er's generalization of Rayleigh's perturbation theory and, most unfortunately, the occasion of his first use of the term "wave mechanics."

It does appear that *Wave Mechanics* would have been more valuable if its reprinted papers had been left intact and if its introductory chapters had been less esoteric. As things stand undergraduates probably will not get through the advanced classical and quantum mechanics in the introduction, and the historically minded will probably reject the unexplained editing. The book might, however, serve profitably as abbreviated history for some readers.

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Math with referents in reality

PARTIAL DIFFERENTIAL EQUATIONS OF MATHEMATICAL PHYSICS, VOL. 2. By A. N. Tychonov, A. A. Samarski. Trans. by S. B. Radding. 621 pp. Holden–Day, San Francisco, 1967. $10.75

by JOSEPH GILLIS

The second volume of this excellent textbook very properly continues from where the first volume ended. Whereas volume 1 was devoted largely to problems involving only one or two space variables, most of the work in this new volume is on three-dimensional problems.

The theoretical work presented is mainly standard and covers most of what anyone could require in a book of this type. Elliptic, parabolic and hyperbolic equations are dealt with and all of the usual methods are explained. A notable feature of the book is that problems are always shown against their specific physical backgrounds. No equation is presented out of the blue. Not only is the physical meaning of the equations always kept in the forefront, but the authors also make a point of emphasizing the intuitive physical content of the solutions. In this way the mathematics is never allowed to stray far from intuition, and, moreover, this control is never achieved at the expense of mathematical rigor. Indeed the manner in which exact and careful mathematics is combined with physical insight recalls some of the great classics of applied mathematics.

Another noteworthy feature is the selection of examples. Here again, as in the first volume, the authors have managed to illustrate the work with problems of live and actual interest.

The last section contains a reasonably broad presentation of some of the more commonly met special functions. This section contains nothing terribly new—except to those who have yet to learn of Tchebycheff–Hermite and Tchebycheff–Laguerre polynomials, Buniakowsky's Inequality, and so forth.

Taking everything together the two volumes constitute as good a textbook as one could wish of basic "mathematical methods of classical physics," and it can certainly be extremely useful to both teacher and student. Nevertheless I am mildly puzzled by an incidental problem. The entire book (both volumes) was translated into English by Robson and Basu and published in a single volume by Pergamon in 1963. The book under review now completes an almost identical translation of the same work. We have learned to accept the population explosion of scientific textbooks, but do such secondary detonations really serve any useful scientific purpose?

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Operational thermodynamics

THERMODYNAMICS: AN INTRODUCTION. By Rubin Battino, Scott E. Wood. 330 pp. Academic Press, New York, 1968. $5.95

by JAMES B. KELLEY

Although the authors of this new text in thermodynamics disclaim any intention to relate to a particular discipline, it is obvious that their own interests quite clearly make the book of particular interest to the chemist. This is not to say that it would not be useful to the physics or mathematics student, but rather that it has special relevance to chemistry and chemical-engineering students. The book, written when both authors were at the Illinois Institute of Technology, is to be used at the "second year of physics" level.

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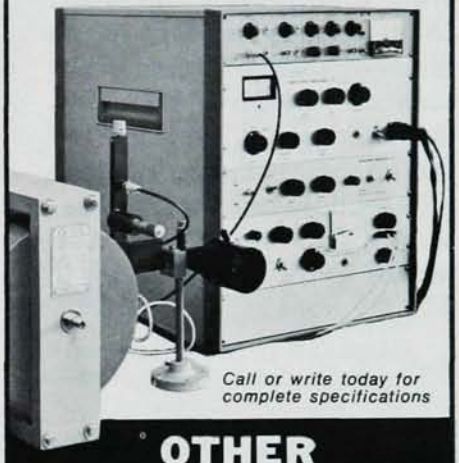

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