

exploiter of coniferous forests during the past half-century, is well known in this respect. Inter-State imports have been proceeding for some time past, and the United States will for some decades to come import forest produce on an increasing scale. From the British point of view, perhaps the first two chapters of this book will prove of greatest interest. The first, "How Forestry came into being", gives us an excellent summary of the various stages of the forests and forestry in the United States have passed through since their utilisation by the white man first commenced. In the second chapter we are shown how the early movement towards forest protection and conservation ran parallel with the immense economic development of the forest industries, the merging of these two great movements being discussed in subsequent chapters. The second half of the book deals with the introduction of principles and methods of forestry with the advent of the trained forester, with education and research, and the real status of forestry in the United States administration. The authors may be congratulated on the way they have handled their material and presented it to the public.

*Beiträge zu einer einheitlichen Auffassung gewisser Chromosomenfragen: mit besonderer Berücksichtigung der Chromosomenverhältnisse in der Spermatogenese von Alydus calcaratus L. (Hemiptera).* Von Enzio Reuter. (*Acta Zoologica Fennica*, 9.) Pp. viii + 487 + 8 Tafeln. (Helsingforsiae: Societas pro Fauna et Flora Fennica, 1930.)

THIS work is a careful cytological study of spermatogenesis in a Hemipteran insect, but it is much more; for it includes a discussion of literature in all the related fields of plant and animal cytology. After some sixty pages giving a critical account of spermatogenesis in this insect, the remainder of the volume is devoted to a discussion of such questions as the structure of chromosomes, hypotheses of chromosome phylogeny, chromosome persistence and composition, the 'resting' period between mitoses, chromosome splitting, the method and meaning of chromosome conjugation, the nature of genes, and other questions. The views and observations of others are freely cited, making the work a very useful one in comparative cytology.

The questions considered are much too numerous to discuss here, but it may be mentioned that in the spermatogonial nuclei of *Alydus* the chromosomes split in the prophase. The somatic number is 13, consisting of five pairs of ordinary autosomes of different sizes, one pair of microchromosomes, and the X, which, as usual, becomes compact at an early stage. The oogonial divisions show two X-chromosomes.

Some of the drawings of chromosomes are made from the living cell. There is no continuous spireme or bouquet stage, but the long chromosomes in meiosis pair laterally, beginning at one end, to form five gemini. Remaining attached at one end, they afterwards diverge until they are end-to-end and then split lengthwise. Before

reaching their definite shape in diakinesis, they pass through characteristic extended (chromomere) and diffuse stages. But it is strongly emphasised that from the last spermatogonial telophase to diakinesis all the chromosomes maintain strict genetic continuity as separate and distinct individuals. The X-chromosome is seen *in living cells* to be composed of four segments.

All biologists wishing a critical summary of the present position on these cytological questions will find this work useful. The bibliography alone occupies more than a hundred pages. R. R. G.

*Einführung in die Bodenkunde der Seen.* Von Einar Naumann. (*Die Binnengewässer: Einzeldarstellungen aus der Limnologie und ihren Nachbargebieten*, unter Mitwirkung von Einar Naumann und herausgegeben von August Thiennemann, Band 9.) Pp. ix + 126 + 7 Tafeln. (Stuttgart: E. Schweizerbart'sche Verlagsbuchhandlung (Erwin Nägele) G.m.b.H., 1930.) 16 gold marks.

THE part of "Die Binnengewässer" before us deals exclusively with lake bottoms. It is a large and interesting subject and very thoroughly handled from all aspects. The study of fresh waters as undertaken at the present day is a comparatively recent branch of science, and there has arisen, with its growth, a number of new terms, mostly introduced by the Swedish school at the Limnological Laboratory, Aneboda, of which Dr. Naumann is director. This laboratory is a model for all such fresh-water research. Most of these terms have come to stay, although many of them have no English equivalent. Good definitions are given throughout the work. The chapters deal with the development and origin of the various bottoms, their layers and zoning, principles and methods of sampling, with descriptions of apparatus; the botany and zoology of the layers, including bacteria; and the organic and inorganic deposits. All these are carefully classified and described. *Bodenkunde* is the study of the origin, qualities, and changes of the bottoms. In it, geology, zoology, and botany are all involved, besides physics and chemistry. It is an extremely important part of the larger and wider study of fresh waters in general. This volume is indispensable to all those engaged in such researches, and is one of the most interesting of the series. It is illustrated by photographs, maps, and text figures which are good and well selected.

*A Century of Wood Preserving.* Edited by Sir Harold Boulton. Pp. x + 150 + 3 plates. (London: Philip Allan and Co., Ltd., 1930.) 8s. 6d. net.

AT the present time, when a renewed interest in the scientific study of wood preservation is being shown in Great Britain, it is well to recall that this country was a pioneer in this work, and the method of forcing antiseptics into timber by means of pressure in a cylinder was patented by Bethell so early as 1838. "A Century of Wood Preserving", edited by Sir Harold Boulton, contains the substance