

BOOK REVIEWS

The lichen genus Usnea subgenus Neuropogon by F. Joy Walker. British Museum (Natural History), London. *Bulletin of the British Museum (Natural History), Botany*, 13, No. 1, 1-130. £19.00. ISBN 0 565 08004 0.

This monograph came as quite a surprise to me. I had thought that Lamb's work on *Neuropogon*, published in 1939 and 1948, culminating in 'Antarctic lichens. 1. The genera *Usnea*, *Ramalina*, *Himantormia*, *Alectoria*, *Cornicularia*' in 1964 was not likely to be superseded for a number of years. This new monograph resurveys all the species described in this subgenus and arrives at interesting conclusions. The status of this group may encourage some debate: some authors consider that *Neuropogon* merits generic status, others may decide it should rank below subgenus. The taxonomic characters selected in determining the status of this group may not be convincing to some lichenologists.

Fifteen species are accepted, some with extensive lists of synonymy. Three species (*U. patagonica*, *U. pseudocapillaris* and *U. subantarctica*) are described as new and several new combinations are presented. *Usnea sulphurea* declines into synonymy with *U. sphacelata* and a number of the Antarctic taxa described by Dodge and his co-workers also subside into synonymy.

The introductory sections of the book are clearly written and comprehensive. Previous collections, research and taxonomic concepts are reviewed and the criteria upon which taxonomic decisions are based (pigmentation, surface ornamentation, papillae, fibrils, internal structure, apothecia, vegetative propagules, mode of branching and pycnidia) are thoroughly discussed. Lichen chemistry is given a section to itself, and characters that were formerly used to delimit taxa at species, subspecies or variety level are now mainly restricted to the recognition of chemical races.

There is a discussion on geographical distribution, dealing mainly with South America, Antarctica and Australasia. Also of interest is the section on ecology (which includes ecophysiology), which is a very clear, informative summary of the topic. Phytosociology merits its own section, and the lichen communities in which species of *Usnea* subgenus *Neuropogon* occur are outlined. Biogeography is treated separately from the section on geographical distribution. One statement here surprised me: Walker considers that 'taken in its entirety, the present-day lichen flora of Antarctica is as rich as that of the Arctic' (p. 31). Perhaps this is true, but a number of lichen genera occur in the Arctic and are unknown or very limited in terms of species in the Antarctic in my view. Certainly, applied to *Usnea* subgenus *Neuropogon*, Walker's view is correct and can, as she suggests, indicate a varied origin and many subsequent opportunities for speciation. However, it is my view that the bulk of the maritime Antarctic lichen flora is of recent, immigrant origin, but much further evidence from glacial and geomorphological sources is required to test any biogeographical theories involving Antarctica. This section is one of the most interesting in the book, synthesizing many ideas and comments about austral and Antarctic palaeogeography in terms of evolution and distribution of groups other than lichens.

A Discussion section then follows (though a tremendous amount of stimulating discussion has already been presented), concerned with taxonomic concepts, criteria used for defining taxonomic ranks and infrageneric classification. These discussion sections occupy 43 pages of text and are worth reading on their own as perceptive statements and summaries on some central aspects of lichenology.

The account of the species accepted occupies the remainder of the book. The key to taxa is exhaustive and comprehensive; I cannot imagine anyone going astray here.

Species are dealt with in alphabetical order. Synonymy is thorough and complete and details of types and their location are included. Each species is given a detailed description, with supplementary comments on distribution, distinguishing features, chemistry, variation and species concept. Lists of selected specimens examined are included for all chemical races recognized. Many specimens are cited, and understandably a few errors have crept into the lists (e.g. pp. 61, 62), where my dates of collection of some *U. antarctica* material are incorrect and a few numbers cited for Lamb's specimens are also incorrect. Photographs illustrate each species, showing habit with close-ups of various features as required. The taxonomic account ends with a comprehensive bibliography.

This is an excellent book, not only on account of its monographic treatment of an ecologically-important group in the cooler regions of the southern hemisphere, but also because of its many summaries of interesting topics relevant to all lichenology. My recommendation is to buy a copy: it is worth the money.

D. C. LINDSAY

Liquenes Antarticos by Jorge Redon F. Instituto Antartico Chileno, Santiago, 1985. 123 pp. (No ISBN or price given.)

A preliminary glance at this book may invite comparisons with Dodge's 'Lichen flora of the Antarctic continent and adjacent islands', published in 1973. Whereas Dodge's book attempted to be a definitive statement covering all lichens and land south of latitude 60°S, this book is much more restricted in scope. The author has limited his coverage to the Antarctic Territories claimed by Chile (i.e. the South Shetland Islands and the Antarctic Peninsula) with comments about occurrence and distribution of lichens in adjacent areas. The account of species occurring in this sector of the Antarctic is also restricted mainly to those lichens collected by Redon and other Chilean workers.

The text is divided into two parts. An Introduction presents a brief outline of lichenology: morphology, anatomy, growth, reproduction, physiology, chemistry, ecology, classification and economic uses are all summarized in 24 pages. This section provides a useful background to the main part of the book, but includes a little superfluous information. For instance, the section on classification covers some orders and families not represented in the Antarctic.

The main part of the book, entitled 'Los Liquenes Antarticos', covers 96 pages of text, with many colour and black and white illustrations of Antarctic lichens and their habitats. A conspectus of the genera and species is presented, outlining taxonomic relationships and indicating the number of species recorded for each genus. A key is then given to genera, species being keyed out under the appropriate generic description later in the text. It is often difficult to construct keys to Antarctic lichens due to their frequent sterility and deformation under harsh conditions. Also a genus may exhibit several contrasting growth forms (such as *Buellia*, *Bacidia* and *Rinodina*). The genera dealt with key out very easily. However, several genera that occur in the maritime Antarctic (e.g. *Diploschistes*) are not mentioned. Some crustose material could prove difficult to identify. A number of *Lepraria*-like crusts are common on mosses (especially *Andreaea*). The key fails to deal with these, the user having to choose between the (saxicolous) *Haematomma* and *Placopsis* when presented with such material. An additional couplet would have been welcome in this part of the key, not only to avoid frustration, but also to acknowledge the presence of such species in

the Antarctic. As long as the user accepts that the book does not intend to be an exhaustive survey of maritime Antarctic lichens, all will be well, but it should not be used for the identification of every Antarctic species.

Within the 47 genera, 119 species are described, the style for the layout of these descriptions following that of Lamb's 'La vegetacion liquenica de los Parques Nacionales Patagonicos', published in 1958. The concept used for delimiting the species is broad, and in general reflects the conclusions of recent monographic studies. Genera are presented in alphabetical order, with keys to distinguish species if more than one is dealt with. Each species is carefully described, with details of its chemical constitution and reference to other published descriptions and illustrations. Most of the ecologically prominent or distinctive species are included, though the basis for inclusion or exclusion is not clear. For example, *Bacidia rhodochroa*, known only from the type locality, is included whereas *Umbilicaria propagulifera*, widespread on the west coast of the Antarctic Peninsula, is excluded. Other macrolichens, which I feel should have been included, are not discussed (e.g. *Cladonia carneola*, *C. gonecha*, *Physcia dubia* and *Umbilicaria aprina*). The treatment of the crustose lichens, understandably is restricted to the few, well-known species. Redon gives descriptions of five species of *Caloplaca*, but probably three times that number occur in the South Orkney Islands. Only one muscicolous *Caloplaca* is given (*C. athallina*), whereas one resembling *C. cinnamomea* is widespread on *Andreaea*. Similarly, the accounts of *Lecanora* (why exclude *L. brocchia* and *L. polytrapa*?), *Lecidea* (*Lecidella bullata* is common) and *Rhizocarpon* (*R. superficiale* is nearly as abundant as *R. geographicum*) are very restricted and can give a false impression of the number of microlichens occurring in the maritime Antarctic. One minor point concerns *Cladonia chlorophaea*: is this true *C. chlorophaea* or *C. balfourii* f. *chlorophaeoides*?

The treatment of *Usnea* is now outdated by the appearance of Walker's monograph on *Usnea* subgenus *Neuropogon*, but this had not been published when Redon prepared his account.

The 21 pages of illustrations, many in colour, are excellent, give a clear picture of the habitats in which they occur and their morphology. However, why use *Parmelia rutidota* (fig. 6), which does not occur in the Antarctic, to illustrate the foliose growth form? Why not select a more typical Antarctic species for this task?

If the reader bears in mind that this book is not meant to be comprehensive, but a broadly-based introduction, then there will be no disappointment and a great amount of pleasure. The role intended for this book for Antarctic lichens seems to be similar to that of Dobson's *Lichens: an illustrated guide* for the British lichen flora. As an introduction to maritime Antarctic lichenology, it is an excellent production and should be sampled by all lichenologists and ecologists with an interest in polar-alpine biology.

D. C. LINDSAY

Penguins by John Sparks and Tony Soper; illustrated by Robert Gillmor. David & Charles, 1987. 246 pp. £12.95.

This, the second edition of a book first published in 1968, is a lively and wide-ranging review of information on penguins. The very readable text is complemented by many good photographs and by some excellent vignettes by Robert Gillmor.

This new edition is very extensively rewritten to incorporate reference to many aspects of the results of the considerable amount of ecological research on penguins that has taken place in the last 20 years. Slightly paradoxically the chapters on

'Evolution' and 'Discovery' (totalling one-third of the main text), which contain least new material, are the best.

The other main chapters treat courtship and incubation, chick-rearing and food and predators. They are preceded by an introduction to penguin adaptations, especially thermoregulation and diving and followed by a brief chapter on exploitation, much of the content of which has already appeared in earlier chapters. There is then an entirely new section, entitled 'Species Notes' which seeks to summarize the main attributes of each species. This had the potential of considerable utility but the content and organization varies so much between entries that this is not achieved. Finally, there is a brief appendix on penguins in captivity.

The strengths of this book are that it is immensely readable, covers all aspects of penguin history and biology (and includes a fair amount of up-to-date information) and, by today's standards, is very cheap!

The shortcomings fall under two heads – those of omission and of commission. There is a general tendency for each of the chapters on penguin biology to concentrate on particular species or species-groups and omit information on others, even though such data are readily available. Thus *Spheniscus* and *Eudyptes* penguins are hardly mentioned under courtship and incubation, despite the fact that the latter group has a particularly unusual division of responsibility between the sexes. Similarly few of the many recent studies of penguin diets are referred to in the chapter on food.

Another common fault is to attribute a result obtained on one species of penguin to the whole genus or to penguins generally and, conversely, to describe for only one species something that is applicable to all species. Though this is not very significant in itself, the problem is compounded by minor inaccuracies and errors which abound. In the absence of any text references it is impossible for a reader to check sources and this imposes a special obligation on authors to get their facts right. Thus gentoos do not lay up to 10 eggs if those laid are removed, rockhopper brooding period lasts 15–20 (not 30) days, kings do not bring 1 kg of food per hour to their chicks, there are not 5 million (only 100 000) Adélies at Laurie Island. The distribution map on pp. 207–8 is widely inaccurate (e.g. rockhoppers breed at Prince Edward and Crozet islands but not at South Orkney and South Sandwich islands, Adélies breed at Bouvet, South Sandwich, South Orkney and South Shetland islands, chinstraps not gentoos breed at the Balleny Islands, chinstraps and Adélie but not gentoos at Peterøya, kings breed at the Falklands and so on).

These kind of inaccuracies will detract from the usefulness of the book to the most specialist reader. The general reader, however, will find this book a rich source of easily assimilated information and certainly easily the best value of currently available books on penguins.

J. P. CROXALL