

BOOK REVIEWS

Field guide to the alpine plants of New Zealand. J. T. Salmon, A. H. & A. W. Reed, Wellington, \$5.60.

This book, which potentially could have been a useful aid to field botanists, cannot be well-recommended because of the numerous misidentifications of species in it. Some of the photographs certainly do *not* represent the species named by the author but it is not possible to be sure what they are. Tentative identifications are queried in the list of corrections below, but in a few instances I do not consider it safe to offer even a tentative identification.

Photo No.	Incorrect name	Correction or comment
52	<i>Coprosma parviflora</i>	? <i>C. depressa</i>
67, 68	<i>Pseudowintera axillaris</i>	<i>P. colorata</i>
75	<i>Hebe canterburiensis</i>	<i>H. subalpina</i>
79	<i>H. brachysiphon</i>	Not safely determinable
87	<i>Myrsine divaricata</i>	? <i>Pittosporum</i> sp.
114	<i>Poa caespitosa</i>	<i>Notodanthonia</i> (probably <i>setifolia</i>)
115	<i>Gahnia pauciflora</i>	<i>G. procera</i>
148	<i>Coprosma petriei</i>	<i>C. pumila</i>
173	<i>R. hookeri</i> var. <i>apicenigra</i>	? <i>R. tenuicaulis</i>
174	<i>R. parkii</i>	<i>R. australis</i>
174a	<i>R. parkii</i>	? juvenile <i>R. tenuicaulis</i> or <i>R. hookeri</i>
175	<i>R. australis</i>	<i>R. tenuicaulis</i>
189	<i>Cotula perpusilla</i>	<i>C. squalida</i>
235	<i>Aciphylla carnosula</i>	<i>Lignocarpa</i> (<i>Anisotome</i>) <i>carnosula</i>
238	<i>Geranium microphyllum</i>	<i>G. sessiliflorum</i>
240	<i>Myosotis australis</i>	Not safely determinable
247, 460	<i>Drosera spathulata</i>	<i>D. stenopetala</i>
249, 465	<i>D. stenopetala</i>	<i>D. arcturi</i>
256	<i>Claytonia australasica</i>	the leaves are mainly <i>Raoulia</i> sp.
261	<i>Carex flaviformis</i>	<i>C. gaudichaudiana</i> or <i>C. sinclairii</i>
262	<i>Hebe pauciramosa</i>	<i>Epacris</i> sp.
270	<i>H. traversii</i>	? <i>H. subalpina</i>
294	<i>Viola lyallii</i>	<i>V. filicaulis</i>
296	<i>Arthropodium candidum</i>	<i>Libertia pulchella</i>
302	<i>Colobanthus strictus</i>	? <i>C. acicularis</i>
310	<i>Ourisia sessilifolia</i>	<i>O. macrophylla</i>
342	<i>Gentiana tereticaulis</i>	Identity of the taxon in doubt. Best omitted
344	<i>G. corymbifera</i>	? <i>G. divisa</i>
347, 348	<i>Gaultheria depressa</i>	? <i>G. crassa</i>
352	<i>G. crassa</i>	? <i>G. antipoda</i> × <i>G.</i> sp.
394	<i>Celmisia bonplandii</i>	? <i>C. durietzii</i>
407	<i>C. walkeri</i>	? <i>C. durietzii</i>
410	<i>C. parva</i>	? <i>C. discolor</i>
415	<i>Aporostylis lyallii</i>	<i>Caladenia lyallii</i>
416	<i>Thelymitra longifolia</i>	<i>T. decora</i>
427	<i>Wahlenbergia pygmaea</i>	<i>W. albomarginata</i>
433, 433a	<i>Pratia macrodon</i>	<i>P. angulata</i>

440, 441	<i>Pimelea prostrata</i> var. <i>erecta</i>	<i>P. oreophila</i>
451	<i>Dracophyllum prostratum</i>	<i>D. pronum</i>
461	<i>Nertera depressa</i>	Almost certainly <i>N. balfouriana</i>
473	<i>Ourisia vulcanica</i>	<i>O. caespitosa</i>
475	<i>Leucogenes grandiceps</i>	<i>L. leontopodium</i>

There are various other doubtful determinations (Photos 73 *Hebe vernicosa*, 94 *Gaultheria antipoda*, 97 *G. rupestris*, 218 *Hebe buechananii*, 241 *Myosotis monroi*, 299 *Pterostylis australis*, 413 *P. oliveri*, 477 *Muehlenbeckia axillaris*); but these, and the tentative identifications noted above, cannot be ascribed certainly to the correct species unless reference could be made to voucher plant specimens. Some modern names which supplant older ones used by the author are *Astelia nervosa* (for *A. cockaynei*, photo 312), *A. fragrans* (for *A. nervosa*, photo 315), *Poa laevis* (for *P. caespitosa*, p. 315), *Thelymitra venosa* (for *T. uniflora*, photo 418).

Needless to say, a book designed for recognition of plants must be as accurate as possible. This one contains not only those errors listed above but it is unreliable on other counts. Plant names are misspelt in various places, especially in the index. I cannot list all these errors but *Chionochloa*, *Leucogones* (or *Leucogenus*) and *Pimelia* instead of *Chionochloa*, *Leucogenes* and *Pimelea* are some of the more noticeable ones. Some general botanical points are also incorrect. The author persistently refers to the inflorescences of members of the Compositae as "flowers". *Haastia* (pp. 112–113) is a composite, with flower heads composed of many florets and its fruits are not capsules. When a head is ripe, the individual fruits (achenes) are released. Similarly, flower heads of *Cotula squalida* (p. 302), another composite, are shown, not buds. A good number of points about habitats and distribution are faulty, for example: *Celmisia glandulosa* is, in my experience, restricted to bog or very wet semi-bog habitats. *Astelia nervosa* (*cockaynei* in the text) is much more abundant in subalpine forest than above treeline. *Cotula pectinata*, *Celmisia parva* and *Hebe traversii* do not occur at Arthurs Pass. *Hoheria glabrata* is the species at Arthurs Pass and in the Hollyford Valley and *H. lyallii* is found only on drier eastern ranges. The term "alpine" is used loosely. Many of the species in the book are subalpine rather than alpine; but if this was to be a reference to subalpine and alpine plants why should species such as *Nothofagus menziesii*, *N. solandri*, *Libocedrus bidwillii* and *Dacrydium biforme* be omitted? Some of the species illustrated cannot even be regarded as subalpine (*Carex secta*, *Hebe hulkeana*, *Gahnia rigida*, *Clematis afofoliata*, *Pseudowintera axillaris*). While considering omissions, one wonders why only two lycopods, one fern and one liverwort, a *Marchantia*, were included from among the hundreds of species of bryophytes and other cryptogams which inhabit the mountains. Grasses receive a poor coverage.

The arrangement is annoying. The author has attempted to make habitat groupings of species but this fails because most species are able to live in a variety of habitats. It would have been more useful to the field

botanist to have had all the members of one genus in one section.

One other fault with the book is that the section from p. 290 onward, dealing with "ecology", is in places naive and sometimes erroneous. One might allow some latitude with the use of terms such as "alpine", "fellfield" and "scree", but Fig. 459 represents a cushion bog, dominated not by *Sphagnum*, but by *Donatia* and *Oreobolus*. *Sphagnum* plays an insignificant part in such bogs.

My other quibbles about the book could perhaps be overlooked by anyone but a purist. The author has coined a good number of common names. In some instances his names override names in use by those of us who work on the alpine flora and vegetation (e.g. mountain tussock, mountain totara, mountain cushion and mountain pine instead of midribbed snowgrass, snow totara, bog cushion and bog pine). I question the need for a common name for every species. It seems no more difficult for me to learn *Celmisia petiolata*, *Parahebe lyallii* or *Hebe decumbens* than purple-stalked daisy, small-leaved wet rock hebe, or black-barked mountain hebe. Most intelligent laymen who might use such a book are quite familiar with technical horticultural names. "Northern", would be a better general name than "North Island" for species such as *Senecio bidwillii* and *Leucogenes leontopodium* which cross Cook Strait. Some others of these newly coined names seem singularly inappropriate, e.g. scarlet snowberry for *Gaultheria crassa*, downy daisy for *Celmisia glandulosa*, matted ourisia for *Ourisia vulcanica*, succulent daisy for *Vittadinia australis* and mossy scabweed for *Scleranthus*.

To sum up, although many of the photographs are very good (but some would have been better omitted either because they are poor reproductions or because they are repetitive of the same species), this book must be regarded as unsatisfactory. It is apparent that the author has not done his homework well enough; this is a pity because there is a need for a handy, accurate reference to mountain plants. It is to be hoped that exhaustive corrections will be made before another edition appears.

C. J. Burrows

Secondary productivity of terrestrial ecosystems (Principles and methods). Vols. I and II. K. Petruszewicz (Editor). Institute of Ecology, Polish Academy of Sciences, Warsaw.

It is virtually impossible for any one person to adequately review the 54 papers contained in the near 900 pages of this publication. There is not even room here to list the titles of the papers themselves.

Volume I contains five papers on the principles of productivity of vertebrates and 14 on examples of such studies.

Volume II is devoted to invertebrates and has five papers on general problems, seven on investigations of productivity of some types of ecosystems and 16 on examples of productivity investigations of particular species or groups.

The range of topics is obviously well balanced and very wide. So too are the interests and nationalities of the authors. Many of the names are well-known and their distribution—like that of the ecosystems studied—is truly holarctic: for example, F. B. Golley from the

United States, A. Macfadyen from Britain, J. P. Cancala de Fonseca from France, P. Berthet from Belgium, K. Petruszewicz from Poland, A. G. Bannikov from the U.S.S.R., Y. Kitazawa from Japan, Y. and D. Gillon from the Ivory Coast and so on. Only two of the papers are not in English and they are in French.

I was not concerned that there is some measure of duplication or that there is a long list of corrections and additions. It would be both unrealistic and unreasonable to expect otherwise; but I was concerned at the lack of uniformity in terminology—I would have thought that all the papers on this subject that have appeared in recent years would have had a better influence by now, especially so since all the authors contributing to these two volumes had apparently all been present at the Symposium in 1966 which gave the volumes birth.

Most ecologists in this country are involved in studies which seek to unravel the relationships between the various parts of ecosystems rather than those which measure and plot the pathway of the energy-flow that makes such ecosystems work. Even agricultural and forest ecologists—when they are involved at all—are usually involved only with the ultimate stages of energy transfer. This is rather surprising when so much of New Zealand's well-being is bound up with the end products of both primary and secondary productivity of agricultural and forest ecosystems. Perhaps the growing vogue for energetics may eventually approach that recently enjoyed by molecular biology, to the ultimate advantage of us all. These two volumes, which have been sponsored by the International Biological Programme, could well play an important part in fostering such an interest.

G. R. Williams

Forestry in New Zealand: The shaping of policy. A. L. Poole. Hodder and Stoughton, Auckland; in association with the English Universities Press Ltd., London. \$3.00.

In this short book of 112 pages, A. L. Poole, Director-General of the New Zealand Forest Service, has provided us with a history of forestry in New Zealand that is both authoritative and eminently readable. I must admit that on being asked to review this book I thought I might be in for some dreary reading, such as I had encountered in not a few Forest Service reports. But not this time. Above all else, the author is to be congratulated on his good writing, which is always concise and to the point. And his publishers have done him well, with an attractive cover (by Miss N. M. Adams) and numerous (33) high-quality photographic reproductions.

I noticed only one typographical error ("popular" for "poplar", p. 59) and only one technical error (*Phyllocladus alpinus* for tanekaha, when it should be *P. trichomenoides*, p. 111). I was a little surprised to read (p. 54) that "New Zealand has three species and two distinct varieties—in effect, five species—of southern beeches". Who, overseas, would guess that we actually have four species! And surely we cannot let pass such a sweeping statement as "beech forests have one uniform canopy with only sparse vegetation beneath". Not all beech forests, by any means, have only one canopy layer, and it seems very unlikely, to judge from exclosures and from those few areas still without browsing mammals, that any beech forest in its natural state had only sparse undergrowth. Some, at least, support thicker under-

growths than do many non-beech forests. Further on in the same paragraph the author says "In structure and habit of growth, southern beech forests [evergreen] are akin to the Northern Hemisphere beech forests [deciduous]". Several other authors have said our beech forests are the equivalent of the northern evergreen coniferous forests. Take your pick — or neither!

The author tells us that forestry has come to be known as "the art, science and business of growing trees". I'm not sure about the "art" part ("art" is a much over-worked word), but "science" and "business", certainly. After reading this book I wonder, though, why forestry has not come to be known as "the science, business and politics of growing trees". As the sub-title indicates it has been the author's aim to show how forestry has shaped, and been shaped by, political decisions. It has not been his aim, clearly, to tell the reader anything about the "science" or the "business" of growing trees. So, ecologists (economists), don't expect any ecology (economics) here! (The words "ecology" and "ecosystem" do not appear even once.) Perhaps this is a pity, for one cannot help going away with a feeling (whether justified or not) that the forester is unable to see the system for the trees. Let me explain: An ecosystem has inputs and outputs—there is plenty about outputs (wood products) in this book, but damn-all about inputs. The only occasion occurs on p. 66 where the author says "With the assistance of phosphate fertiliser, radiata pine will grow satisfactorily on a range of the stiff North Auckland clay soils". What we would really like to know is how much *more* all the other forests would produce were fertiliser to be used. If, by chance, the answer now was "not significantly more", we would still want to know about the future. Oh well, it's the reviewer's right to have at least one growl.

A. P. Druce

The New Zealand sea shore. John Morton and Michael Miller. Collins, London and Auckland. \$9.50.

Well-written, authoritative and handsome—and a prize-winner into the bargain—this book should find a sure place in any list of 10 essential books on our natural history that might be made by a rash committee of ecologists in the near future.

Though Professor Morton and Dr Miller disarmingly admit in their preface that they have drawn most of their examples from the North Island, they have indeed, as they claim, tried hard to restore the balance as far as the South Island is concerned and this they have done so well that the book's title is no misnomer.

It has a strong ecological flavour and is divided into three main sections:

- (i) Zones and habitats
- (ii) Hard shore-lines
- (iii) Soft shores.

The first section includes chapters on zoning plants and animals in moderate shelter, boulder beaches and their inhabitants, the reef fringe at low water, tidal pools, the intimate fauna of seaweeds, animals of crevices and borings.

The second section deals with exposed northern and southern shores, platform reefs and cliffs, protected southern shores, the shores of outlying islands, reefs of harbours and estuaries, life on piles and wharves, zones and tides.

The last section includes chapters on the building of soft shores, open and protected sand beaches, harbours and river mouths, zosteria and salt meadows and deep coastal sediments.

Add to all this, chapters on the moulding of the shore, the role of the tides and briefer sections on taxonomy, conservation, classification, a considerable bibliography and you will appreciate the book's comprehensiveness. There are 28 black and white plates, 32 in colour and 220 figures in the text—all of them good. The diagrams of communities in their habitats are particularly valuable, especially to the informed amateur or the student. So, too, are the maps. However, I did spot two geographical oversights: in Figure 133 Taylor's Mistake appears to be south of Lyttelton instead of north; and in Figure 165 the positions of Cheltenham and Howick have been interchanged.

Ecologists of the sea shore, whether they be informed amateurs or professionals, local or overseas, will welcome Morton and Miller's new book. Though the authors imply that their effort may prompt some South Island colleagues to produce a similar book they will be brave indeed to accept the invitation. Perhaps the best we can hope for is a southern collaborator in some future edition.

G. R. Williams

The roe deer of Cranborne Chase: an ecological survey. Richard Prior. Oxford University Press. \$6.65.

In books published under the sub-title "An ecological survey", ecologists have come to expect the results of research into the concepts of community structure, energy paths and population homeostasis to be balanced according to the particular interest of the researcher. It was, therefore, disappointing to find that this book attempts nothing of the kind, but is, instead, a very general, very uncritical essay on a population of roe deer in an English forest estate, with enough "ecology" thrown in to make it respectable. Thus the title does a disservice to the obvious qualities of the book.

Richard Prior is quite obviously very interested in being with deer, either hunting them or watching them; and in many places throughout the book conveys compassionate impressions of the life of these delightful forest animals in a highly developed industrial country. In one place, for example (p. 21), he describes the effect of coming across deer at very short range. A doe, confronted by the author at five yards range "remained completely still, with a leaf hanging from her mouth. Gradually she started to shiver, and her eyes seemed to bulge as we stared at one another. I began to tell her in level tones that she was in no danger, and in fact she was the most beautiful doe in the wood. Quite quickly the shivering stopped; she relaxed completely, then moved three leisurely steps away, started to feed and took no further notice of me." Such passages distil pages of objective scientific writing; yet all the imagery of confrontation, alarm syndrome, displacement activities, learning, and intelligent response are there, and can be understood by the amateur naturalist or the specialist. The former of these will enjoy the flavour unequivocally, even if the specialist remembers the word *teleology* from his days of reading Darling's book on red deer.

Chapters on movements (diurnal and seasonal), on foods, and ethology and morphology are well written, but they are not a specimen of contemporary ecological research. *Movement* is an anecdotal mixture of unqualified observations; *foods* amounts to a list of browsed plants which could be compiled in an afternoon's walk; his views on ethology are years behind, and make no reference to the massive amount of research done in continental Europe. Nonetheless, Mr Prior seems to enjoy writing them, and they make pleasant reading.

In contrast to these early chapters, he seems to slog through three chapters on age determination, census, and population structure and density, from a sense of duty and total disregard for the mass of research done over the past few decades. Animals were aged only by appearance, without any effort to check conclusions by applying the technique of counting annuli in the dentine or cementum of the teeth. Considering that tooth sectioning has been used to age roe deer in Germany for over 30 years, this lapse is scarcely excusable. Similarly, numbers were estimated by coupling the number of identifiable bucks (identified by antler peculiarities) with some very shaky statistics of the adult sex ratio, to produce a 'census' of both. This is blandly done despite Andersen's classic paper on the difficulties of counting roe deer in Denmark (in woodlands which are very similar to those at Cranborne), and despite a massive literature on census methods based on mark-recapture, transect counts and faecal pellet counts.

The last two chapters, on management and culling, find the author back on his home range; choice of rifles, preparation of management plans, venison values, and sale of stalking rights are all considered in detail.

An appendix by Dr A. McDairmid provides a lucid summary of the present state of knowledge of the diseases and parasites of the roe deer. Life cycles of the common parasites are shown in cartoon-strip style, and the text is extremely well written. It does two things: It adds greatly to the value of the book; and at once identifies the intended audience—the layman and amateur naturalist. These readers will find the book very helpful and informative. It is a pity, though, that the publishers or the author decided to call it an "ecological survey". It is good countryman stuff, but it is certainly not ecology.

C. L. Batcheler

Asia: a natural history. Pierre Pfeffer. Hamish Hamilton, London, 1968. New Zealand price \$13.95.

Since conservation of natural resources in the face of the rapidly rising tide of human population—and particularly the conservation of those natural resources which are not obviously economically important—is a tough uphill fight in which victory is by no means certain, it is essential that as much public support as possible be sought by the conservationists. This may be done by an appeal to sentiment or to reason (through education), or both. Though one should not under-rate, or sneer at, the former, it is the latter which in the end is the surer and more effective, even if it is slower.

The spate of handsome books on natural history that appears year after year takes both the sentimental and reasoned approach. *Born Free* is an example of the former, *Asia: a natural history* is one of the latter. It is

part of a series called *The continents we live on* and all, except Antarctica, have now appeared and all are worth owning in spite of their price.

Authors of considerable standing have been chosen for each volume and a great feature is made of beautiful photographs (in colour and black and white) of species in their natural environments. As far as natural history is concerned, to own each volume is, in spite of the shortcomings each may have, the next best thing to being there.

Obviously it is quite impossible to adequately cram the natural history of any continent—except perhaps Antarctica—into about 300 pages (however, large and closely printed) and about as many illustrations. Only broad outlines with occasional details are possible; but the man in the street and even the professional ecologist could not hope to absorb all the details anyway. Dr. Pfeffer, we are told, has spent five years in Russia, one in Borneo and has taken part in expeditions to Central Asia, China, India, Indo-China (*sic*), Malaysia and Indonesia. Furthermore, he has degrees in zoology, botany, geology and biology (the latter one seems, on the face of it, to be gilding the lily somewhat), so we should be in authoritative hands.

I am no expert on the ecology of the largest, most complicated and perhaps most modified of the continents so cannot directly comment on Dr. Pfeffer's reliability; but whenever I have checked a fact he has either been correct or close enough to it.

Wherever possible, Asia has been broken down into biomes or the nearest equivalent, then into geographical regions and ecosystems. The resultant discussion may not be hard-core ecology but it is at least ecologically-treated natural history and one would be churlish to ask for more. Some of the colour photographs are most striking: I particularly remember those of Lake Band-i-Amir, the Si Kiang River and a forest in Aomori in Japan. Though the one of Lake Baikal is not impressive it is rather interesting to see this biogeographical treasure almost "in the flesh".

I do have some criticisms: the maps in the text do not always match those of the end papers; by now, even the most unpolitical of us would expect to see the names of Cochin-China and Indo-China brought up-to-date and, finally, I should welcome a carefully selected set of references—Allen Keast did supply one for the companion volume of *Australia and the Pacific Islands*.

G. R. Williams

The tuatara, lizards and frogs of New Zealand. Richard Sharell, Collins, London. \$3.50.

Apart from the well-known tuatara, New Zealand has six species of frogs and about 30 species of lizards. The primitive indigenous frogs of the genus *Leiopelma* and the geckos, the only viviparous members of the family, are of particular interest to herpetologists. A popular book is long overdue and Richard Sharell's publication goes some way toward filling the need.

Inexplicably, the book is divided into two parts. Part One, dealing mainly with the general biology of the New Zealand herpetofauna, opens with a chapter on the history and evolution of life. Three chapters follow, each devoted to one of the three orders to be found in New Zealand, the tuatara (*O. Rhynchocephalia*), the lizards

(O. Squamata) and the frogs (O. Anura). These are good accounts, beginning with a review of the observations on the different species and covering — briefly — anatomy, morphology, reproduction, habits, habitat, feeding and behaviour. The omissions are mostly gaps in knowledge rather than points overlooked by Sharell, although some relevant papers (e.g. Boyd 1940, 1942; Barwick 1959) appear to have been completely missed.

Following the chapter on the tuatara is a "Narrative of sixteen days on Stephens Island", which, although it does convey some idea of conditions on a "tuatara" island, is unfortunately written as if it were the only surviving colony of this fascinating reptile. It is a pity that the other twenty or so islands where tuatara occur and mostly flourish are not even listed. Incidentally three of the eleven latin names I counted in this chapter are misspelt.

Also in Part One is a chapter on reptiles in Maori mythology and art. This is very pleasing to see as it covers an aspect of an animal group that is all too frequently overlooked. Again, there are some gaps, for example the rock paintings of the South Island, well known to all of us from the current 20c stamp, are not mentioned.

Part Two seems intended as a systematic account but really only summarises Part One. The tuatara and the six frogs are described but only half of the thirty or so

lizards are mentioned. Here Sharell could have drawn more heavily on McCann's bulletin of 1955 which, despite some shortcomings, is the only recent comprehensive scientific study of New Zealand lizards. Unfortunately, some of the lizards that are omitted are those that are most likely to be encountered by the reader.

The volume is illustrated with fifty-two colour plates and sixteen half-tones, and it is to Sharell's credit that nearly all the species described are shown in colour. Most of the photographs are good, but there are distracting out of focus areas in many of the close-ups. Disappointingly, the tuatara are posed very unnaturally atop bare rocks and in full sunlight!

My main criticism is the excessive "padding" by both author and publisher. Of the 94 pages (numbered fly-leaf to fly-leaf) about 70 carry text. Chapter One (History and Evolution) seems unnecessarily long (one-sixth of text) as an introduction for a book of this kind. Chapters Three (Stephens Island) and Five (Maori Mythology) and Part Two contain rather a lot of repetitious or irrelevant material, and even three of the colour plates have "duplicates". The whole book could be considerably shortened without loss.

Despite these reservations, as the first and only guide to the New Zealand herpetofauna this book is a welcome addition to any public or personal library.

A. H. Whitaker