

## Structure and role of plasma proteins

*Structure and Function of Plasma Proteins*, vol. 1. Edited by A. C. Allison. Pp. viii+316. (Plenum: London and New York, 1974.) \$28.90.

As the title indicates, this book is concerned with both the structure and the function of plasma proteins. Unfortunately, with the exception of the immunoglobulins and albumin, available structural data are still mainly of a physicochemical character but even so information of this kind is well presented for a number of plasma proteins. Most, though not all, selected for inclusion have at least one known function. It is evident that in several cases these functions and their normal physiological roles are identical, though in other cases true physiological roles are still uncertain; the existence of analbuminaemics who often enjoy excellent health must serve to underline this point. In this regard it is disappointing that the chapter on albumin deals only with "aspects of chemical behaviour and structure" and that, in consequence, no comment is made on the function of albumin. It is indeed curious that a book with such a title does not as yet include any information concerning the function of that protein which is present at the highest concentration in plasma. But at least the information that is given about albumin is excellently presented and includes an interesting discussion of the macro and microheterogeneity of this protein. The opposing views of two schools of thought on the complex matter of the pH dependent N-F transition of albumin are very fairly presented.

Very satisfactory descriptions are given of present knowledge concerning both haptoglobin and haemopexin, two proteins usually considered to be of known function. As with albumin, genetic deficiency (or at least very low levels of haptoglobin) is compatible with reasonable health and it certainly is "important to know if complete absence of haptoglobin is compatible with life".

An especially warm welcome must be given to the chapter on acute phase reactants. As I have mentioned, the physiological roles of certain of these proteins, such as fibrinogen, are clear whereas the stimuli which bring about increased synthesis after injury of this and other acute phase proteins are little understood. Although on the basis of experiments using the isolated perfused rat liver it has been suggested that hormonal factors are of prime importance, evidence obtained by perfusion of physiologically normal livers suggests otherwise; a very rapid rate of

synthesis of haemopexin has been obtained when such livers are perfused (p. 42). Since haemopexin is not an acute phase reactant the finding that in the presence of hormones perfused livers from normal rats synthesise acute phase reactants at very high rates falls into a new perspective. Evidently, the simplest hypothesis at this time is that perfused livers synthesise many proteins (albumin is a major exception) at a greatly increased rate. Such behaviour may most reasonably be ascribed to the presence *in vivo* of inhibitors which cease to function under perfusion conditions.

In spite of the fact that certain chapters are out of date the book represents a valuable contribution to the field. **A. H. Gordon**

## Life and science in cold environments



Glaciated arctic landscape on the north-eastern coast of Baffin Island.

*Arctic and Alpine Environments*. Edited by Jack D. Ives and Roger G. Barry. Pp. xviii+999+47 plates. (Methuen: London, November 1974.) £35.00.

In recent years Man and his technology have begun to invade the cold arctic regions for science, minerals and simply for amenity. So this book, dedicated to Professor Carl Troll in acknowledgment of his extensive work on altitude geology, is a very timely synthesis of arctic and alpine work. It is edited by the director and coworker of the Institute of Arctic and Alpine Research at the University of Colorado and is largely written by colleagues working there or at government departments or universities in the USA or Canada; two authors are German, one Norwegian and one a New Zealander. Each contributor is an authority in his field and is very readable and generally succinct; some of the chapters are scholarly masterpieces of condensation.

The awful price of £35.00 will deter

most private purchasers but it is only the absence of exploration sagas and of contributions concerning social sciences and economic aspects that prevents the book from qualifying as an encyclopaedia. The 1,000 pages, which include a glossary, an index and 49 black and white plates inconveniently located at the end, embrace 37 papers, each of which has an extensive bibliography. They are divided into sections covering present and past environments, present biota and its development, abiotic processes, man in cold environments and man's impact on the environment. A more practicable approach would have been to present a format in three parts covering physical, biological and human (including technological) aspects. Expensive photographs could have been replaced with sketches where possible, and the number of diagrams could have been increased, even though 200 are already included.

Some of the papers treat elements of the environment in a systematic manner: the paper entitled "Snow" is an erudite summary of this ubiquitous characteristic of both arctic and alpine environment, but it says nothing of drift snow and would benefit from more diagrams. On the other hand regional themes dominate other papers, such as those on "Arctic Hydrology" and "The Present Ice Cover". Many of the papers, however, combine both the systematic and the regional approach—that on "Radioecology", for example—but very few treat 'arctic' and 'alpine' areas as similar regions; indeed, one of the achievements of the book is to pinpoint the differences between them. One of the longest and most fascinating papers explains how the alpine and arctic tundra are combined in a single tundra biome, an approach which, though having some justification where plants are concerned, has far less in the case of animals, particularly vertebrates, as not a single mammal is common to both arctic and alpine tundra. Controlling the differences between the two environments are length of day, solar radiation patterns, topography and moisture. Distances involved are so much greater in the arctic and it encloses an ocean which (even though largely ice covered) provides a further contrast.

Extremely brief conclusions from many atmospheric models and palaeotemperature profiles form only a small part of a brilliant précis on palaeoclimatology. Radiation over all the different time scales is a dominant variable in the many heat balance expressions used through the book. Better coordination of these would be a blessing to the student reader. And more data from The International Biological Programme, from the Alaska pipeline and from many smaller projects is now available to the rapidly expanding, corporate body of knowledge so lucidly defined in this most creditable collection.

**H. Lister**