cussion of the geometry of solutions of a slightly perturbed system of two first order equations. The first chapter considers the equation $v''+f(v)v'+g(v)=e(t)$ $('=d/dt)$, where e is periodic. The existence of a periodic solution of the same (or integral multiple of the) period of e is assumed, and the stability of this solution is defined in terms of the characteristic exponents of the corresponding equation of the first variation. A discussion of the Mathieu equation and Hill's equation follows in which "approximate" characteristic exponents are obtained, and corresponding stability regions are plotted. The question of the degree of approximation is not considered. In the next three chapters special cases are worked out in detail, a typical equation being $v''+2\delta v'+(c_1v+c_3v^3)=B\cos \nu t$, where δ, c_1, c_3, B, ν, are constants, with a subharmonic of the form $v=k_1 \sin t+k_2 \cos t+k_3 \cos \nu t$ assumed. Various experiments with electrical oscillatory circuits are described and the results compared with the approximate stability regions determined. In the last two chapters (Part II) the integral curves of some special cases of the system $x'=X(x, y)$, $y'=Y(x, y)$ are depicted in the vicinity of the equilibrium points. The solutions of the van der Pol equation are also sketched.

The book is replete with excellent illustrations.

Although from the mathematical viewpoint the equations and solutions considered are rather special, this work should serve its purpose well, and in addition provide mathematicians with a supply of nicely illustrated examples of forced oscillations.

E. A. CODDINGTON

Hypergeometric and Legendre functions with applications to integral equations of potential theory. By Chester Snow. (National Bureau of Standards, Applied Mathematics Series, no. 19.) Washington, Government Printing Office, 1952. 11+427 pp. $3.25.

This is the second edition of a monograph of which the first edition appeared in 1942 (as MT15 in the Mathematical Tables Series of the National Bureau of Standards) and was exhausted within a year, a second printing being sold out soon afterwards. Continuing, and indeed increasing, demand for the monograph and the impending retirement of the author from active service with the National Bureau of Standards were the motivations for the present second edition. Known misprints have been corrected, some chapters have been rewritten and expanded, and a new chapter (on confluent hypergeometric functions) has been added.

A brief indication of the contents, chapter by chapter, follows.

I. Definitions and preliminary formulas relating to the gamma function and Gauss' hypergeometric series.