58[X].—L. Ė. Ėl'sgol'c, *Qualitative Methods in Mathematical Analysis*, Volume 12, Translations of Mathematical Monographs, American Mathematical Society, Providence, R. I., 1964, vii + 250 pp., 23 cm. Price $14.60.

The preface of this interesting and comprehensive book has the "Russian" quality of disclosing to the reader at the very outset some of the "secrets" of the trade! A careful distinction is made very early between the purely qualitative methods, pertaining to geometry and topology, which are considered in the first three chapters, and the more nearly quantitative processes from the domain of analysis, which are treated in the last three chapters. The reviewer believes that the dividing line between the two categories is even more blurrable by means of high-speed computers.

The six chapters deal with the following topics: I. Extremal problems, notably the Poincaré-Morse type number theory. II. Application of complex variables. III. Fixed points: theorems of Brouwer, Lefschetz, and Schauder. IV, V, VI. Differential equations: the index theory of Poincaré and all manners of questions concerning existence theorems, approximations, oscillations, and systems with retarding or advancing argument.

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59[X].—Ernst Peschl & Karl Wilhelm Bauer, *Über eine nichtlineare Differentialgleichung 2. Ordnung, die bei einem gewissen Abschätzungverfahren eine besondere Rolle Spielt*, Forschungsberichte des Landes Nordrhein-Westfalen, No. 1306, Westdeutscher Verlag, Opladen, 1964, 59 pp., 24 cm. Price DM 43.50. (Paperback.)

The first four chapters of this monograph treat in detail solutions of the equation

$$ff'' - f'^2 + 3Lf' - 2f + 2L'f + 2L^2 = 0,$$

$$f = f(\alpha), \qquad L = -1 - \epsilon e^{2\alpha}.$$

A complete summary of the solutions is presented in Chapter 5. The solution of the above equation with $2L^2$ replaced by $-2L^2$ is discussed in Chapter 6. Graphical representations of the solutions for $\epsilon = 0$ and $\epsilon = \pm 1$ are provided.

Y. L. L.

60[X].—V. I. Zubov, *Methods of A. M. Lyapunov and Their Application*, P. Noordhoff, Ltd., Groningen, 1964, xvi + 263 pp., 22 cm. Price $9.50.

This is an excellent translation of a monograph devoted to recent work by Yerugin, Barbashin, Krasovsky, Nemytsky, Sobolev, and Zubov himself, on the application of Lyapunov's first and second methods to the study of the stability and periodicity of solutions of nonlinear ordinary and partial differential equations. The book is recommended to all those interested in the modern theory of ordinary differential equations and control processes.

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