

REVIEWS

The Evolution of Canada's Flora

TAYLOR, ROY L. and R. A. LUDWIG (eds.)
1966. University of Toronto Press. pp.
i-viii, 1-137. \$5.50.

A book of only 137 pages treating the evolution of Canada's flora must of necessity be somewhat spotty in its coverage. What we have here is a volume of eight essays commemorating the Founding Meeting of L'Association Botanique du Canada held at Carleton University, Ottawa, in May 1965. The chapters are based upon a colloquium of papers on Canadian botany. The topics are diverse, ranging from algal communities and moss evolution to the role of man in plant migrations and the ecology of phytogeographic zonation. One gains the impression that Canada's flora is not an especially exciting one, being largely attenuated and derivative. But at the same time, detailed investigations on special problems now being carried out in Canada demonstrate a vigor and enthusiasm that promise a fruitful future for Canadian botany.

In many ways a strong research potential in botanical sciences will be of major importance in the future development of this great land area of the earth's surface. The emphasis on reductionist biology of the fifties is currently being diminished more and more in favor of environmental and evolutionary biology which are closer, for the most part, to the needs of man and his relationship to his surroundings. Complex ideas represented by such phrases as we read in this book — "unfavorable conditions," "favored habitats," "closed associations," "relict distributions," "temporary habitats," and so on — what do they really mean? Will such biological problems ever be placed upon a predictive and quantitative scientific basis? It is only by such efforts as are represented by the

contributors to this volume that we can come closer to understanding the evolutionary and populational levels of the study of plants.

Marcel Raymond's "Personal Recollections of Frère Marie-Victorin" is a delightful introductory chapter which brings out the romantic character of the man and, along the way, a rich picture of his world. The subsequent chapters are more-or-less brief reviews of certain aspects of the flora, some of them containing original data. Robert K. S. Lee describes the marine benthic communities on Vancouver Island, and J. C. Ritchie the late Pleistocene history of the Canadian flora. For me the chapter that was most enjoyable to read was Jacques Rousseau's on "Movement of Plants." I was slightly confused by the title. As a long-time elementary botany teacher, used to the jargon of the trade, I tend to think of "movement" in connection with such things as turgor, tropism, taxis, etc. Rousseau is really discussing *changes* in plant species and communities together with their *migrations*. His lively style of writing and the helpful enumeration of examples (over 70 taxa, including animals), these well tied in with history, make this essay a very practical source of information.

Howard Crum's thoughtful contribution on evolutionary and geographic patterns in the Canadian moss flora points up our lack of knowledge. He admits that "Very little is known about the evolution of bryophytes, in Canada or elsewhere." I was very pleased, as a student of another group of spore-dispersing plants, the pteridophytes, to read Dr. Crum's comments on the assumption commonly made by phanerogamic botanists that "Spore-bearing plants are diffusely and ubiquitously distributed." The fact is, as he emphasizes, the spore-dispersed plants are dis-

tributed in nearly the same patterns with like relationships to the factors of geography and the environment, as the seed-dispersed plants.

The discussion on phytogeographic zonation by J. S. Rowe contrasts the floristic with the vegetational geography of Canada, bringing together the relationships of species to formations, migrations, fire, climate, and land-form in an admirably concise and readable format.

The largest chapter, and perhaps the most important one, is that by Theodore Mosquin on "Reproductive Specialization as a Factor in the Evolution of the Canadian Flora." It presents a good summary of current thinking about breeding systems, together with a pertinent bibliography which should be of value to readers in general. He proposes a new hypothesis, namely that specializations which foster genetic uniformity of populations have played the dominant role in the adaptation and evolution of the Canadian flora. The ancestors came from the lower latitudes, according to his argument, which may be summarized in the statement "Many Canadian species and genera are conservative and relatively static in evolution because they have for the most part lost the dynamic qualities of ideal diploid hermaphrodites." The evidence which Mosquin presents for his hypothesis in this stimulating paper is substantial. However, the question remains — why should mechanisms promoting constancy be adaptive? Is it really due, as he suggests, to "recurrent restrictiveness of northern climate," or "low soil and air temperatures during the growing season"?

Taylor A. Steeves, R. T. Coupland, and M. V. S. Raju follow up one aspect of Mosquin's paper in their chapter on "Vegetative Propagation in Relation to the Aggressiveness of Species." Interest in this subject has been steadily increasing in recent years. In the past the underground vegetative reproduction of plants has been largely an ignored

phenomenon. It leads to difficult semantic questions; for example, what is an individual plant? The chapter shows correctly that vegetative multiplication must be considered in attempting to understand the composition of a flora. Although we still have but little knowledge of the subject, there seems to be no question that this type of reproduction is a matter of considerable importance and definitely calls for much more investigation.

Small though it is, this volume contains a rewarding concentration of useful information and ideas of value not only for classroom students of botany, for the researchers as well.

WARREN H. WAGNER, JR.

Department of Botany,
The University of Michigan
Ann Arbor, Michigan 48105

Of Scientists and Salamanders

By VICTOR C. TWITTY. W. H. Freeman and Company, San Francisco. 1966. 178 pp. Illustrated. \$4.50 (U.S.).

Victor Twitty ends his account of his intellectual odyssey as a scientist with a chapter entitled "Redemption or Downfall". The journey of which he writes takes a course which one would judge to be unusual among the intellectual travels of biologists in that it begins in the experimental laboratory, where it remains for many years, but from which it departs to the scene of current adventures in the stream valleys of the California coast ranges. Intellectual travel in a reverse direction, from natural history to experimentalism, is, one is led to believe, the time-honoured pathway of scientific autobiography. The fact that Dr. Twitty, who has made a great success of his route, did feel it necessary to end this little book with a defence, is probably proof enough that his history is unusual and that he has found many of



Wagner, Warren

H.

↑

. 1967. "The Evolution of Canada's Flora, by Roy L. Taylor and R. A. Ludwig (eds.) [Review]." *The Canadian field-naturalist* 81(3), 206–207.

<https://doi.org/10.5962/p.342771>.

View This Item Online: <https://www.biodiversitylibrary.org/item/90098>

DOI: <https://doi.org/10.5962/p.342771>

Permalink: <https://www.biodiversitylibrary.org/partpdf/342771>

Holding Institution

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Sponsored by

Harvard University, Museum of Comparative Zoology, Ernst Mayr Library

Copyright & Reuse

Copyright Status: In copyright. Digitized with the permission of the rights holder.

Rights Holder: Ottawa Field-Naturalists' Club

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://biodiversitylibrary.org/permissions>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.