88[X].—WILLIAM KARUSH, *The Crescent Dictionary of Mathematics*, The Macmillan Co., New York, 1962, x + 313 p., 24 cm. Price $6.50.

From the introduction: "The subject matter of the 1422 entries in this dictionary covers two general categories. First, a detailed treatment is provided of the following standard high school and college mathematics material: arithmetic; elementary, intermediate, and college algebra; plane and solid analytic geometry; differential and integral calculus. Second, a wide selection of items is provided from more advanced mathematics, including the following fields: logic and fundamental concepts; theory of equations, theory of numbers, and modern higher algebra; advanced calculus; geometry and topology; probability and statistics; recent areas such as computer sciences, information theory, operations research, and so on."

The coverage in the first "general category" is thorough, but most branches of advanced mathematics are hardly attempted. For instance, even advanced calculus, including such terms as "Jacobian", "Stieltjes Integral", "Uniform Convergence" and "Cauchy's Theorem", is not covered. On the other hand some modern specialties, e.g., Theory of Games, Linear Programming, Computers and Their Coding, Logic, Machine Intelligence, Markoff Process, etc. are covered briefly but well. This class of specialties is apparently favored because of the author's position on the staff of the System Development Corporation.

The coverage is not as broad as that of the larger volume [1] of James and James. Perhaps because of this narrower range, the present volume is more uniform in character. The definitions are uniformly good and are carefully written and printed. With its limited extent in mind, the dictionary can be recommended to the several audiences for which it was intended.

D. S.

1. GLENN JAMES & ROBERT C. JAMES, *Mathematics Dictionary*, 2nd ed., D. Van Nostrand Co., Princeton, New Jersey, 1959. (Reviewed in RMT 66, *MTAC*, v. 13, 1959, p. 331–332.)

89[X].—N. N. KRASOVSKII, *Stability of Motion*, Stanford University Press, Stanford, California, 1963, vi + 188 p., 24 cm. Price $6.00.

One of the most powerful and flexible techniques available for the study of the stability of solutions of functional equations is that based upon the use of Liapunov functions.

To illustrate the basic idea, first presented by Liapunov in his fundamental memoir of 1892, consider the system of equations

$$\frac{dx_i}{dt} = g_i(x_1, x_2, \cdots, x_N), \qquad i = 1, 2, \cdots, N, \tag{1}$$

or, in vector notation, $dx/dt = g(x)$. Considering $V(x)$, where V is as yet undetermined, as a function of t, we have

$$\frac{dV}{dt} = \sum_i \frac{\partial V}{\partial x_i} g_i = (\text{grad } V, g). \tag{2}$$

Suppose that V, as a function of x, has been chosen so that

$$(\text{grad } V, g) \leqq -kg, \qquad k > 0, \tag{3}$$