higher degree of readability than one has hitherto been accustomed to expect in professedly encyclopedic summaries of mathematical science. Although proofs are, of necessity, frequently omitted, theorems are stated with clearness and accuracy, and in well-arranged sequence. References to the literature, while by no means exhaustive, will in most cases provide ample orientation for those who wish to undertake specialized studies.

By reason of the arrangement of the material and the style of exposition, it is probable that most mathematicians will find in this section of the Repertorium not only appreciable stimulation but also a measure of downright enjoyment.

L. S. HILL

Tables of Damped Vibrations. By W. E. Milne. University of Oregon Publication. Mathematics Series. Vol. 1, No. 1, March 1929. 39 pp.

In an earlier paper entitled *Damped vibrations. General theory together with solutions of important special cases*, dated August, 1923, the author gave fairly extensive tables covering the case in which the damping is proportional to the square of the velocity, and short tables applicable to the more general situation in which the resistance function is of the form $R=v(B\pm Dv)$, where v is the velocity and B and D are positive constants. The sign to be taken is the same as that of v.

The objects of the present paper are (a) to furnish more extensive tables for the solution of the problem of oscillations with a resistance function of the type cited and (b) to supply additional tables applicable to the case where the term involving v^2 does not change sign when the sense of the motion reverses. A concrete application of case (b) is afforded by the oscillation of water in the hydraulic surge chamber.

The fourteen tables,—all of four decimal places,—are preceded by useful preparatory paragraphs on the "Scope of Application, The Hydraulic Surge Chamber, Interpolation and Method of Computation." In the first of these attention is called to the fact that, in many cases, the binomial resistance function quoted above may represent experimental data as satisfactorily as the conventional relation $R=Cv^m$. In particular, when m lies between 1 and 2, (as is often the case in practice), it is shown that it is possible to determine B and D in such a manner as to make the error incurred by using the easily calculable binomial in place of the mth power monomial resistance formula of no greater importance than the other uncertainties inherent in the problem. For illustration, the "standard error" attains its greatest magnitude of about 0.0082 when 1.4 is the value of m. Since the tables furnish solutions of differential equations which cannot be solved in terms of known functions they will be welcomed by mathematicians, physicists, and engineers when problems of damped oscillations arise in their investigations and demand numerical solution. The computation of the tables was aided materially by a liberal grant of funds from the National Academy of Sciences.

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