the D-operator is left until very late in the book, in connection with linear systems, necessitating an elaborate explanation of the method of undetermined coefficients.

P. J. Ponzo, Waterloo

Stability of Motion, by A.M. Liapunov. Translated by F. Abramovici and M. Shimshoni. New York, Academic Press, 1966. xi + 203 pages.

In his 1892 Mémoire, Liapunov considered the stability of the equation

$$\underline{x}(t) = A\underline{x} + X(\underline{x})$$

where X, near $\underline{x} = 0$, vanishes to at least the second order. He there covered the cases where all eigenvalues of A are negative in real part, or where one vanished, or where two were pure imaginary.

Liapunov also studied the case where two eigenvalues vanished, the rest having negative real parts, in three papers not so well known as his Mémoire. This publication consists of a new translation of these, together with contributions by V.P. Basov and V.A. Pliss. They are out of order; a better discussion of sources could be given.

One should begin with the 1893 work, here beginning on p.128, in which Liapunov considers only the case $n = 2$. Thus in effect one has simply $x = y + 0(|x|^2)$, $y = 0(|x|^2)$. The work in which this is extended to general n remained incomplete, and unpublished; it was found by Smirnov in 1954 and published in Liapunov's Collected Works. Here it is published beginning on p.13. The final argument concerning the case when all the higher terms in $X(\underline{x})$ must be considered before stability can be decided, was fitted in by Pliss in 1964, in a short paper here starting on p.185. The short note beginning on p.123 is again out of place, and shows that only in the case that all eigenvalues of A have negative real parts is it possible to determine stability by examining A alone [without also studying $X(\underline{x})$].

D.R. Miller, Western Ontario

Introduction to Ordinary Differential Equations, by Albert L. Rabenstein. Academic Press, New York, London, 1966. xii + 431 pages. $9.95 (hard bound in gray buckram).

The title of this book is a little misleading. While primarily devoted to differential equations there is also a smattering of material that one usually associates with other courses. The whole treatment is aimed at undergraduate engineering and science students whose background need not include advanced calculus. The miscellaneous extra topics treated probably result mainly from this choice of target audience.

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