

Instead of this, Fujita's expression for θ_* at $\alpha = 0$, was used; namely

$$\theta_* = \frac{1}{y_*(1+m-my_*)} \quad (2)$$

On substitution of (2) in (1) and integration, the result is

$$\tau = \frac{1}{1+m} \left\{ 1 + \frac{2m\alpha}{(1+m)^2} \right\} \ln \left(\frac{y_*}{1+m-my_*} \right) + \frac{\alpha}{(1+m)^2} \left\{ 1 - m - \frac{1+m-2my_*}{(1+m-my_*)y_*} \right\} \quad (3)$$

The agreement for $\alpha = 1.0$, $m = 0.5$ is shown in the table.

y_*	τ by		
	Computer solution	Equation (3)	Oth-Desreux
1.0406	0.08000	0.08002	0.07959
1.0823	.16000	.15996	.15835

1.1250	.24000	.23977	.23622
1.1687	.32000	.31960	.31318
1.2132	.40000	.39927	.38918
1.2584	.48000	.47878	.46420
1.3042	.56000	.55816	.53819
1.3503	.64000	.63711	.61111
1.3968	.72000	.71602	.68294
1.4433	.80000	.79443	.75363

For lower values of α and m agreement is even better, for example, at $m = 0.1$, $\alpha = 1.0$, $\tau = 0.79889$ vs. 0.8000 at $y = 1.5298$; at $m = 0.1$, $\alpha = 0.2$, the two values of τ differ by 2.5 parts in 10,000 at $y = 1.4938$. As would be expected, a very good approximation always is obtained for y close to unity.

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BOOK REVIEWS

The Chemical Behavior of Zirconium. By WARREN B. BLUMENTHAL, Chief of Chemical Research, Titanium Alloy Manufacturing Division, National Lead Company, Niagara Falls, New York. D. Van Nostrand Company, Inc., 120 Alexander Street, Princeton, N. J. 1958. vi + 398 pp. 15.5 × 23.5 cm. Price, \$11.00.

This volume is offered "with the intent of providing students and research workers with a broad and detailed account of the chemistry of zirconium as an element and as a component of compounds, interstitial solutions, and alloys." To this end, the author has summarized the available information on zirconium chemistry in a monograph which far exceeds in comprehensiveness and scope any previously published treatise on this element. In doing this, he has avoided the purely encyclopedic approach by the liberal interpolation of interpretative comments and semi-theoretical concepts.

The book treats in order background chemistry, the element, the important interstitial and intermetallic phases, the simple compounds, and the complex compounds. Each section is liberally documented with original literature citations. Illustrations, except for phase diagrams, are at a minimum, but the text is replete with graphic formulations of various compounds and ionic species.

As a source of information about zirconium chemistry, the volume is highly recommended. As an interpretative treatment, however, the book cannot be as highly recommended. The theoretical and semi-theoretical portions are definitely weaker than the descriptive and are commonly more speculative than definitive. Thus, much of what is given as structural material has no support in experimental fact; many explanations are circuitously worded and couched in such general terms as to be without real meaning; and more attention is sometimes paid to the "rules" of zirconium chemistry than the available evidence would warrant. Typical is the comment on p. 37: "Although zirconium occurs both in cations and anions, it is incorrect to associate the positive charge of zirconium-containing cations with the zirconium atom. It is rather to be associated with the oxygen atom."

Mechanically, the book is well done and attractive. Errors in printing and proof reading are at a minimum. An excellent author index is provided. The subject index, however, is much too brief and non-inclusive to do the volume justice.

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Vitamins and Hormones. Advances in Research and Applications. Volume XVI. Edited by ROBERT S. HARRIS, Professor of Biochemistry and Nutrition, Massachusetts Institute of Technology, Cambridge, Massachusetts, G. F. MARRIAN, Professor of Medical Chemistry, University of Edinburgh, Edinburgh, Scotland, and KENNETH V. THIMANN, Professor of Biology, Harvard University, Cambridge, Massachusetts. Academic Press Inc., 111 Fifth Avenue, New York 3, N. Y. 1958. xi + 437 pp. 16 × 23.5 cm. Price, \$11.60.

Volume XVI of "Vitamins and Hormones" is a book which covers nine separate subjects of great current interest. Each chapter is an authoritative account of the present stage of development of the particular subject and written so that it is of interest to the uninformed as well as to the expert in the field. The literature references are particularly valuable in most of the chapters because they have been gathered from such a wide variety of sources.

Three chapters, "Nutritional Effects of Parasitic Infections and Disease," "The Dependence of Gonadal Function upon Vitamins and Other Nutritional Factors" and "Vitamins and Other Nutrients in Cardiovascular Disease," deal principally with nutrition and physiology. Three of the chapters, "Chemical Structure in Relation to Biological Activities of Vitamin B₆," "Glucagon" and "Synthetic Derivatives of Cortical Hormones" are largely chemical in nature. The remaining three, "Hormonal Aspects of Coronary Artery Disease," "The Physiology of Secretin" and "Chemistry and Physiology of the Thyroid-Stimulating Hormone," deal mostly with physiological and biological aspects.

For many years it has been realized that diet had a considerable influence on parasitism and disease, but the interdependence of host and parasite nutrition has been too complex and variable to permit any generalization. The chapter by Geiman indicates that progress has been made because of a better understanding of the metabolism of both host and parasite. No simplification of the problem has yet resulted from this progress.

A similar evaluation could be made of the relation of nutrition and gonadal function covered by Lutwak-Mann. A number of pertinent questions are asked at the beginning of the chapter. It presents many data bearing on the questions, but in most cases these are not yet adequate for definite answers.

The same is true for the relation of nutrients and cardiovascular disease. In the opinion of the authors of this chapter, Felch, Sinisterra, Itallie and Stare, the theory of hyper-