of the mathematics of modern adaptive and statistical control theory is introduced. The reader is much better served, in much shorter time, by a good book on Laplace transformations, as, for example, the treatise by Widder [1], or the first chapter of the book by Bellman and Cooke [2], or, in the engineering literat re, the first chapter in the book by Truxal [3], and the book by Ragazzini and Franklin [4].

The same plodding approach to theory, through involved and unenlightening examples, is followed through very long chapters on open-loop and closed-loop systems, replete with formulas and valuable computations and curves which would be more useful in an edited version for a reference work on particular control systems. Even there, however, I would prefer the relevant parts of the book of Gibson and Tuteur [5].

In addition to presenting the reading public with this disorganized compilation of theory, practice, and practical results, the publishers have obtained a very bad translation, set in a fashion that can only be described as a sorry example of the printer's art. The translation reads like pure Russian with (mostly) English words in which articles are inserted or omitted capriciously, commas are used in keeping with the original Russian grammar, and, more seriously, the precise English word is often neglected in favor of an easier choice. Thus, we have "law" instead of "characteristics," "image" instead of "transform," "closed-system" instead of "closed-loop system," "trapezium" when "trapezoid" is meant, and so on. Coupled with the undulations of the lines and the very poor proof-reading, the clumsiness of the translation makes the text annoying to read.

In sum, the book is a very poor text, although it may have some value thanks to the curves, formulas, and descriptions of very complicated control systems that it contains. The reader interested in an introduction to the field would be much better advised to use Chapter 9 of Truxal's book, Ragazzini and Franklin's book, or the book of J. T. Tou [6]. These books, as well as the others cited above, also present a much more understandable discussion of the underlying mathematics and system concepts.

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1. D. V. WIDDER, *The Laplace Transform*, Princeton Univ. Press, Princeton, N. J., 1946.
2. R. BELLMAN & K. L. COOKE, *Differential-Difference Equations*, Academic Press, New York, 1963.
3. J. G. TRUXAL, *Automatic Feedback Control System Synthesis*, McGraw-Hill Book Co., New York, 1955.
4. J. R. RAGAZZINI & G. F. FRANKLIN, *Sampled Data Control Systems*, McGraw-Hill Book Co., New York, 1958.
5. J. E. GIBSON & F. B. TUTEUR, *Control System Components*, McGraw-Hill Book Co., New York, 1958.
6. J. T. TOU, *Optimum Design of Digital Control Systems*, Academic Press, New York, 1963.

20[V].—I. A. KIBEL′, *An Introduction to the Hydrodynamical Methods of Short Period Weather Forecasting*, Pergamon Press, Ltd., Oxford, England, distributed by The Macmillan Co., New York, 1963, xiii + 383 p., 23 cm. Price $14.50.

This book is a translation by the British Air Ministry from the original volume in Russian published at Moscow in 1957. As such, the material represents the state of short range numerical weather prediction at the end of its first decade. This was the era of quasi-geostrophic, or "balanced," hydrodynamic frameworks. Since then, considerable progress has been achieved with primitive equation hydrodynamics, i.e., where the sole filtering approximation is that of quasi-hydrostatic equilibrium.

The volume's interest is therefore mainly historical. However, it will have an additional attraction to the meteorological community of the western world. Despite the author's attempt to maintain a broad perspective of contributions, it is, as one might expect, weighted toward the Soviet literature—and yet one can make a virtue of this inevitable necessary characteristic. The volume provides one with a self-critique of significant Soviet scientists and of their progress that may be difficult to glean from the large volume of Soviet journals, both in the original and translated, that is accessible to the West.

The first two chapters provide the basic Navier-Stokes hydrodynamic framework, accommodating readers with a background primarily in mathematics and physics. Here, in addition to discussing boundary layer exchange processes, Kibel′ also provides a scale-analysis justification of the hydrostatic approximation. The next chapter extends the scale argument to demonstrate the quasi-geostrophic, quasi-nondivergent and quasi-barotropic character of large-scale atmospheric motions, laying the ground work for the filtering approximations to be used in the remainder of the book. The following three chapters apply linear analytical techniques to the study of the properties of such motions and finally to the stability characteristics of baroclinic disturbances.

Chapter 7 begins the consideration of the general non-linear problem, with some emphasis on Green's function expansions. The next two chapters demonstrate the application of finite difference methods to the integration of barotropic and then to baroclinic models. Kibel′ then turns his attention to the smaller-scale frontal motions and considers the application of the balance ("quasi-solenoidal") approximation. The last two chapters touch on non-inertial influences: the introduction at the lower boundary of large-scale orographic barriers, boundary layer exchanges of momentum, heat and water vapor, the internal release of lateral heat, and radiative transfer.

The Conclusion, though short, speculates upon the use of the primitive equations of motion, and proposes the application of numerical hydrodynamical methods to the problems of the prediction of cloud and precipitation, cumulus convection, the sea-breeze, and small-scale orographic motions, all of which have become a reality since the writing of this book.

It is unfortunate that the references are not always documented beyond the author and year of publication. Also the reproductions of figures from the original are only marginally acceptable. Despite these deficiencies, no dynamic meteorology library can be considered complete without this volume.

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21[V, X].—R. W. Claassen & C. J. Thorne, *Steady-State Motion of Cables in Fluids, Part 2, Tables of Cable Functions for Vertical Plane Motion*, PMR-TM-63-9, Pacific Missile Range, Point Mugu, California, 1963, 487 p., 21 cm.