

net specific balance will be positive and greater than 0.3 m. H₂O. The strain diamond was remeasured and analysis indicates that the principal strain axis is directed down-glacier and shows a compressive strain of 10⁻⁶ yr. (based on 2 years of measurements). Using the Boas Glacier mass balance data, a discriminant equation has been developed based on September to May accumulation at Broughton Island, and accumulated summer degree days (June, July, August). Investigations of other mass balance data suggest that the Broughton Island data constitute a sensitive predictor of mass balances as far north as Devon Island. This finding is in agreement with the submitted paper by Bradley¹ that indicates a broad similarity of climatic events throughout major sections of the Arctic.

QUATERNARY GEOLOGY

Investigations on Neoglacial, Wisconsin and pre-Wisconsin local ice advances were carried out in the area between Cape Dyer and Pad-

loping Island. Echo soundings indicated the presence of glacio-marine deltas at depths of 30 m. below sea level. Dr. G. Boulton, University of East Anglia, Norwich, visited the area and collected a peat monolith in front of the Maktak Glacier, and Dr. M. Church, University of British Columbia, carried out investigations on the Maktak sandur.

John T. Andrews

Roger G. Barry

John D. Jacobs

Institute of Arctic and Alpine Research
University of Colorado
Boulder, Colorado 80302
U.S.A.

REFERENCE

- ¹Bradley, R. S. 1973. Seasonal climatic fluctuations in Baffin Island during the period of instrumental records. *Arctic*, 26(3): in press.

ALASKA TREES AND SHRUBS. By LESLIE A. VIREECK and ELBERT L. LITTLE. *Washington, D.C.: U.S. Department of Agriculture, Forest Service, Agriculture Handbook 410, 1972. 6 x 9 inches, 265 pages, 128 illustrations, 2 maps. \$3.25.*

This well produced and carefully written book is a fine addition to the library of any biologist working in Alaska, Yukon or Northwestern British Columbia. Like most U.S.D.A. handbooks it is also a very good bargain at its modest price. The authors treat fully 128 species of trees, shrubs and subshrubs that occur regularly in the State, including line illustrations and a distribution map. In addition 8 species of marginal or doubtful occurrence, or that are almost wholly herbaceous, are treated briefly and without illustrations. Woodiness is hard to delimit precisely, and some may be surprised to find woody-based *Cornus canadensis* and *C. suecica* (more readily separated by drawings than by descriptions) in the secondary group, although *Vaccinium oxycoccus* and *Arceuthobium tsugense* are treated fully.

Reviews

The treatment for each species includes full description, habitat, Alaska range, total range, often notes on economic status or use as food and often etymology of generic name or specific epithet. The Scots, of course, are well-represented here as discoverers, and I hope they will not be too pained at being called Scotch, which, I have always been assured, should be applied only to edible and, naturally, potable products. The treatment is really very thorough, only chromosome numbers being omitted; and probably relatively few species have yet been counted from Alaskan material. There is a good selective bibliography of over 200 items, about 30 of them 5 years old or less.

A map showing the national parks, monuments, forests and wildlife refuges forms the front end-papers; and a pocket in the back cover holds a coloured map at 1:5,000,000 of the vegetation types. The latter should be used in conjunction with habitat data to determine the exact probable range of a species; for, as the authors warn in the introduction, the small-scale range maps can show little more than the overall limits. Despite these limita-

tions, a number of the maps emphasize the importance of the great mass of the St. Elias mountains and their icefields as a biogeographic barrier. The illustrations, from several sources, usually adequately show the general appearance, but give no details of flower structure.

There is a good introduction that deals, among other topics, with vegetation types, which should be read thoroughly. It is followed by a key to trees, a winter key to deciduous trees, a key to genera of shrubs, and a winter key to shrubs. Other keys occur in the text as appropriate, and for *Salix* there is a vegetative key as well as the regular one, and even a special key for use in the area of overlap of three difficult species. The authors acknowledge the use of a manuscript copy of the new treatment of *Salix* in Alaska and Yukon by George Argus. Genera and species run in taxonomic sequence, bringing related plants conveniently together, which is much easier on the reader than the alphabetical sequence used in some recent floras. Thus *Phyllodoce* and *Cassiope* are adjacent.

Synonyms are omitted except for names used in other floras of this general region. In a few instances some readers will inevitably disagree with the rank (species vs. subspecies), but only additional field and experimental study can settle such issues. The authors call the crowberry *Empetrum nigrum*, as did Calder and Taylor, and avoid the complex problem of ssp. *hermaphroditum*. It may be noted in passing (although this alone does not allow positive assignment) that it is very easy to show that a fruiting specimen had perfect flowers: examine the calyx ends of the fruits with a lens, and the old stamens may be seen between the calyx and fruit. *Ledum groenlandicum* is justifiably restored to specific rank. Because it is occasionally quite small-leaved at unfavourable sites further distinctions are worth noting. In *L. groenlandicum* fine white hairs are abundant on pedicels and capsules; and the coarse rusty hairs are absent from pedicels and calyx. In *L. (palustre ssp.) decumbens* the white hairs are few and small or lacking on pedicels and capsules; and the rusty hairs are few to many on pedicels and usually fringe the calyx lobes. The distinction in pedicel shape is reliable in fruit but often fails in flower.

The authors have provided common names for all species, not always with unqualified success for small plants that are seldom distinguished by the layman. Starry cassiope seems to me a poorer choice than Steller's cassiope for *Cassiope stelleriana*. In this connection it may be noted that Stevens (New Phytologist 69: 1131-1148, 1970) strongly supports the segregation of this unusual species as

Harrimanella stellariana (Pall.) Coville.

Andromeda polifolia is mentioned as having toxic foliage, but *Kalmia* species, including *polifolia*, have been more often implicated in livestock deaths. The suggestion that the bitter taste is a safeguard is overoptimistic, for small children will eat quantities of chokecherries, tatarian honeysuckle berries and even quinine tablets; and a taste revolting to adults is literally no protection to them.

The book seems very free of misprints. On p. 56 the Mosquito aircraft, designed round the availability of clear Sitka spruce long enough for the main spar, should be capitalized, the word denoting its name rather than its prey. The only other slip noticed is the almost inevitable one in my own name, which bothers me only when I am told that I misspell it!

D. B. O. Savile

DIARY OF THE 'TERRA NOVA' EXPEDITION TO THE ANTARCTIC 1910-1912. BY EDWARD WILSON. New York: Humanities Press, Inc., 1972. 7 $\frac{3}{8}$ x 9 $\frac{3}{4}$ inches, 279 pages, 27 watercolours. \$19.50.

This is an account of Scott's last expedition from the original manuscripts in the Scott Polar Research Institute and the British Museum.

In 1966, the publication of Edward Wilson's diary of the British National Antarctic expedition of 1901-1904 was received with the greatest interest by the public. Now, his diary of the Terra Nova expedition of 1910-1912 should be welcomed with even greater enthusiasm, especially by those sincerely interested in polar exploration. As Sir Charles Wright says in the foreword "it is a major contribution to Antarctic history".

Dr. Wilson was a medical man, an ornithologist, and an artist. He was the scientific Director of the expedition and had working with him scientists of various disciplines. The diary was written primarily for his family, but it is obviously the journal of a naturalist who missed no opportunity to record in detail anything and everything that was of scientific interest. And so, the diary has a wealth of information about the Antarctic. An indefatigable worker, Dr. Wilson's working day began at about 4:30 A.M. when he rose to sketch the sunrise or work on his ornithology — and finished at 9:00 or 10:00 P.M. when he was too sleepy to stay awake. Indeed he often wrote standing up because he feared he would fall asleep if he sat down. He does not mention the time given to help his companions, help given so gladly and generously that he was known