ically from typescript. The diagrams and half-tones are of good quality.

Despite the admissions of ignorance it contains, this is the nearest we have to a definitive work on the subject. Indeed, there is no other to compare with it in detail. It is a necessity for all students of plant transport, whether they are concerned with metabolic or with informational molecules.

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Soviet Endocrinology

Thyroid Hormones. Biosynthesis, Physiological Effects, and Mechanisms of Action. YA. KH. TURAKULOV, A. I. GAGEL'GANS, N. S. SALAKHOVA, A. K. MIRAKHMEDOV, L. M. GOL'BER, V. I. KANDROR, and G. A. GAIDINA. Ya. Kh. Turakulov, Ed. Translated from the Russian edition (Tashkent, 1972) by Basil Haigh. Donald H. Ford, Transl. Ed. Consultants Bureau (Plenum), New York, 1975. xii, 318 pp., illus. $42.50. Studies in Soviet Science.

Physiology in the Soviet Union has developed in partial isolation, despite the language skills of the Russians and even though translations of Western scientific publications are available to them. The fact that Russian papers are rarely cited in English-language publications in physiology implies an even more formidable barrier in the opposite direction. The appearance of this excellent translation provides a rare opportunity to appreciate the orientation and status of research on thyroid hormones in the Soviet Union.

The book is the work of seven authors from two institutes, one in Tashkent (Institute of Biochemistry) and one in Moscow (Institute of Experimental Endocrinology and Hormone Chemistry). Unfortunately, the vista it provides is not completely clear, since the book was originally published in 1972 and thus represents the field as it was in 1971.

The three sections of the volume deal with thyroidal hormonogenesis and its regulation, certain systemic and metabolic actions of thyroid hormones, and actions of thyroid hormones at the cellular level. They are detailed and well-organized. Because 1521 bibliographic items are referred to and discussed in the text, the book reads more like a review than a textbook. About 20 percent of the authors cited are Russian, and to this reviewer it seems remarkable that work of such breadth is so rarely mentioned in the English-language thyroid literature. Most impressive is the very large volume of Soviet research on responses of mitochondrial biochemical systems to changes in thyroid state.

If Soviet research in neuroendocrinology has a Pavlovian slant, this orientation is most obvious in the first chapter of the book, in which "the generally accepted view of the existence of control over thyroid function by the cerebral hemispheres, based on numerous indisputable clinical observations" is briefly discussed. This attention to "parahypophyseal regulation of thyroid function" is accompanied by a much more complete discussion than can be found in reviews in English of direct autonomic influences on thyroid function. This short and relatively vague section, which cites research principally from B. V. Aleshin's laboratory, ends with the statement: "A final solution to this problem [of] confirmation of the role of the sympathetic parahypophyseal regulation of thyroid function ought desirably to be obtained from other laboratories."

Another Pavlovian statement is found as an opening remark in the second chapter (on physiological effects of thyroid hormones), and it is one that would be most unlikely to be found in an English-language review:

> Two opposite views are held on the action of thyroid hormones in the intact organism. Some workers assert that the mechanism of the effect of thyroid hormones is nervous and that the hormone affects the state of neurons of the central nervous system either through a reflex or directly, and that it exhibits its peripheral action through the activity of the CNS cells. Another group of workers insists that these hormones reach the body tissues by the humoral route and exert their effect directly at the cell level.

There is no such controversy among Western physiologists, and to be fair one must add that Turakulov himself expresses doubt concerning its importance in a later paragraph.

Aside from the occasional expression of such attitudes, *Thyroid Hormones* differs in no important way from reviews by authors outside the Soviet Union. Unfortunately, thyrotropin releasing factor is treated cursorily. The discussion of the nature of the thyroid stimulating hormone molecule fails to mention its subunit structure. The wealth of new information concerning plasma T_3 and T_4 levels under various circumstances, made possible by recently developed techniques, is absent. The new approaches provided by radioimmunoassay of thyroid stimulating hormone and thyrotropin releasing hormone are missing as well. Were it not for its age, *Thyroid Hormones* would be a useful reference and summary. However, even the third edition of Werner and Ingbar's *The Thyroid* (1971) is in many ways more modern, and a new edition of this excellent book is about to appear.

We must nevertheless be glad to have this evidence of the excellence of Soviet thyroid research. In particular, work that has provided insights into the relationship between the thyroid and the central nervous system, a subject emphasized by Russian endocrinologists, deserves close reading and should be cited in the Western physiological literature. This translation makes it impossible to use the unavailability of such data in English as a pretext for ignoring them.

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Behavioral Physiology

Hormones, Behavior, and Psychopathology. Papers from a meeting, March 1975. EDWARD J. SACHAR, Ed. Raven, New York, 1976. xviii, 308 pp., illus. $24. American Psychopathological Association Series.

Only slightly more than a decade ago, when biologic psychiatry had just begun to emerge from the "hunt and peck" system of chemical analysis, the contents of this book would have been seen as unbelievably advanced. The book stands as a landmark, revealing advances in techniques for hormonal assays, advances in research strategy, and recognition of the complexity of the relationships among the various hormones, behavior, stress, environmental conditions, and cognitive states.

Often in a volume with many contributors papers tend primarily to reflect the individual participants' own research or pet theories. That is not the case with this volume. Although there are papers that are focused on narrow technical issues, they serve to exemplify the state of the art and to illustrate problems. The broad review papers are the strength of the volume. The reader will not find a wealth of detail about research methods, but they are taken into account in the bibliographies that follow each chapter.

In the first section of the book, Hormonal Influences on Brain and Behavior, there are a number of papers that will be of interest to the clinician. The review by A. J. Prange *et al.* of hormonal alteration of imipramine response, Bardwick's paper on psychological correlates of the menstrual cycle and oral contraceptive medication, and Whybrow and Hurwitz's account of psychological distur-