

of the concentrations of Sb(III) and Sb(V). The table exhibits some of the data supporting this statement. Formally this implies that the

ABSORPTION OF  $\lambda = 470 \text{ m}\mu$  BY MIXED Sb(III), Sb(V) SOLUTIONS

C(Sb(III))	0.217	0.157	0.0678	0.251	0.102	0.399
C(Sb(V))	.0868	.143	.227	.250	.399	.109
D/C <sub>III</sub> C <sub>V</sub>	7.70	7.83	7.15	8.23	8.06	7.57

absorbing species is a dimeric complex containing one Sb(III) and one Sb(V), and not a monomeric complex of Sb(IV). This result is in agreement with the known properties of crystals, such as  $\text{Rb}_2\text{SbCl}_6$ , containing "tetravalent antimony," in which equivalent  $\text{SbX}_6$  octahedra of average charge  $-2$  mutually interact in such a way as to give a diamagnetic crystal.<sup>2</sup> That the concentration of such a dimeric complex in solution is small is suggested by the comparison of the weak color of the mixed solutions with the intense black color of crystals like  $\text{Rb}_2\text{SbCl}_6$ .

Further investigations of this phenomenon for other oxidation couples and other coordinating

(2) Jensen, *Z. anorg. allgem. Chem.*, **252**, 317 (1944).

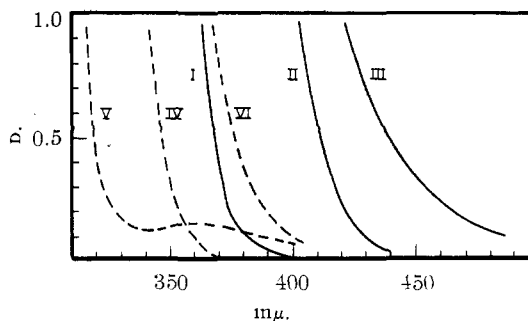


Fig. 1.—Absorption spectra of: I, 0.30 *f*  $\text{SbCl}_3$ , II, 0.28 *f*  $\text{SbCl}_3$ , III, 0.15 *f*  $\text{SbCl}_3$ , 0.14 *f*  $\text{SbCl}_5$ , IV, 0.84 *f*  $\text{SnCl}_2$ ; I-IV in 11.3 *f*  $\text{HCl}$ ; V, 0.84 *f*  $\text{SnCl}_2$  in 10.9 *f*  $\text{HCl}$ ; VI, 0.42 *f*  $\text{SnCl}_2$ , 0.42 *f*  $\text{SnCl}_4$  in 11.2 *f*  $\text{HCl}$ .

anions, and studies of the radioactive exchange properties of such systems are in progress.

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## NEW BOOK

**Vitamins and Hormones. Advances in Research and Applications.** Volumes III and IV. Edited by ROBERT S. HARRIS and KENNETH V. THIMANN, Massachusetts Institute of Technology and Harvard University, Cambridge, Mass. Academic Press, Inc., 125 East 23rd Street, New York, N. Y., 1945 and 1946. Vol. III, xv + 420 pp. Illustrated. 15.5 × 23.5 cm. Price, \$6.50. Vol. IV, xvii + 406 pp. Illustrated. 15.5 × 23.5 cm. Price, \$6.80.

Volume III of *Vitamins and Hormones* contains nine reviews which were written by fourteen investigators. Nine of the authors live in the United States, three in England and two in Palestine. The editors are to be congratulated, and more than the usual appreciation is due the authors for the efforts required to prepare these papers during the war period.

The articles on vitamins are reports of progress in work with a large number of vitamins studied under a wide range of conditions. The first four are "The Interrelation of Vitamins," by T. Moore, "The Synthesis of B Vitamins by Intestinal Bacteria," by V. A. Najjar and R. Barrett, "Sulfonamides and Vitamin Deficiencies," by F. S. Daft and W. H. Sebrell, and "Manifestations of Prenatal Nutritional Deficiency" by J. Warkany. For those in the field of growth and nutrition, the reviews should be a welcome compilation of the results which have been published in many journals and in several countries. These reviews assemble the many advances, not only with the references to the literature, but with a closely joined report and discussion of the work. The article by B. C. J. G. Knight on "Growth Factors in Microbiology—Some Wider Aspects of Nutritional Studies with Micro-organisms" is the most extensive, and although the subject matter is divided into fourteen independent sections, the reader's interest is sustained throughout.

E. C. Dodds in a report entitled "Possibilities in the Realm of Synthetic Estrogens" warns against too great optimism those who would like to hasten advances in the field of pharmacology made possible by the strong tool of organic chemistry. Diethylstilbestrol is the outstanding example of what can be done to simplify a natural estrogen; however, before a new start is made to do likewise with another hormone, the short essay by Dr. Dodds should be read.

The subject of "Chemistry of Anti-pernicious Anemia Substances of Liver" is well reviewed by Y. SubbaRow, A. B. Hastings and M. Elkin. The high hopes of 1926-1927 have been tempered. However, the authors state "the amount of material needed by the patient per day has decreased from 400 g. to less than 1 mg. Such progress makes it reasonable to expect the isolation and identification of the active material to be an attainable objective."

What is known of "The Mechanism of Action and Metabolism of Gonadotropic Hormones in the Organism" has been presented by B. Zondek and F. Sulman. Several questions are left unanswered, and it probably will require more investigation before the final chapter can be written.

The last in order of the reviews is "The Role of Acetylcholine in the Mechanism of Nerve Activity" by D. Nachmansohn. From the meager beginning, when traces of acetylcholine were first separated from the surviving heart, a hypothesis has been suggested for the explanation of the mechanism of the nerve impulse. Regardless of what must be added or taken away before the final revision of the subject, the author has marshaled the pertinent facts and creates in the reader the desire to know more about the formation, hydrolysis and pharmacologic action of acetylcholine.

Seven of the nine reviews in volume IV were prepared by investigators who live in the United States; one was

written in Australia and the remaining one in Argentina. The following comment made by the editors is indeed evident: "An interesting feature of the present trend is the increasing interrelationship between vitamin and hormone research. This is exemplified in three of the articles in the present volume, and it justifies the Editors' initial feeling that the bringing of reviews of these two fields under one cover will prove realistic and helpful."

The chapters in this volume continue to expand the scope of the project as contemplated by the editors, and although all the subjects which are discussed are not yet beyond the scope of dispute with differences in interpretation, the work as presented is for the most part a review and not an opinion of the respective authors.

"The Newer Hematopoietic Factors of the Vitamin B-Complex," by J. J. Piffner and A. G. Hogan brings together the many separate and apparently unrelated investigations on the experimental production of anemia and vitamin deficiencies. Although common relationships were uncovered and although essential active materials were separated as crystalline compounds, the chemical structure of this series of compounds became evident from the synthesis of folic acid and its conjugate. This achievement is included in an addendum, but another chapter will be needed to discuss many other aspects which are not yet completed.

"Nutrition and Resistance to Infection: The Strategic Situation," by H. A. Schneider, is a description of the factors involved and a discussion of the relationships which may be revealed by further work. Some old beliefs are exposed and strong skepticism is expressed about the value or necessity of certain vitamins for resistance to infection. There is a refreshing originality in the presentation which makes this chapter good reading.

"Manifestations of Nutritional Deficiency in Infants," by F. W. Clements, is a review of the manifestations, in infants, of deficiencies of eight of the vitamins as well as of protein, water and other mineral constituents of the diet. The treatment of each subject is systematic and comprehensive.

"Effect of B Vitamins on the Endocrinological Aspects of Reproduction," by Roy Hertz, is a short but interesting chapter on the effect of restriction of food and of some of the B vitamins on gonadal function, the metabolism of estrogens, lactation and other vitamin-hormone interrelationships.

"Nutritional Therapy of Endocrine Disturbances" by M. S. Biskind, can be described as controversial. A large portion of the review is used to present the evidence for syndromes related to excess of estrogen. The reviewer is not in a position to judge the conclusions of the author, but it seems probable that in the field of clinical medicine interpretations other than those presented herein may prove to have merit.

"The Thyroid and Diabetes" by B. A. Houssay, is a review of the original work of the author and of others on the influence of the thyroid gland on diabetes produced experimentally and as seen in clinical medicine.

"Thyroactive Iodinated Proteins," by E. P. Reineke, is a presentation of the work which has made the preparation of thyroxine a relatively simple matter. From the questionable results of the early workers, a systematic study of the chemical reactions involved has culminated in the development of methods for the preparation of l-thyroxine either in crystalline form or in large-scale manufacture as derived from casein or other protein. This freedom from the natural animal source will doubtless prove to be of great value, especially as large-scale uses in dairying and poultry raising become desirable. It is a fascinating story which is well told.

"The Protein Anabolic Effects of Steroid Hormones," C. B. Kochakian, records the results of investigations

of the steroids in relation to the deposition of protein and the metabolism of N-containing constituents of the blood and urine. Although a long list of steroids has been studied in large part by the author, methyl testosterone, testosterone and its propionate possess the greatest activity. The increase in body weight, in the weight of the kidney and in some of the enzymes in the kidney which follows administration of the steroids is evidence of an influence outside the organs primarily affected by androgens. This field of investigation is not yet exhausted. An extract of normal urine produces an anabolic effect on protein which is greater than that produced by any known steroid thus far studied.

"Methods of Bioassay of Animal Hormones," by S. A. Thayer, is a review of the principles which should govern biologic methods, the assay of the trophic hormones of the pituitary and several methods for the assay of the hormones of the adrenal cortex. Although the principles can be accurately stated, the complications encountered during the assay of pituitary hormones become evident and the difficulty in evaluation of the physiologic activity of the hormone of the adrenal cortex leaves much to be desired.

E. C. KENDALL

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## BOOKS RECEIVED

June 10, 1947—July 10, 1947

- T. S. CARSWELL. "Phenoplasts. Their Structure, Properties and Chemical Technology," High Polymers, Vol. VII. Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y. 267 pp. \$5.50.
- ALWYN G. EVANS. "The Reactions of Organic Halides in Solution." The Manchester University Press, 8-10 Wright St., Manchester 15, England. 71 pp. 2 shillings and sixpence.
- BERNARD S. GOULD. "Chemical Compounds Formed from Sugars by Molds." Scientific Report Series, No. 7. Sugar Research Foundation, Inc., 52 Wall St., New York 5, N. Y. 17 pp.
- JAMES LEWIS HOWE AND STAFF OF BAKER AND CO., INC. "Bibliography of the Platinum Metals, 1918-1930." Baker and Co., Inc., 113 Astor St., Newark 5, N. J. 138 pp. \$5.00.
- K. S. MARKLEY. "Fatty Acids, Their Chemistry and Physical Properties." Interscience Publishers, Inc., 215 Fourth Ave., New York 3, N. Y. 668 pp. \$10.00.
- L. S. PRATT. "The Chemistry and Physics of Organic Pigments." John Wiley and Sons, Inc., 440 Fourth Ave., New York 16, N. Y. 359 pp. \$6.00.
- J. L. SIMONSEN. "The Terpenes." Vol. I. Second Edition. The Macmillan Co., (Cambridge University Press), 60 Fifth Ave., New York 11, N. Y. 479 pp. \$6.50.
- FRANK J. WELCHER. "Organic Analytical Reagents." Vol. II. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, N. Y. 530 pp. \$8.00 (individual price). \$7.00 (series price).
- F. WILD. "Characterization of Organic Compounds." The Macmillan Co. (Cambridge University Press), 60 Fifth Ave., New York 11, N. Y. 306 pp. \$3.75.
- M. W. WOERDEMAN, General Editor. "Ophthalmology being Section XII of Excerpta Medica." Vol. I, No. 1. Excerpta Medica, 111 Kalverstraat, Amsterdam C. The Netherlands. 49 pp.