

LIFE IN THE COLD

Animal hibernation is an insufficiently explored and mysterious phenomenon. On the one hand it deals with a human dream of longevity, even of immortality... on the other, its problems come within the practical domain of medical transplantology which stem from the belief that we can learn from animals how to preserve tissues for transplantation.

Research done by biologists tries to answer a wide range of questions regarding strange conditions: where does the ability to hibernate stem from? Is it a primary phenomenon, an evolutionary relict inherited from cold-blooded ancestors, or simply a survival strategy in extremely difficult conditions discovered repeatedly in the course of evolution by various groups of animals?

So far it has been considered that the wintering of cold-blooded animals is a passive submission to low temperatures. The question arises, however, is it really possible that there are no regulatory mechanisms which control this process?

Will the study of hibernation tell us anything about evolution, particularly of endothermy? Is it a kind of sleep? How can we classify the processes and phenomena related to wintering while still dealing with reality?

We are not in a position to answer all of these questions. In the series of articles we would like to present our results as well as the reflections on life in the cold, as seen from different views.

We present five articles concerning life in the cold.

In the first, PAWEŁ KOWALCZYK relates basic information on mammal hibernation and the most significant results obtained in the last few years. He deals with the conceptual and terminological confusion still extant in this field.

The article by EUGENIA TĘGOWSKA gives a keen analysis of dependence between sleep and torpor. The author also tries to answer the question whether these phenomena are analogous or homologous.

MICHAŁ WOJCIECHOWSKI writes about adaptive strategies of bats (living in the temperate zone) in response to different environmental conditions such as lack of food and cold.

The next article (by P. KOWALCZYK, R. MERONKA, E. LISOWSKA, and J. SOTOWSKA-BROCHOCKA) gives ample evidence that — despite of the current belief — regulatory processes occur during the hibernation of cold-blooded animals such as amphibians.

Finally, in the last article ROBERT MERONKA presents a dramatic situation of frogs inhabiting the far north; these animals have to freeze (in a controlled way) in order to survive.

We hope that the problems raised concerning unknown aspects of life in a wide range of animals, will be found interesting and helpful to students of biology and teachers as well.

