

fifteenth day, there was one living mouse in group A and five in group B.

To be conclusive this experiment should have been on a greater number of animals, but the necessary material is not procurable at present. We draw no conclusions, but publish this only to demonstrate possibilities in the biological study of *B. subtilis*.

LIMNOLOGY IN THE U.S.S.R.

CONSIDERABLE progress has been made in the U.S.S.R. in the study of lakes and inland seas, especially since 1928, at which date several new limnological stations and institutes were founded and a new method of complex study inaugurated. The essentials of this method consist in team-work combining the study of hydrology, hydrobiology, hydrogeology and hydrochemistry. A short report by L. S. Berg (*Bull. Acad. Sci. URSS., Sér. Géol., No. 1, 54; 1945*) presents a general review of the work done since 1928, while D. N. Taliev (*ibid.*, 79) presents a report on the activity of the Baikal Limnological Station, and N. M. Strakhov (*ibid.*, 61) discusses the significance of lake and lagoon deposits in the study of processes of sedimentation. The Caspian Sea has been intensively studied by special expeditions, and the work on salt deposits of Kara-Bogaz, begun long ago, has been continued with great success. The salt deposits of Kara-Bogaz are of great interest from the point of view of pure science and have also great industrial value. A number of papers are devoted to the study of the variation of the level of the Caspian Sea during the last seven hundred years. The Aral Sea has also been studied by the Aral Fisheries Station and the Aral Hydrological Institute.

Baikal, the deepest lake in the world, which contains a very interesting relict fauna, was studied by the members of the Baikal Limnological Station founded in 1928 and directed by G. Y. Vereschagin (1889-1944), one of the most prominent limnologists in the U.S.S.R. The endemic fauna and flora of Baikal were studied in conjunction with fossil types found in the sedimentary rocks in the district. This work is considered to be of high importance not only in connexion with limnology but also as a valuable contribution to the theory of evolution.

Another lake intensively studied is Sevan (Gokcha) in Armenia, and eighteen volumes of the "Materials for the Study of Lake Sevan and its Basin" (1931-38) have been published, including reports on the limnology, geology and geography.

Other large lakes such as Balkhash, Issyk-Kul, Ladoga, Onega and a host of smaller lakes (including 1,324 lakes in the Leningrad district) have been surveyed.

Great progress has also been made in the investigation of salt lakes by the Salt Laboratory, the Institute of Halourgy and the Institute of Applied Chemistry. Lake deposits, especially medicinal oozes and sapropelic deposits, have received a great deal of attention and the results published in various periodicals, such as the *Trav. Supropelic Inst., Microbiology* and others.

Reviews of current literature on limnology are published in the *Bibliography on Hydrology* and in the publications of the Hydrological Institute.

A separate article by N. M. Strakhov is of a particular interest to geologists, for in it the author discusses the mode of precipitation of carbonates in lake waters as influenced by the concentration of various ions, the formation of bauxitic and man-

ganese deposits and the formation of petroleum. In Lake Balkhash, for example, the magnesium carbonate is precipitated in the form of dolomitic ooze at pH above 8.8. Contrasted with this are the lakes of the humid zone with a much lower pH, in which the carbonates are not precipitated. This, in its turn, influences the process of diagenesis of organic matter, and it is suggested that the formation of petroleum may be conditioned by the alkaline environment in the lakes and lagoons of the arid zone, while the formation of humic material is a characteristic feature of the acid waters in the humid zone.

S. I. TOMKIEFF.

CLASSIFICATION OF MAMMALS

BY his wide researches on the mammalia, Dr. G. G. Simpson can speak with great authority on their classification, and in a recent paper entitled "The Principles of Classification and the Classification of Mammals" (*Bull. Amer. Mus. Nat. Hist.*, 85; 1945) he gives his views not only on the mammals but, as well, on the wider aspects of classification.

The work is divided into three parts. The first is on general principles and deals with phylogeny, classification and nomenclature. This section is of interest not to students of the mammalia alone but also to all biologists. To use the author's own words, "Taxonomy is at the same time the most elementary and the most inclusive part of zoology, most elementary because animals cannot be discussed or treated in a scientific way until some taxonomy has been achieved, and most inclusive because taxonomy in its various guises and branches eventually gathers together, utilizes, summarizes, and implements everything that is known about animals, whether morphological, physiological, psychological, or geological". This truth has not always been sufficiently recognized.

Under the heading phylogeny the subjects treated are: phylogeny and classification, nomenclature, types and other relevant matters. Thirty pages in double column are taken up by the author's opinions on these, which are clear, concise and most informative.

Part 2 is a classification of the mammalia, living and extinct, headed by a short introduction and explanation of the method used. It is interesting to note in passing the tabular list comparing the numbers of living and extinct genera of the orders of mammals. In general, the number of extinct genera is largely in excess of the living, the Artiodactyla, for example, being as 333 to 86 and the Perissodactyla as 152 to 6. The rodents, on the other hand, reverse the picture, the numbers being 275 to 344 and the Chiroptera 16 to 118. These figures are not without significance and point to these two groups being on the upgrade, though some correction must be made to allow for the lesser chance of preservation as fossils of the smaller kind of animals.

The classification is presented in great detail, complete down to genera living and extinct, together with their distribution in time and space.

Part 3 is a review of the mammalian classification, explanatory of the list given in Part 2 and to be regarded, in the author's own words, as an "elaborate footnote" to it. The orders are discussed seriatim, and various divergencies of opinion of detail in classification reviewed. A bibliography of works referred to in the text, an index of family and generic names and one of vernacular names complete this most valuable work.

C. FORSTER COOPER.