

BOOK RECEIVED

V. N. Bolshakov: Puti prisposblenija melkih mlekopitajuših k gornym uslovijam. [Adaptation of small mammals to mountain conditions.] Izd. »Nauka«, Moskva, 1972, 200 pp. figs. 27. Price 1.37 rb.

This book is concerned with ecological analysis of the different forms of adaptation to life in high mountain conditions exhibited by small mammals (*Insectivora*, *Rodentia*, *Lagomorpha*).

The author first discusses the distribution of mammals in different zones of mountain habitats, emphasising that there are no uniform criteria for determining which zones should be considered as, for example, high mountain zones. Although this fact makes it difficult to classify the vertical distribution of different mammal populations, broadly speaking we are concerned either with species which occur in mountains only, or with species which are characterized by an extensive geographical range which includes mountain habitats, giving the world range of species belonging to the above three orders as an illustration of this.

Next, on the basis of analysis of indexes of various kinds — physiological (energy budget, activity, feeding habits, reproduction, growth and development), — ecological (population structure and dynamics) and morphological (body size, weights of organs), the author describes ways in which representatives of the above orders adapt themselves to mountain conditions. In this connection the author emphasises that both typically mountain species, and species with a wide geographical range, have many indexes of this kind in common, both having similar spatial structure of their populations, being characterized by increase in the sum total of circadian activity with its simultaneous lability, reduction in food specialization, collection of food stores for the winter in cases where the food supply is subject to considerable fluctuations and also being capable of accumulating food reserves, not only in the form of fats, but also glycogen and vitamins A and E.

Fundamental differences are, however, observable between these two groups of species. The mountain species are characterized by a constant although low reproduction rate, whereas in the case of species which live in the mountains but which have a wide geographical range, considerable fluctuations are observed in the number of young in a litter, the number of generations, and length of the reproduction season. It must be added here that it has been shown by experiments that the potential reproductive capacity of mountain species is high. The two groups of species living in mountains also differ as to the ways in which the energy balance of the organism is maintained. Species with a wide range have a higher metabolic rate in mountains, which also brings about changes in morphological indexes. *e.g.* increase in the heart index, but this phenomenon is not observed in typically mountain species. The author puts forward the hypothesis that these changes are biochemical in character and take place on the tissue and cell levels.

In conclusion the author presents the hypothetical way in which processes of adaptation to life under mountain conditions take place in small mammals.

The whole of the material contained in the book reviewed is based not only on comprehensive literature listed on 33 pages of print, but also on the author's numerous experiments carried out either directly under field conditions, or in the laboratory. It is therefore justifiable to assume that it is only due to editorial limitations on the size of the book that the reader is frequently conscious that more detailed documentation of the questions discussed would be desirable. It is therefore to be regretted that this interesting book, providing so much material for discussion, has not been published in less restricted form. There is, however, no doubt that this book makes an important contribution to scientific literature, as the author has given detailed discussions of problems connected with the living conditions of mammals under mountain conditions.

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