

Principles of Paleontology.

Agnatha, Fishes

Edited by D. V. OBRUCHEV. Published by "Nauka", Moscow, 522 pages, illustrated. 4 rubles 50 copecks (in Russian).

Ichthyologists have been fortunate in having publications which surveyed knowledge on fish fossils. These include Zittel's (1898) *Handbuch der Paläontologie*, Woodward's (1898-1901) four volume *Catalogue of fossil fishes in the British Museum*, Woodward's revision of Zittel (1932, in English), Grasse's (ed., 1958) three fish volumes of *Traité de Zoologie*, and Piveteau's (ed., 1964—) three fish volumes of *Traité de Paleontologie* now being issued. Romer's (1933 and later editions) *Vertebrate Paleontology* summarily deals with fish. The book reviewed here is a fine addition to these studies of palaeoichthyology.

The study of fossil fishes in North America and particularly Canada has not received the attention it deserves. This is not from the lack of suitable deposits in Canada. All of the major studies above are European. The reviewers would like to draw this untrammelled Canadian field of study to the attention of young biologists.

The *Principles of Paleontology* comprises a series of volumes being published on different fossil groups. The volume on fishes is finely bound in green cloth. Its binding, paper and illustrations reflect the current rise in quality of Russian publications.

The text is preceded by a table of contents, a stratigraphical table (without geological age) and a short introduction, and ends with an index to taxa. The body of the text is divided into chapters, each of which covers a class or subclass, is individually authored and is followed by its own bibliography and set of plates. Each chapter is well-salted with text-figures. Descriptions and geological spans are given for each fossil taxon down to the genus; taxa not represented by fossils are omitted. The author and date is cited for most families and genera.

The classes dealt with are Diplorhina, Monorhina, Acanthodei, Chondrichthyes and Osteichthyes, while a last chapter includes as *incertae sedis* the Order Conodonti. Under the major taxa are included sections on history, morphology, systematics, ecology, and geological and biological significance.

The classification is generally conservative. Fewer classes are recognized than in the somewhat split classification of Berg's (1940) *Classification of fishes both recent and fossil*. Separate classes for hagfishes, lampreys, and ratfishes, for example, are dropped. Surprisingly the taxonomic endings of the American, Stenzel are adopted, whereas most North Americans currently follow the Russian ichthyologist Berg! The union of the crossopterygians and lungfishes in a subclass Sarcopterygii does not seem well advised; their nasal passages have been shown to be ontogenetically dissimilar.

The coverage of Osteichthyes seems reasonably complete, although *Mallotus* and *Artediellus* known from Pleistocene fossils and the Ramphosoidei are omitted. Unfortunately Patterson's (1964) study on Mesozoic acanthopterygians was published too late for inclusion. Although some publications up to 1963 are included, Parsch's (1962) study on fossil fish of Alberta, and Uyeno and Miller's (1963) important survey of late Cenozoic freshwater fish records from North America have been omitted.

Compilation is of course necessary to produce a work of this sort. But there are new data and new figures. New taxa include — in the Heterostraci: Olbiaspidida (Order) and Olbiaspididae (p. 78); in the Monorhina: Tannuaspididae (p. 98); in the Placodermi: Radotinidae (p. 132); Groenlandaspididae (p. 143); Euleptaspidae (p. 144); Hussakofidae (p. 148); Erromenosteidae (p. 150); in the Acanthodii: Polyacrodontidae (p. 212); in the Chondrichthyes: Pseudodontichthyidae (p. 255). The lack of new phylogenetic dendrograms is disappointing.

The chapter on conodonts uses a classification with families, though most students of conodonts today — at least in the west — no longer retain this category for what are recognised as “form genera”, not true genera. It is interesting to recall that though conodonts were discovered first in 1859 in the Leningrad area, they have since been almost totally ignored by Russian workers. The present chapter leans heavily upon recent German and American work.

This volume will be of considerable value in the study and identification of fossils because of its descriptions and many figures and its literature summaries at the end of each chapter.

D. E. McALLISTER
D. L. DINELEY

National Museum of Canada, Ottawa, and
University of Ottawa, Ottawa, Ontario.

Tuktu: A Question of Survival

By FRASER SYMINGTON. Canadian Wildlife Service, Department of Northern Affairs and National Resources, Queen's Printer, Ottawa, 1965. 92 pp. 19 plates and 1 fold-out map. \$2.00.

This is a popular treatment of the “caribou problem” which faces federal and provincial game authorities who are charged with managing this important northern renewable natural resource. Mr. Symington has done a very capable job of translating the many official reports of field biologists into a more digestible language for the layman, without losing any of the feeling of the rawness of the land and the urgency of the situation.

The booklet opens with a pictorial essay on the barren-ground caribou and then is introduced by the Honourable Arthur Laing, Minister of Northern Affairs and National Resources. The author treats the problem in a series of chapters on the land, the caribou and the people

and concludes by presenting a caribou management program with an outline of basic principles. This booklet should perform the important task of bringing the public up to date on the barren-ground caribou situation in northern Canada.

A. W. F. BANFIELD

National Museum of Canada,
Ottawa, Ontario.

Fishes of the Sea of Japan and neighbouring parts of the Okhotsk and Yellow Seas.

By G. U. LINDBERG and M. I. LEGEZA. Published by “Nauka”, Moscow and Leningrad, Part I, 1959, 207 pages, 108 figures; Part II, 1965, 389 pages, 324 figures (In Russian).

The isolation of the Sea of Japan by sills, its geological history and its mixed arctic, temperate and tropical faunal elements make it especially interesting to the ichthyologist. The fish fauna of the Sea of Japan has not been recently surveyed as a whole. Matsubara (1955) in *Fish morphology and hierarchy* surveyed the Japanese portion of the Sea of Japan and Chung (ed., 1961) in *The fauna of Korea, fishes*, the Korean portion. The former does not contain synonymies and descriptions and the latter does not give synonymies. Lindberg and Legeza's study give both of these plus keys, distribution and a figure for each species. Part I includes from the lampreys to the ratfishes, Part II from the sturgeons to the threadfins, and presumably a later part(s) will cover the remainder of the fishes. This study will be valuable to those interested in the fish fauna of the Japan Sea and to those interested in the amphi-pacific members of the Canadian Pacific fish fauna. It is hoped that the last part will contain a zoogeographical discussion of the area.

D. E. McALLISTER

National Museum of Canada
Ottawa, Ontario.



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