PANTOTHENIC ACID—A VITAMIN

THE discovery of Jukes[1] and of Woolley, Waisman and Elvehjem[2] indicating plainly that the "chick antidermatitis factor" is identical to pantothenic acid, which has been investigated in the writer's laboratory, comes as a welcome confirmation of a suspicion which has long been entertained—namely, that pantothenic acid is a vitamin of importance in animal nutrition. It seems likely that this particular compound, which appears to be universally present in living tissues, will be found to be required by higher animals in general.

A partial synthesis of pantothenic acid somewhat similar to that reported by Woolley, Waisman and Elvehjem was carried out in the author's laboratory in June, 1938, but publication was deferred pending further investigation. This partial synthesis, based upon our finding that pantothenic acid was a derivative of β alanine,[3] was mentioned orally to a few individuals, but we have no reason to doubt but that it was accomplished by Woolley, Waisman and Elvehjem independent of any knowledge of the procedure which we employed. The Wisconsin workers and Dr. Jukes, of the University of California, are to be congratulated on the clear-cut character of their results.

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THE EFFECT OF X-RAY ON THE COCCIDIA OF THE RABBIT

INTRACELLULAR stages of rabbit *Eimeria* have been found to be susceptible to the x-ray. Skin dosage of as little as 150r. at 70kvp. causes a sharp decline in oocyst production, while skin dosage of 450r. at 70kvp. completely stops oocyst production for from five to seven days, after which a relapse occurs in which oocyst production varies considerably from day to day with a gradual decline, which in one instance reached zero on the sixteenth day after the relapse. At no time during the relapse has the production of oocysts reached the same volume as before raying.

From these observations it is evident that the gametocytes are more susceptible than the asexual stages, but the exact developmental stages which are most susceptible have not yet been determined because of lack of complete information on the life cycle of the coccidia studied.

It is indicated that laboratory animals as well as valuable stock and pets might be freed from coccidia by the use of x-ray.

This work is being extended to the coccidia of poultry.

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SCIENTIFIC BOOKS

THE GEOLOGICAL SCIENCES

The Birth and Development of the Geological Sciences. By FRANK DAWSON ADAMS. $5.00. 506 pages. Illustrated. Williams and Wilkins.

THIS copiously illustrated volume is a very welcome addition to the rather scanty literature dealing with the history of geology and the related sciences. Whereas the widely used treatises of Zittel, Geikie and Merrill deal mainly with the development of geological science during the last two centuries, it gives much larger space to the consideration of the more ancient writers and the first attempts, often naive and unscientific, to explain the phenomena of the earth.

During Dr. Adams's long life of devotion to education and science at McGill University, he has become a conspicuous leader in geological research. His intimate friends have long known of his passion for rare and ancient books, and many have envied him his remarkable collection of more than a thousand such books dealing with geological topics. And now with characteristic generosity, he gives to the world the benefit of his activities as a bibliophile.

After a survey of geological science, or the lack thereof, in classical times and a general investigation of the conception of the universe in the Middle Ages, a half dozen of the subdivisions of the broad science of geology are considered in sequence. There is a chapter on the ancient controversies concerning the "generation of stones" and two chapters devoted to "Medieval Mineralogy" and "The Birth of Modern Mineralogy and its Development from Agricola to Werner and Berzelius."

Next comes an account of the birth of historical geology in which due attention is paid to the rise and fall of the "Neptunian Theory." This is followed by chapters dealing with the birth of paleontology, the early investigations of metalliferous ore deposits, the origin of mountains, the attempts to explain earthquakes and the origin of springs and rivers. Where it seemed advisable to do so, Dr. Adams has briefly sketched the more recent developments of geological principles and theories. In the concluding chapter, there is an appraisal of the reasons why the earlier seekers after knowledge were so often turned aside into the by-paths

[1] *Jour. Amer. Chem. Soc.*, 61: 975, 1939.

[2] *Jour. Amer. Chem. Soc.*, 61: 977, 1939.

[3] This relationship was reported both at the International Physiological Congress in August, 1938, and at the American Chemical Society meeting in Milwaukee, September, 1938. A paper on the subject is now in press.

of misunderstanding and error, and a brief glance at the promising new fields of investigation which are now becoming available for the geologist of the twentieth century.

There is unfortunately an inexcusably large number of typographical errors in the text. The reader, moreover, can not fail to note the great disparity between the author's style in various portions of his work. Some of the paragraphs would rate high in any literary critic's scale of merit, whereas others seem to be merely a succession of hasty notes casually assembled for the printer. Despite these shortcomings, the book will prove of great interest not only to geologists, mineralogists and paleontologists, but also to those who seek an intimate acquaintance with the thought patterns of ancient and medieval times.

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CHEMISTRY OF THE CARBON COMPOUNDS

Richter-Anschütz. The Chemistry of the Carbon Compounds; Vol. II, The Alicyclic Compounds and Natural Products. Translated from the 12th German edition and revised by T. W. J. TAYLOR and A. F. MILLIDGE. Pp. xii + 656. Nordemann. $15.00.

THE second volume of this admirable handbook will be welcomed by all organic chemists, to whom the earlier editions have been well and favorably known for so many years. It will be especially helpful to those Americans not familiar with the German language, since 17 years have elapsed since Blakiston published D'Albe's translation of the eleventh German edition.

This volume is not merely a translation of the German text (which appeared in 1935), but represents also an expansion and rewriting of various sections, so far as possible with the collaboration of the original contributors, in order to harmonize and bring the material up to date. Those familiar with the fields covered and the speed with which they have been advancing in the last few years, will appreciate the magnitude of this task. A valuable new feature is the replacing of the *Zentralblatt* references by references to the original papers and the inclusion of the names of the authors.

Richter-Anschütz is a veritable mine of information, not alone by virtue of its text, but also because of the wealth of its references to the original literature. Standing as it does between the monumental encyclopedias of the Beilstein type and the numerous college text-books, it is unrivaled in its field and an invaluable aid to the teacher and investigator in the vast domain of organic chemistry. Treatises and reviews, of course, are available which cover separate chapters in much greater detail, but no single work in the English language, of similar size, presents with such thoroughness and compactness our existing knowledge of the subject. Its only handicap is the high cost for the complete work of four volumes.

MARSTON TAYLOR BOGERT

Season of Birth: Its Relation to Human Abilities. By ELLSWORTH HUNTINGTON. New York: John Wiley, vii + 473 pp. 5½ × 8. 1938.

AN editorial review in the *Journal* of the American Medical Association states: "This remarkable book is one of fundamental importance in human biology and should be read by every physician and worker in fields concerned with racial reproduction"—"with full supporting facts"; "one feels inclined to accept his conclusions as proved."

A review by J. S. Wile (*Americal Journal of Orthopsychiatry*): "As an exceedingly useful document whose theory and supporting evidence are most challenging, it should command wide attention."

C. E. P. Brooks, in the *Meteorological Magazine* (British): "Huntington has now proved that climate is of even greater importance with respect to birth than later in life."

From reviews in other journals, the following quotations may be selected: "It contains a vast amount of evidence from all parts of the world." "Millions of factual data are presented in readily comparable graphs." "Valuable also as an example of readable presentation of large bodies of statistical data." "Will increase Dr. Huntington's already great reputation as a persistent seeker after the significances of the environment and as one who earnestly strives to make his discoveries widely useful by using great care in presenting them effectively and interestingly."

In brief: Seasonal influences apparently affect appreciably the survival rate in all stages of life, the sex ratio and the proportion of people possessed of superior energy and ability. The best time for conception and birth varies with region and weather as well as with climate and numerous other factors. In general, it appears that the month when temperature conditions most closely approach the optima for human physical health is best for conception, provided that when birth occurs average temperatures are close to optimum for mental activity. These temperatures have been found by several investigators to be about 63° and 50°, respectively. Mental activity appears to have been especially important in giving the infant a good start in life during the early, doubtless difficult stages of the development of *Homo sapiens,* when these optima presumably were established. People conceived and born under favorable temperature conditions live on the average more than a year longer than those less fortunately timed, and throughout their life have better health and more energy.

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