

region differs considerably from that of previous authors.

The paper is illustrative of many of the problems encountered in palaeontology, particularly those of convergence and the establishment of significant evolutionary (and, therefore, taxonomic) criteria. In this respect it is most interesting to see that the use of sensory canal pathways as such a criterion in holostean evolution is regarded as unreliable by Wenz.

In conclusion it may be noted that the lucid text is further clarified by a large number of excellent diagrams and drawings. The photographic plates are of the highest quality and could well serve as a mark to be aimed at by other authors. The author and publisher may rightfully be proud of this volume.

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### **Flora of the Prairie Provinces: A Handbook to the Flora of the Provinces of Manitoba, Saskatchewan and Alberta**

By Bernard Boivin. Part I. Pteroides, Ferns, Conifers and Woody Dicotyledons. 202 pp. 1967. Part II. Dicotyledons, Dimerae, Liberae. 185 pp. 1968-1969. Mémoires de l'Herbier Louis-Marie, Faculté d'Agriculture, Université Laval, Québec. Paperback. Available from the author or from The Blue Jay Bookshop, Box 1121, Regina, Saskatchewan. \$3.00 per part.

Canadian botanists have long awaited a modern, critical taxonomic treatment of the flora of the prairie provinces. With the appearance of Part II of Boivin's four-part Flora it is evident that we are witnessing the publication of an original taxonomic work, one that will serve as much to stimulate controversy among taxonomists as to serve as a guide to the plants of the Prairie Provinces.

The Flora includes all the native and introduced vascular plants of Manitoba, Saskatchewan and Alberta and, as such, contains a considerable

portion of the Canadian flora. Since the manual includes not only the Great Plains and the boreal forest floras, but also portions of the Great Lakes-St. Lawrence forest flora, the southern arctic flora and the cordilleran flora, it should be useful outside the area specifically covered.

The manual contains keys to the families, genera and species. For each species, and for many varieties, there is a diagnostic description, a statement of flowering time, brief ecological notes, generalized distribution, important synonymy, and English and French common names.

Discussions of the distinctions between closely related taxa and of nomenclatural and distributional problems are often included. In the case of morphologically variable taxa, such as *Ranunculus aquatilis* and *Armeria maritima*, keys to varieties, including extraterritorial varieties, are presented and the variation is discussed.

The keys are simple and generally seem to be useful. However, the occasional use of unusual technical terms, such as "diachene" instead of schizocarp for the fruit of the Umbelliferae, the use of obscure or difficult to observe characters, such as "legume sulcate dorsally or not at all sulcate" in *Astragalus* versus "legume sulcate ventrally" in *Oxytropis* instead of the more familiar and useful keel characters, and the occasional use of vague statements, such as "flowers large" versus "flowers smaller", will reduce the usefulness of some of the keys and will require, at least, the inclusion of a glossary in a later part.

The arrangement of the orders and families will immediately strike the reader as unusual. It is based on a system of classification proposed by the author in 1957 (Les familles de Trachéophytes, Bull. Soc. Bot. Fr. 103: 490-505) in which he modifies the Bessey and Hutchinson systems of classification. Taxonomists are generally agreed that the Bessey system more closely reflects the evolution of the angiosperms than does the Engler and Prantl system, commonly used in floras; but the incorporation of the Hutchinson hypothesis that woody plants are more primitive than herbaceous plants leads to the subdivision of the dicotyledons into two lines, the woody Lignidae and the herbaceous Herbidiae. This results in the "unnatural" separation of some apparently closely related groups, such as the Araliaceae and the Umbelliferae. Boivin's system while it reveals the author's views on angiosperm phylogeny does not, in my opinion, contribute to the utility of the Flora.



The general appearance of the Flora, reproduced by photo-offset press, is not attractive and it is regrettable that the decision was made to publish it originally in *Phytologia*, a journal printed by the photo-offset method. It would be desirable, once all four parts have appeared, for the author to make some minor revision, or at least to incorporate the additions and corrections already made, and to republish the work in a single, attractive volume suitable for field use.

The most outstanding feature of Boivin's Flora is that it is the result of a critical taxonomic, floristic and nomenclatural re-evaluation of the flora based on a study of all available herbarium specimens and on the extensive field experience of a competent, classical taxonomist. The taxonomic treatment is often original and the author has not allowed convention or convenience to stand in the way of his species concept. Species which he is unable to distinguish morphologically are combined, many familiar names are relegated to synonymy and many new combinations are incorporated. Some botanists will disagree with his taxonomic decision to combine *Pinus banksiana* (jack pine) and *P. contorta* (lodgepole pine) as varieties of one species (*P. divaricata* var. *divaricata* and var. *latifolia*); but his nomenclatural decision to use *divaricata*, which has priority, as the proper specific epithet eventually will find acceptance.

I cannot fully agree with his taxonomic treatment of *Salix*; but his combining *S. glaucophylloides* and *S. laurentiana* under the latter name seems to be valid and I am now re-examining the *lucida-lasiandra-caudata* and the *pellita-drummondiana-subcoerulea* groups in the light of his decision to treat them, respectively, as *S. lucida* and *S. pellita*. Time will tell just how many of Boivin's taxonomic judgements will be accepted and how many will be rejected by taxonomists; but his nomenclatural decisions seem to be basically sound and the taxonomic controversy that he will have generated will more than justify his courage and labour.

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### The Killers

By D. P. Mannix. Clarke, Irwin and Co., Toronto.  
255 pp. 1968. \$7.20.

### Troubled Waters

By D. P. Mannix. Clarke, Irwin and Co., Toronto.  
247 pp. 1969. \$8.35.

These books, one about a fighting cock, the other about a goldfish, are filled with both good natural history and anthropomorphism. They are pleasant stories, well told, easily read, with accurate ecological detail. The animals do not talk, but they think, and decide, and tiptoe, and they are generally react mentally as would people. I have been warped enough by science to find this sort of writing disturbing, but I wonder too if it does not fill a real need. I doubt that I was badly damaged by Thornton Burgess, Charles G. D. Roberts, and others whose animal stories science would snub. Writers like these have spread knowledge and delight as few scientists can do, and as almost none want to do. Until scientists can communicate entertainingly with the public, good observation told with anthropomorphism will have to be the best that is available.

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### Carl Rungius: An Artist's View of Nature

By L. E. Render (and D. A. E. Spalding). 1969.  
Publication No. 1 of the Provincial Museum and Archives of Alberta. 24 pp. Queen's Printer, Edmonton. Price not given.

Carl Rungius has been a standard of perfection in big game art through most of this century. Born in Germany and a long time resident of New York, he discovered the Canadian Rockies in 1910, then spent most summers there until his death in 1959. Canada — and Alberta — can both claim him as partly their own.

This first publication of Alberta's Provincial Museum and Archives is a brief account of the man, a fine presentation of his art reproduced in part in full color, and a catalogue for a show of his art on display in the museum. The art there is on loan from the Glenbow Foundation.

It is an impressive production, magazine-like, containing eight colour plates, five half tone plates, and about 22 sketches and studies of animals. Brief articles examine the man, his art, and his ability as a naturalist.





Argus, George W. 1970. "Flora of the Prairie Provinces: A Handbook to the Flora of the Provinces of Manitoba, Saskatchewan and Alberta, Bernard Boivin [Review]." *The Canadian field-naturalist* 84(3), 325–326.  
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