

with meager forest and coastal plain bogs and barrens proved unattractive to the life of our rich Canadian forest, with the result that the forest species of both animals and plants, or the species which demand rich or basic soils, were for the most part unable to cross to Newfoundland."

The Carolinian flora of southern Ontario has been the subject of a number of studies by Fox and Soper (1952-54) and Soper (1956; 1962). Soper and Maycock (1962) have investigated the phytogeography of an area along the north shore of Lake Superior, finding that most of the northern species appear to have an extensive gap in their range between that region and the shores of Hudson Bay and James Bay. They conclude that "The gap seems to be reasonable in terms of the flat lands of the northern Clay Belt and the boggy regions of the Hudson Bay Lowlands. Undoubtedly these species may eventually be discovered in other scattered localities in these central areas, but it is reasonable to assume that the disjunct nature of the distributions finds a counterpart in the lack of suitable environmental situations in those regions". The plants referred to are characterized by their preferences for open, rocky habitats free from forest competition, a condition analogous to that discussed above for the rare Cordilleran species of Eastern Canada, although the Lake Superior cliffs are the acidic Precambrian granites and gneisses of the Canadian Shield. Their smooth, rounded weathering and scarcity of soil are undoubtedly responsible for holding the forest in check.

Doris Löve (1959) has concluded that all of the vegetation of Manitoba was obliterated during the Wisconsin Ice Age (one of the phases of the Pleistocene epoch); that a grassland followed the ice withdrawal and a 'marsh-grassland' developed about 10,000 years ago (according to radiocarbon dating of wood from peat deposits of this stage) on the Lake Agassiz bottom following the drainage of its first stage toward the south; that a deciduous forest of elm, ash and aspen later developed around the shores of the second stage of Lake Agassiz; and that a western and southwestern prairie flora composed of various grasses, legumes and composites invaded the lake bottom following its final drainage northward into Hudson Bay while an arctic flora migrated southward and spruce forests spread over the Precambrian Shield, the forest penetrating during the last 2,000 years to invade the aspen belt and produce the present mixed forest. The past century has seen the transformation of the major area of prairie and marshland into a rich farm land. Ritchie (1956; 1957) has published the results of studies on the vegetation of northern Manitoba. He suggests tentatively in a later paper (1954) interpreting pollen spectra of the Riding Mountain area of southern Manitoba that "... the upland sites of the area were occupied by an initial closed forest, followed by a more or less closed treeless episode characterized by grassland vegetation, replaced by a deciduous forest episode with birch, poplar, and oak, culminating in a mixed spruce-deciduous forest closely similar to the vegetation of today". Earlier studies on the vegetation or ecology of the Prairie Provinces are noted by Adams (1936), but the paper entitled *Ecology of the Aspen Parkland of Western Canada*, by R. D. Bird (1961), deserves special notice.

### Recent Botanical Publications

The earliest major floristic works dealing with the ferns and flowering plants of Canada were *Flora Boreali-Americana*, published in 1803 by André Michaux; *Flora Americae Septentrionalis*, published in 1814 by Frederick Pursh; and *Flora Boreali-Americana*, published between 1829 and 1840 by Sir W. J. Hooker. These were followed, between the years 1883 and 1890, by the appearance of John Macoun's *Catalogue of Canadian Plants*, a remarkable achievement for the day and a stimulus for greatly expanded botanical exploration.

Five provincial *Floras* in manual form are now available, with 'keys' for the identification of species. These are: *The Flora of Nova Scotia* by A. E. Roland (1947); *Flore laurentienne* (southern Quebec only), by Frère Marie-Victorin (1935—with a 1947 supplement of additions and corrections by Ernest Rouleau); *The Flora of Manitoba* by Homer J. Scoggan (1957); *Flora of Alberta* by E. H. Moss (1959); and *Flora of Southern British Columbia and Vancouver Island* by J. K. Henry (1915). Porsild (1957) published an *Illustrated*