

Book Reviews

Man in a Cold Environment. Physiological and pathological effects of exposure to low temperatures. Alan C. Burton and Otto G. Edholm. Edward Arnold, London; Williams and Wilkins, Baltimore, 1955. xiv + 273 pp. Illus. \$6.75.

In bringing together the material on the influence of cold on man from government World War II reports and the open literature, the authors have done a great service to physiologists interested in human responses to low temperature. When to this practical service there is added the particular viewpoints of investigators who have contributed much to the field, there results a book of importance.

The book is centered about the discussions of three topics: the physics and physiology of maintaining the thermal steady state during exposure to low temperature, the vascular and metabolic responses of animals and man to prolonged exposure to cold (including acclimatization and adaptation), and the noxious effects of cooling tissues below the physiological range of temperatures. The first of these topics is treated in a way that can be easily understood even by the "busy executive," but for those working in the field of cold physiology it will seem that this discussion is much oversimplified. The problem of temperature regulation in the cold receives little attention, and perhaps for this reason the discussion of the primary response to cold, the sensation of cold itself, is omitted. However, the treatment of the insulation afforded by clothing and by the peripheral tissues of the body is excellent.

The chapters on the vascular and metabolic responses are also satisfying and contain a full discussion of the important experiments of Burton and Brank on the muscle action potentials of cats exposed to cold but prior to shivering. The evidence in animals with respect to the existence of "chemical regulation" of body temperature and acclimatization to cold is well reviewed. The difficulty of obtaining good data on these topics from studies on man is noted and the hope expressed that someday experiments will be carried out on the Tierra del Fuegan aborigines. The topics of hypothermia

and cold injury are discussed briefly but well, with comments on the large areas in which present-day knowledge is deficient.

The book is an excellent review of the present state of knowledge on the topics that the authors have felt have not previously been covered, and for this reason physiologists will need the volume for reference. On the other hand, the book is so well written that it can be enjoyed by all who are interested in the many peculiar effects of cold on man.

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Symposium on Problems of Gerontology. Nutrition Symposium series, No. 9. Robert S. Goodhart, Ed. National Vitamin Foundation, New York, 1954. ii + 141 pp. Illus. Paper, \$2.50.

In his foreword the editor points out that in the first half of the 20th century there have been remarkable advances in the reduction of mortality in infancy and childhood from infectious diseases and that we are confronted now with problems in promoting the welfare of approximately 13 million people of 65 years and over. He rightly says that knowledge and understanding of the metabolic changes, both normal and abnormal, associated with ageing are essential.

During the reading of this publication several points impressed me. The 10 participants could not have been better selected. They are N. W. Shock (Baltimore), A. I. Lansing (St. Louis), H. J. Deuel, Jr. (Los Angeles), C. S. Davidson (Boston), B. F. Chow (Baltimore), J. E. Kirk (St. Louis), F. H. Bethell (Ann Arbor), C. N. H. Long (New Haven), D. J. Ingle (Chicago), and H. A. Rafsky (New York). Each is to be congratulated on the clarity of his presentation and on the fact that it is definitely focused on ageing from the point of view of metabolism. It is a relief to find that this can be done effectively without resort to complicated formulas and advanced mathematics. All presentations are accompanied by

short but well-chosen lists of references to the literature for purposes of follow-up.

In this volume the reader will find a good presentation of the essential biological background. Many significant experiments with lower animals afford clues to conditions in man and to rewarding investigations that should be carried on. Well-established data on the dietary needs and metabolic handicaps of older persons as compared with younger ones are made available. It is pointed out that the usual yardstick of adequate nutrition employed for young adults does not necessarily apply to elderly subjects. Alterations in the absorption of fat and in the roles of sex hormones are emphasized. There is little evidence to think that pituitary function fails in old age. Indeed, the secretion of gonadotropic hormones increases as gonadal function falls off. The perils of overeating are underscored. Experimental obesity in rats resulting from small lesions produced in the hypothalamus is discussed. There is much discussion about vitamin B₁₂ and its distribution in the body when it is labeled with Co⁶⁰. The strains that older people undergo are viewed in terms of Selye's work. It is said "that Selye's concept of the role of endocrine response to nonspecific stressors in causing disease is one of the most important ever raised in medicine." Stress is defined "as a harmful state of disturbed homeostasis."

If there is anything that would add to the symposium as published, it would be inclusion of questions by the group and answers to them by the symposium participants.

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Gas Dynamics of Cosmic Clouds. A symposium of the International Union of Theoretical and Applied Mechanics and International Astronomical Union. Interscience, New York; North-Holland, Amsterdam, 1955. xii + 247 pp. Illus. + plates. \$5.75.

This volume, the second in the symposium series of the International Astronomical Union, gives the proceedings of a symposium held at Cambridge, England, in July 1953. This symposium was organized jointly by the IAU and by the IUTAM (International Union of Theoretical and Applied Mechanics). It received a grant-in-aid of \$6000 from UNESCO to cover traveling expenses of scientists attending this symposium, and UNESCO also assisted with the publishing of the proceedings.