

#### BOOKS RECEIVED

**N. I. Kalabukhov: Periodičeskie (sezonnnye i godičnye) izmenenija v organizme gryzunov, ih pričiny i posledstvija.** Izd. Nauka, Leningrad, 1969, 248 pp., edition 1600 copies, price 1.65 rb.

**[Cyclic (seasonal and annual) changes in the organism of rodents, their causes and consequences]**

This book constitutes not only the recapitulation of many years' studies by the author but also a synthesis of results accumulated by his disciples and co-workers. At the same time it is a successive volume in the series of this author's monographs concerning environmental physiology and ecology of mammals.

A chapter concerning seasonal changes in the organism of almost 30 species of rodents constitutes the fundamental part of the discussed book. Particular species are discussed separately, in a systematic order. The characterization of variability is based in principle on the following physiological indices: rate of oxygen consumption, body temperature, fur isolation, temperature preferendum, activity rhythm, leucocyte count, ascorbic acid (vitamin C) and tocopherol (vitamin E) contents.

It is clear that not all species are discussed in equal details since some of them have been less thoroughly studied until now. The author presents most fully the data on 3 species of mice (*Apodemus tauricus*, *Mus musculus*, *Rattus norvegicus*), on the bank vole (*Clethrionomys glareolus*), on gerbils (*Meriones meridianus*, *M. tamariscinus*, *M. tristami*, *M. persicus*, and on souslik (*Citellus pygmaeus*).

Analysis of physiological traits in the seasonal and annual (or in many years) cycles allowed Kalabukhov to divide 28 discussed species into 3 groups. The first group includes three species only (*Calomyscus bailwardii*, *Mus sergii*, *M. musculus*) — all these are thermophilic and stenothermic rodents. They inhabit only the environments with rather stable thermal conditions. The second group also consists of species susceptible to changes of temperature (e.g. *Apodemus tauricus*, *A. sylvaticus*, *Microtus arvalis*), but owing to the ability of accumulation of food reserves and adequate modification of behaviour in unfavourable periods these species fairly well tolerate variations of temperature. This is proved by the fact that they inhabit enormous areas of forests, steppes, deserts and mountains of the Eurasia. Nevertheless in rodents of this group some physiological adaptations are perceptible, although only feebly expressed. The third group includes species (e.g. *Clethrionomys glareolus*, *Lagurus lagurus*) characterized by fully developed physiological adaptations. This allow them to continue the full activity even in the most unfavourable periods of the year and occupy various environments. Of course the hibernating species are included into a separate group.

The duration and included of insolation are regarded by the author as fundamental factors responsible for all changes in the rodent organism. He emphasizes, however, that these factors should be discussed separately. Another important factor in the regulation of physiological activity is related to food, especially to its qualitative composition and, among others, to the level of vitamins C and E.

The last part of Kalabukhov's book deals with the problem of relationship between periodical variations of epizootic infections and physiological changes in the rodent organism. As an example may be regarded the pest which in some years quickly spreads in rodent populations while in others a significant increase of resistance to the infection is observed. Particularly interesting is the resistance of hibernating species, and at the same time two stages can be distinguished. The first one appears already during the full activity of animals due to fat accumulation and increased level of tocopherol. The second stage is associated with lowering of the body temperature during hibernation. Similarly differentiated is the resistance in relation to the age of a specimen. Many years' studies allowed to establish that unequal susceptibility to infection is associated not only with changes of physiological parameters but also some morphological features (e.g.

body size, thickness of the skin cover). Hence not only the population density and frequency of inter-specimen contacts exert an effect on the origin, development and extinction of the epizootic pest. In addition one should take into consideration some pathogenic traits of the microorganisms which modify in a various degree the relationship between the host and a parasite.

The content of the book is enriched by numerous tables (141) and figures (123). The bibliography includes 399 positions, from which over 320 is of Russian authors.

M. G.

**Anton B. Bubenik: Das Geweih. Entwicklung, Aufbau und Ausformung der Geweihe und Gehörne und ihre Bedeutung für das Wild und für die Jagd.** Verlag Paul Parey, Hamburg und Berlin, 1966. 214 pp, figs 87 (215), price 42 DM.

To meet the requirements of numerous hunters and students of forestry the Publishing House of Paul Parey in Hamburg specializes in publications of monographs concerning particular species of game or summarizing practical aspects of actual knowledge in the field or rational economy in hunting grounds. It is fortunate that this renowned series has been supplemented by a book which may be equally interesting for practical hunters and for research workers studying the physiology and biology of *Cervidae*.

The monograph by Dr. Bubenik constitutes an original synthesis of achievements of world scientific literature on the problem of formation of antlers and points. At the same time it is a presentation of original results of the author's studies carried out for several years. The publication has been carefully elaborated by the editors and is adorned by excellent figures and illustrative schematic diagrams by the author.

The arrangement of the book with clear numerical classification of chapters introduces the reader at the beginning to general characteristics of ruminants bearing points, their evolutionary development, as well as formation and structure of antlers. A comprehensive chapter covers the problem of biological and physiological aspects of formation and change of the antlers, presented on a broad morpho-physiological background. These problems are even more thoroughly discussed in connection to a theory of »trophic centres of antlers« propounded in an outline by the author. The theory attempts to correlate the hormonal mechanism of the antlers cycle with the influence of external stimuli by means of autonomic centres of the central nervous system. Subsequent chapters are much nearer to the interest of practical hunters. They deal with the effect of food and animal's age on the formation of antlers, as well as with the appearance of pathological forms of antlers.

The thorough knowledge of the subject both in detailed studies and in general biological problems enabled the author to give a synthetic view in the chapter entitled: »Mechanism of development and biological significance of antlers«. The phenomenon of formation of organs, the origin and function of which is still lacking a uniform theory, obtained there an interesting interpretation with new and often original conceptions. Although the chapter contains some as yet unconfirmed hypotheses, which in the future must be subjected to detailed studies, but one has to emphasize a broad and biological method applied by the author to the problems being for years under the domination of practitioners. From this point of view the most interesting and deserving generalization among hunters and students of forestry are the author's ideas on the subject of actual criteria of selection and real values of trophies in the deer. Similarly many practical hints and ideas arising from a desire of maintaining some species traits of reared animals may be found in the author's considerations on the subject of scientific organization of breeding work in a hunting-ground.

In general one has to conclude that the method of discussion and scope of the subject qualify this book by Bubenik to a group of synthetic monographs so helpful for biologists of various specialities. On the other hand the appearance of the book in the series so popular among hunting experts ensures its popularity and world-wide range.

J. R.