of interdisciplinary contacts, and the typical lack of overt religious impetus. Major issues receiving discussion are the Lorenz-Lehrman debate on nature and nurture, behavioural genetics, human ethology, sociobiology, and studies in communication and orientation. The essays also reflect the sociological rise of the discipline including the development of evolutionary biology generally, the establishment of journals and conferences, and the involvement of these researchers in general education, especially film making. For anyone interested in animal behaviour or intellectual biographies this volume is excellent reading, and Dewsbury is to be congratulated on it. It is intriguing to speculate how women and some countries, conspicuously absent from the present book, will be represented in a subsequent one a generation hence.

PATRICK W. COLGAN

Biology Department, Queen's University, Kingston, Ontario K7L 3N6
Present address: Canadian Museum of Nature, P.O. Box 3443, Station D, Ottawa, Ontario K1P 6P4

Journal of a Barrenlander, 1928-1929

By W. H. B. Hoare. Edited and annotated by Sheila C. Thomson. 1990. Published by Sheila C. Thomson, Box 4435, Postal Station E, Ottawa, Canada K1S 5B4. 186 pp., illus. $24.95.

W. H. B. Hoare had substantial travel experience in the western Arctic, could speak Inuit and understood the lifestyles of both the Inuit and northernmost Indians, and was also a remarkable all-round mechanic. In January 1928, assisted by A. J. Knox, a warden from Wood Buffalo Park, he undertook a general investigation of the Thelon Game Sanctuary for the Department of the Interior. He was required to take two years' supplies and also much of the material needed to build a warden's cabin at an appropriate site in the sanctuary. They were thus heavily laden even on level ground and seriously overloaded for the uneven high country. They had a single team of five Eskimo dogs, and repeatedly had to shuttle back and forth with divided loads. They really should have had two teams, but fish proved so scarce in the Hanbury highlands that it was difficult to keep one team going. The worst problem of all was that they were misled by the most recent (seriously erroneous) official map into taking a southerly route, by Ford and Campbell lakes, into the Hanbury system, rather than the proven route along Artillery Lake, up Lockhart River, through Ptarmigan Lake, and, with a few relatively short portages, into the upper Hanbury River. Examination of the modern topographic maps, based in large part on vertical aerial photography and radar altimetry, makes it astonishing that they survived. In addition to the major lakes (now correctly positioned) there are countless little lakes. The lakes are mostly between 350 and 390 m above sea level. The intervening land often runs over 400 m but is without high hills that might have broken the wind. It is hard to imagine worse country to traverse in mid winter with overloaded sleds and under-nourished men and dogs, for they were in the belt of WNW prevailing winds that stretches from the western Mackenzie coast to and across Hudson Bay. Because of this wind pattern Chesterfield, on the coast, has a severer January wind chill than any station in the arctic islands. That they reached the Hanbury in awful weather across this mismapped country is a tribute to the stamina and skill of both men.

Just what are the Barren Lands? The term has been criticized because the land is not completely lifeless; but barren usually means unproductive in terms of forestry or agriculture, which aptly describes the Barren Lands. In Collins English Dictionary (2nd edition) they are defined as "the region of tundra in N. Canada, extending westward from Hudson Bay: sparsely inhabited chiefly by Inuit." It is, of course, a descriptive rather than a political term, and so we need not precisely define its boundaries. The term is apt in another sense, for until vertical aerial photography came into use after WWII maps of this huge area (including most of Keewatin and much of eastern Mackenzie) were featureless except for a coastal strip and the Back, Hanbury, Thelon, Dubaunt, and Kazan rivers and lakes along them. Summer travel was practically all by canoe, which allows a very limited lateral field of view. Well, our maps are no longer blank, for the region is riddled with small lakes, but to northerners the term is still meaningful. As a piece of our history it should be preserved, just as we keep most of our Fort place names although the stockades are long gone.

The Barren Lands were heavily glaciated and relatively late in deglaciating. With cool summers there has been little new formation of mineral soil. A peculiarity of the region is that even far beyond the continuous tree line small clumps of spruce (*Picea glauca* and *P. mariana*) are found. It seems

certain that these clumps have persisted ever since the end of the Hypsithermal Interval when the limits of trees and other plants were driven several degrees southward. They seem all to be on sites sheltered to the west and northwest. Probably few of the trees on the least protected sites ever set seed; but they spread by tillering of the lower branches, so that each finally forms a clonal colony whose stems combine to reduce wind speed and protect the winter buds from snow abrasion. Of all the factors that limit the spread of spruce into the barrens, by far the most important in this region is wind-driven winter snow, which consists mainly of small sharp crystals. The surviving trees are sheltered by river cutbanks, eskers, or hills. Probably the finest grove is the one on the left bank of the Thelon where Hoare and Knox built the warden's cabin. I judge from the photograph on page 97 that most of the trees are fully 10 m tall. The grove is on an extensive gravelly beach and is shielded on the northwest side by hills that seem to be up to 100 m high. Here catabatic warming of the prevailing wind must somewhat enhance plant growth, for we know that under marginal conditions a rise of less than a degree in the July mean temperature may double the number of plant species and conspicuously increase their sizes. Most other spruce mentioned by Hoare were small, misshapen, or with broadly triangular trunks indicating very small annual growth.

My own interest in the region started in about 1948, when I volunteered to do botanical work with the Northern Insect Survey. It was then that I read some of the early accounts, including those of the Tyrrells and C. H. D. Clarke. Thus I learned something of Hoare's work only after his untimely death. However, his daughter Sheila joined the Division of Botany at Ottawa at about this time, and I gradually became infected by her enthusiasm for her father's work; but only now, from his unabridged journal, have I recognized the full extent of his achievements. This is not a glamorous adventure story, but the stark and sometimes telegraphic account of a man working under often appalling conditions to do his job. This diary, lovingly edited by his daughter, is a significant contribution to the history of exploration of our northlands. Nothing that I could write would enhance Hoare's account, but I shall comment on a few items.

I suggest that, for a first reading, a reader unfamiliar with the region follow the route map on page 174. To understand their problems in the essentially unmapped Hanbury highlands see the portions of the modern topographic map on pages 59 and 92.

On 8 June 1928, when they were at ca 400 m, Hoare reported the first mosquito, which would be only three weeks later than the average date at Ottawa. I finally realized that he must have seen a species of *Diamesa* midge such as we see in April at Ottawa emerging from snow-melt streams. I find no mention of mosquitoes that summer in the highlands. In contrast, in the diary for 7 July 1929 onward, along the lower Thelon, their maddening attentions were repeatedly noted.

There is repeated reference in the diary to a feature, Hawk Rook, below Helen's Falls on the lower Hanbury. It is a conspicuous glacial erratic slab (*fide* Sheila Thomson). Dr. Denis St. Onge suggests that Rook is abbreviated from Rookery and used also for the site of a single nest. Possibly in Tyrrell's day a Rough-legged Hawk or a Peregrine Falcon nested on the rock.

The lower Hanbury is extremely fast. In less than 30 km it drops some 115 m in a series of falls and rapids. During deglaciation it must have been a huge torrent, bringing down great quantities of sand. After meeting the Thelon it presumably slowed down enough to deposit most of its load; and I suspect that the bench which allowed the excellent tree growth at Warden's Grove is such a deltaic deposit. However, the sand ridges mentioned occasionally must be eskers, which are common in the region.

In 1929, White-crowned Sparrows and (Common?) Redpolls nested freely in the trees at Warden's Grove. Both species prefer to nest in trees or shrubs, but will also nest in open tundra. Thus I see no way of telling whether there have been nesting populations in this grove ever since the tree-line retreated or whether it was rediscovered by migrants at some later date. The limits of some arctic species do change strongly with fluctuating summer weather.

I have two minor criticisms of Hoare's entire operation: The supplier of his canoe motor should have supplied spare shear pins for the propeller shaft; and I am surprised that Hoare did not know the Inuit practice of making mukluks for the dogs to wear in icy spring snow. (They apparently work well if you can fit the last dog before the first one eats his!)

D. B. O. SAVILE

Biosystematics Research Centre, Canada Agriculture Research Branch, Central Experimental Farm, Ottawa, Ontario K1A 0C6