

Kun, having assembled so complete and comprehensive a body of information, did not utilize it more fully in expanding this section into an authoritative study of the structural control of African mineralization. It might well form a book in its own right.

The bibliography is very complete and, in addition, the author lists names of companies, organizations and individuals having interests in African mining.

This is essentially a reference book, the price of which will probably place it beyond the reach of most individuals. It may well, as the publishers claim, "find a ready audience among geologists, mineralogists, geographers and economists", but the main appeal will probably be within the geological field. Part 2, one imagines, will prove rather too technical for the economist and the geographer. An excellent case could, in fact, be made out for publishing Parts 1 and 2 as separate volumes with, possibly, a third volume devoted to a discussion of mineralogenetic provinces.

The importance of this book as a major contribution to the geological literature of Africa will, doubtless, increase with time, and one can have nothing but admiration for Prof. de Kun in the magnitude of the task undertaken, and the masterly manner in which it has been accomplished.

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## AMERICAN MAMMALS

### Mammals of the Pacific States

California, Oregon and Washington. By Lloyd G. Ingles. Pp. xii + 506. (Stanford, California: Stanford University Press; London: Oxford University Press, 1965.) 80s. net.

THE Pacific States of the United States—California, Oregon and Washington—cover an area of approximately 325,000 square miles and provide habitats ranging from the icy slopes of the Rocky Mountains to the burning sands of Death Valley which are the homes of a large mammalian fauna. No less than 233 species of wild and feral mammals live in this vast region, from the grizzly bear, the elk (wapiti) and the moose (elk), to the minute pygmy shrew, the marsupial opossum, and a host of bats and rodents. The long seaboard is the haunt of seals, sea-bears and sea-lions, and the coastal waters are frequented by whales, porpoises and dolphins. Some of the larger species such as the grizzly are now almost extinct in the region, but others now protected by law, such as the sea otter and the grey whale, have made a remarkable recovery in numbers from the remnant left after over-exploitation in the past.

The main part of this book is a systematic account of the species, in which a large amount of information is given on their habitats, ecology, and general biology, as well as the diagnostic characters by which they are identified. Keys to the orders, sub-orders and families are provided where necessary and are supplemented with pictorial keys, drawings of anatomical details, range maps, and photographs. The illustrations and diagrams are particularly good; they are not merely embellishments but have equal weight with the text. There is also a useful and well illustrated artificial generic key to the skulls of the mammals with the exception of the cetaceans.

The book, however, is more than a guide to the mammalian fauna of the Pacific States; it is an excellent introduction to the study of mammals in general, for the preliminary chapters and the appendices cover a wide field. The author states his approach to his subject in the preface; he regrets that today many scientists are being trained in depth in their fields but are not being educated and lack the foundational breadth to support their specialized training. "Biology is the study of organisms, and biologists must be concerned not only with molecular and cellular biology, with organs and systems, but also with whole individuals, their populations, and the

ecosystems involving many species." Part I therefore gives a general account of mammals, their structure, classification, ecology, biogeography and their geological history. Appendices deal with the collection and preparation of specimens for study, the identification of seats, the principles of classification and other matters, and include a check list of the mammalian fauna of the Pacific coast. The volume ends with a good selected bibliography and a full index.

The book can be strongly recommended as an excellent account of mammals in general, and those of the Pacific States in particular. It will be read with interest and enjoyment by zoologists in all parts of the world.

L. HARRISON MATTHEWS

## FLORA JAPONICA

### Flora of Japan

By Jisaburo Ohwi. Edited by Frederick G. Meyer and Egbert H. Walker. Pp. ix + 1067 + 17 plates. (Washington, D.C.: Smithsonian Institution, 1965.) n.p.

THE development of regional floristic accounts, which usually begins with the publication of preliminary lists based on the collections of one person, expedition or institution, ideally should pass through the stage of the preparation of a critical wide regional revision before the third generation, as it were, of mere local accounts. Unfortunately for most regions of the world this ideal has not been realized, though perhaps the Indian sub-continent has come nearest to it with *Flora of British India*. In this case, as in those of Australia, South Africa and Tropical Africa, the regional revision came too early to form a proper basis for modern taxonomic treatments, and as a consequence the more local accounts that have followed to be satisfactory have each had to undertake their own submonographic revisions. In the case of the Soviet Union, the local floras have been produced more or less contemporaneously with the major one, with the result that taxonomic manpower has been dispersed and deployed instead of being concentrated on the main project, which has thus proved less satisfactory as a basic reference in taxonomy and nomenclature than it might have been. Perhaps the Malesian region holds hope of becoming the most fortunate taxonomically, if the preparation of the regional *Flora Malesiana* receives total regional support, and national and other pressures to divert effort to the production of floras of more limited areas can be resisted until it is completed.

Some areas have, however, mainly for historical reasons, altogether lacked an adequate regional coverage. Such are Europe, the neotropics, and the Sino-Japanese region. The floras of these latter two are so large that it is perhaps beyond the bounds of possibility to produce a critical revisionary flora covering all their territories. The great need in these cases is for a simple list of recorded taxa, on the lines of the *Index Florae Sinensis*, but purely nomenclatural, not attempting taxonomic evaluation but listing authenticated dates and places of publication, typification, location of type and other necessary nomenclatural information for all the names of taxa recorded from the region. Such a list would provide the necessary sound basis with the aid of which local national or district floras could each be more speedily written, would ensure nomenclatural correctness and uniformity throughout the region, and enable the botanists to concentrate on the plants without the time-consuming encumbrances of bibliographic and nomenclatural studies. The recent *Flora Europaea* is most at fault in omitting precisely this kind of information; this new *Flora of Japan* shares this defect and I feel justified in expounding it at length in this review.

Nevertheless, this well printed volume is welcome; the richness of the Japanese flora, the absence of any modern