, arranged in parallel columns, which are the coefficients appearing in the transforms of the Fourier integral. Many of these have been obtained by transformations and combinations of other pairs previously obtained. A list of rules for combining or operating on pairs already found, to produce new pairs, is given without proof and there is some explanation of the way additional pairs are obtained in special cases. In addition to the use here made of the table, it has considerable interest, per se, as a table of definite integrals. The notation is somewhat elaborate, and at first confusing, and requires a long explanatory note.

The second table contains 85 solutions in "closed form"; that is, without employing infinite series or similar infinite processes, which the authors have found for certain physical systems when one of three definite causes or forces is applied.

The method itself is, briefly, as follows: The two vertical parallel columns of Table I may be referred to, from left to right, as F and G. A cause corresponding to an entry in G is assigned. The mate, F, of this cause is then multiplied by the "admittance" of the system and this product is then sought in Column F. When this is found the corresponding mate, G, represents the effect.

The book represents an ambitious attempt to collect and tabulate a rather complete amount of data in table form which may be used by the physicist or technician without much thought as to the mathematical processes by which the result is arrived at. Since there is always danger in using something which is not completely understood, a somewhat more adequate treatment of the fundamentals underlying the method itself with additional illustrative examples would seem to have been justified and would result in a much wider use of the tables. The compilation of the tables, the checking of the evaluation of the integrals and of the parameter domains represent a vast amount of work. The book stands as a unique contribution to the literature dealing with Fourier integrals and transient problems. One suspects that the earlier work of these authors in this field, which has resulted in the book under review, has inspired the recent interest shown in England in Fourier integrals, self-reciprocal functions, and allied subjects.

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