present, however, little attention has been given to the influence of food supply, and some experimental and other evidence, particularly the effect of excess nutrition on the production of a free nuclear stage in embryos normally undergoing simple embryogeny, indicates the importance of giving more attention to the possibly broader significance of this factor.

Dr. W. H. Cook, director of the Division of Applied Biology of the National Research Council, discussed some of the war research projects of the council under the title "Some Wartime Food and Supply Problems." Under war conditions the main problem in feeding civilian or service personnel is that of transport and distribution, complicated by the perishability of many foodstuffs. To meet the emergency, facilities had to be improvised to preserve the product, or alternatively the foodstuffs themselves had to be rendered less perishable. The dehydration of foodstuffs rich in proteins and fats was discussed in relation to the measurement and maintenance of quality and the type of deterioration that occurs.

Several new chemicals required by war industry can be provided by the fermentation of starch. Reference was made to the bacterial fermentation yielding 2,3-butanediol, a material readily converted to butadiene and other chemicals.

Thirty-eight other papers on various phases of biological and medical sciences made up the program of Section V. These included an important communication by Dr. B. P. Babkin, describing the interference of quinine bisulphate with cholinergic mechanisms in the heart and stomach of the dog, and a demonstration by Dr. C. C. Macklin that venule capacity in the lung is increased on inspiration.

Officers for 1945–46 were elected as follows: *President,* Professor E. S. Moore, University of Toronto; *Vice-president,* Professor H. A. Innis, University of Toronto; *President, Section I,* Dr. S. Marion, Ottawa; *President, Section II,* Professor D. C. Harvey, Dalhousie University, Halifax; *President, Section III,* Professor C. T. Sullivan, McGill University; *President, Section IV,* Dr. B. R. McKay, Ottawa; *President, Section V,* Dr. B. P. Babkin, McGill University.

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SCIENTIFIC BOOKS

CLIMATE AND HUMAN HEALTH

Climate and the Energy of Nations. By S. F. MARKHAM. x + 236 pp. Illustrated. Oxford University Press. 1944. $3.50.

THE relation of climate to the incidence of infection has attracted interest for a long time, but only recently has the effect of climate on individual fitness received much scientific study. This has resulted to a large extent from the difficulties experienced in maintaining full efficiency in troops exposed to extreme climatic conditions. Consequently, laboratories have been set up for the wartime study of such problems in Germany, Russia, Canada, England and on a particularly large and elaborate scale in this country. A large number of trained personnel exist, and it would be a misfortune if their experience ceases to be utilized for the public good after the war.

The main object of this note is to draw attention to a recent work by S. F. Markham (an English Member of Parliament) entitled "Climate and the Energy of Nations" (Oxford Press, 1944). This book traces the spread of civilization in relation to climate, reviewing history with emphasis on the effects of developments in housing, heating of houses, chimneys, glazed windows, central heating and adequate lighting on the spread of culture to more northern climates, where cold and the long winter nights would otherwise have hindered development. The ideas advanced stem from those of Professor Ellsworth Huntington and are presented in a popular manner. While the author's technical knowledge is open to criticism, so that an abstractor for *Biological Abstracts* reviewed the book with little sympathy, the author sees the problems clearly in broad outlines and presents a point of view, which is of considerable public interest. He maintains that men developing under good conditions will outstrip those living under greater handicaps, and that such environmental factors are more important than minor genetic differences between racial strains. Considering how great are the obstacles to book work imposed by long periods of cold and darkness, biologists are apt to agree with him. If the thermal regulation of houses were limited to heating as it has been in the past, one would expect the main centers of civilization to shift more and more to colder climates. If we were able to understand fully the factors concerned, better conditions should be obtained in regulated houses than are found in any natural climate. Mr. Markham presents evidence that high levels of intelligence are more prevalent in areas where extreme climatic conditions are rare. He argues that such intelligence levels are demonstrated in high standards of public health, of foreign trade and national wealth. The relationship of such factors to external climate, if established, are

of importance not only to scientists but also to statesmen and financiers. There is probably a basis of truth and, if so, in the future such developments are likely to be more or less controllable by proper use of air-conditioning and to depend less and less on the external climate.

Tropical areas now provide an interesting field for study, for the efficiency of control of cold conditions is already highly developed. On the other hand, little has been done to obtain practical methods for the application of air-conditioning under the heavy heat loads and on the enormous scale that would be needed to modify life in the tropics. Yet these areas contain enormous undeveloped sources of wealth, and we would be foolish to assume that control can not possibly be attained. There is little doubt that highly populated areas such as India will not be able to compete in the industrial field with areas in which the climate is more favorable, without the use of sweated labor, unless the factories are air-conditioned. It is also very probable that the output of a factory in such a climate would be still more affected beneficially, if the living quarters of the workers could be cooled. If choice had to be made between cooling a factory or living quarters, the latter is probably the more important. Such projects are at present not even under consideration and might involve changes in the housing and living conditions of whole nations in the tropics, since cooling could be more efficiently attained in large buildings.

Not only should air-conditioning be considered for industrialized areas, it may also prove of value to agriculture. Thus in Brisbane recently 25,000 chickens died in a single unusually hot day from heat stroke. This accident led to experimental work in the University of Queensland under Professor D. H. K. Lee, with the result that limits of tolerance and methods of control (by spraying) are now available. The difficulties of obtaining a good yield of milk from cattle in the tropics is well known, but, surprisingly enough, it is claimed that air-conditioning of a milking barn will more than pay for itself by increasing this yield. Also much work in cross-breeding is required to determine the best strains of cattle and other animals for life in the tropics.

It would appear that innumerable fields for study exist, and that the effects of changes in temperature even for part of the day are not readily predictable. We know little about the agricultural problems, we know almost nothing about the human side. We have no information as to the effect on man of living continuously in cooled houses for generations in areas with a hot external climate.

It is not improbable that cooled houses in a tropical climate, if used consistently for one generation, might modify the whole character of a population. It would certainly not be wise to rely for such information on chance observations, when large-scale experiments could be carried out much more accurately, more cheaply in the long run and probably with the approval of those used as subjects. Such experiments involve mental activity and should be made on man. Data of this type might be expensive to obtain but should pay dividends, possibly very large dividends. All the world would be served, the tropical countries through the more rapid development that would be possible when the facts were known, and countries in more temperate zones by demands on their supplies of mechanical equipment. International cooperation, whether on a limited scale as through the Pan American Union, or preferably on a broader basis, should expedite progress.

These future possibilities are only hinted at by Markham. Prophecies as to the future are left to the reader. However, if people with imagination read Markham's speculations as regards the past and make efforts to speculate as regards the future, it is to be expected that some extremely valuable experiments may materialize.

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AMINO ACIDS AND PROTEINS

Outline of the Amino Acids and Proteins. Melville Sahyun, editor. 251 pages. New York, N. Y.: Reinhold Publishing Corp. 1944. $4.00.

AMONG the major problems in the organic chemistry of natural products, that attracting the keenest interest of investigators is the constitution of proteins. As a consequence, much is currently being printed in the technical journals concerning the chemistry of the amino acids and several publishers of scientific books have recently issued text-books on the subject.

The stated purpose of the volume under review is "to outline in a simple and readable manner the essentials of the chemistry and biochemistry of amino acids and proteins." This it attempts to do in a group of essays by more than a dozen experts; as is unfortunately too frequent in such collections, insufficient effort appears to have been made to coordinate the subject-matter and to maintain a logical balance between the individual chapters. Moreover, several of these essays labor under deficiencies of structural equilibrium within themselves. In the opening chapter, discursive accounts of investigations which led to the characterization of individual amino acids are interspersed with passages intelligible only to the expert. How much information could be extracted from the bare remark that the first synthesis