These were not recorded by Mr McPherson but by Carl and Lise Wiesmann on their trip here in 1956-7 using EMI L2a and L2bs recorders on Scotch 11A and 12 tapes with a 36" parabolic reflector.

I have found nothing to fault the technical quality of these recordings, and believe most listeners will agree that they represent very well the general types of communications of these species.

These are loud, low-voiced birds which are among the easiest to record. That is to say, they do not have strong high notes with great volume such as is found with the New Zealand Robin, the Hedge Sparrow, and those of similar eloquence but which are the bane of every recordist, even those blessed with the possession of such high-fidelity, precision machines as the Swiss Nagra with its speed of 15" per second. As mentioned in previous reviews, it is most difficult to prevent over-recording, with consequent distortion, in making tapes of such birds. This problem did not exist with the birds on this disc. Nevertheless, it is most evident that care and experience combined to produce some very excellent tapes. Our appreciation and commendation go to the Weismann husband-wife team and to Mr McPherson for making this disc available to the public.

Wm. V. W.

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The Natural History of New Zealand. An ecological survey. Edited by Gordon R. Williams. Pp. XVIII + 1-434, text illus., pls 1-40. Wellington, *&c.:* A. H. & A. W. Reed. 1973. $15.50.

Only a brave man (of incredible omniscience) or a rather foolish one (possessed of crass ignorance) would try to review such a comprehensive book as this purports to be with equal profundity for all parts of it. The accepted technique for the reviewer is to sample a part and, finding what is new and true, authentic, questionable, or however it seems in the particular field of knowledge which the reviewer professes, judges then the whole by the part. I have been pleased, therefore, to find many things not said before, some things said by others but not in this way with yet other things known to most of us but gathered together or reinterpreted here in a manner which makes *The Natural History of New Zealand* a unique reference work.

I cross swords, therefore, with the reviewer of *The Press*, the Christchurch morning paper, who wrote of this book on 11 May 1974:

> " The editor claims that the book is an ecological survey, hoping that today's " man in the street " might find it a basic reference on which he may base his judgement of his impact on, and his development of, the New Zealand environment. But time also passes for the scientists and most of the facts and ideas seem to predate 1971.
>
> " Some of today's real problems, for instance water management in swamps and estuaries, are hardly mentioned, and for the most part the general movement of concern about our environment has already assimilated most of the ideas behind the book.

> " It is unfortunate and disappointing that the book presents no great advance over a combination of " The Natural History of Canterbury " and " Encyclopedia of New Zealand." For the general reader it may be a useful summary up to 1970 of the state of natural history in New Zealand."

One would be sorry to think that the potential user, the " man in the street " if you wish, wanting to know the " state of the art " of the natural history of New Zealand, the high school or university student, the teacher, the university lecturer, all or any of these, would be turned away from this rich source of knowledge which he certainly will not be able to find between two covers anywhere else. To label such a reference work as out of date is trite. Of course it must be — as those who know the inevitable delay between the time a manuscript leaves its writer's hands and the appearance of the printed page can testify — but can any publisher present science at work with any greater expediency ? The reader of papers in even a quarterly journal knows how long it is since the work was done and the hypotheses proposed. Even letters to *Nature* hardly reveal the advancing forefront of knowledge.

Admittedly *The Natural History of New Zealand* does not look a pretentious volume. But the meat is there even if the wrappings of the sandwich do not suggest it. The somewhat garish dust jacket with its 16 vignettes of New Zealand natural history is not especially attractive and the impression given by the 434 pages of quasi-newsprint is immediately that what is printed on them must therefore be of similar quality. The cost of the book, already high enough, would be much greater, the publishers might argue, if the binding, paper and wrappers were to match the worth of the contents but it might have been a risk worth taking. As it stands, it reflects little on the publisher's art or on the House of Reed in particular.

The Natural History of New Zealand is made up of the following contributions — The General Environment and New Zealand's Biogeography (G. Ross Cochrane), 27 pp.; Ecological Aspects of the Climate (J. D. Coulter), 33 pp.; The Ocean Environment (J. W. Brodie), 32 pp.; The Sea-shore (J. E. Morton), 38 pp.; Soil Ecology (J. D. Stout), 24 pp.; Native Vegetation (P. Warle), 15 pp.; Introduced Vegetation (A. J. Healy), 20 pp.; Insects (A. D. Lowe), 14 pp.; Agricultural Ecology (A. G. Campbell), 15 pp.;The Freshwater Environment (V. M. Stout), 22 pp.; Fish and the Fisheries (G. D. Waugh), 33 pp.; Reptiles and Amphibians (Joan Robb), 19 pp.; Birds (G. R. Williams), 30 pp.; Mammals (J. A. Gibb & J. E. C. Flux), 38 pp.; Offshore and outlying Islands (I. A. E. Atkinson & B. D. Bell), 21 pp.; Nature Conservation (J. T. Salmon), 18 pp.

One would begin by agreeing with the critic in *The Press* that the first contribution is poor. We have come to expect a high standard from those who have already outlined the general ecological situation and biogeography of New Zealand and this reviewer, for one, would have liked to have seen what the editor himself, a recognised and respected practitioner of the masterly summary and compilation, would have said on these topics. The " biogeography " is a rather muddled mixture of biotic factors, affinities, problems of dispersal and grouping of compositions of flora and fauna taken from C. A. Fleming's accounts

and giving the impression of not being quite understood by the author himself. The climatology and geology have been better dealt with elsewhere including Coulter's contribution in the same volume and in the various geological articles in the *Encyclopaedia of New Zealand.* Coulter's article is very much better and does a worthwhile job in that it shows us what those rather stodgy Monthly Climatological Summaries and Annual Meteorological Observations produced by the N.Z. Meteorological Service can mean in terms of ecology and the features of the environment and its various inhabitants which interest us. Topics dealt with here include various aspects of the macro-climate, local climates, mountain climates and micro-climates, climate related to natural communities, climate in agriculture (which ties in nicely with A. G. Campbell's later article in this volume) and a summary of problems, many of an ad-hoc nature, which occupy the meteorologist including aerobiology, concerning the mechanism of transportation of organisms across the Tasman, an aspect recently discussed elsewhere for insects but scarcely adequately investigated for birds. The ornithologist is only lately beginning to realise the usefulness of meteorological information (cf. Hamel 1972, *Notornis* 19: 20-25; Barlow & Sutton 1972, *Notornis* 19: 212-249) and the extensive documentation and notes given by Coulter provide a most helpful introduction to a science often little appreciated by those working in other disciplines.

For the ornithologist many of the other chapters will be very relevant, some more than they realise at present. For example, a particularly fine attempt at a correlation of seabird distribution with physical factors of the sea which is currently appearing in *Notornis* uses a great many references to published work on the physical oceanography of New Zealand all done by the staff of the N.Z. Oceanographic Institute (i.e. within the past 20 years or less), marking, incidentally, the special contribution that this division of the DSIR has made to New Zealand science, but showing in particular the relevance of such information to an ornithological problem. J. W. Brodie's contribution on " The ocean environment " will be a source of reference to those who want to know where to find details of the physical properties of the seas around New Zealand as well as the more specialised aspects of marine ecology and productivity. The history of marine exploration in New Zealand makes fascinating reading and it will be a revelation to many readers to see how much background information now exists applicable to the practical problems of fishery and mineral exploitation. To show how wrong the *Press* reviewer is, we find that Brodie's contribution lists a score of as yet unpublished manuscripts or papers " in press " and cites the very latest works in both physical and biological oceanography. It could hardly be more " up to date " (particularly since some of the items cited are *still* " in press ").

I am not going to be brave or foolish and pass comment on the other allied contributions except to remark that, in a similar way, the chapters on native and introduced vegetation by Wardle and by Healy give a handy summary of much that is relevant to the ornithologist and, since they are written by people acknowledged to know what they are about, they are likely to be both true and useful to the non-

botanist. Insects, agriculture, the freshwater scene, reptiles and amphibians, mammals (the length of this chapter illustrating the significance and importance of an element of the fauna introduced from outside New Zealand) — all these are welcome scholarly and readable contributions, the study of which will broaden the interests of us all and deepen our appreciation of the particularly varied environment in which we (as introduced mammals ourselves) inhabit. The chapter on offshore and outlying islands, written by two authors who know their islands and their problems, is especially interesting providing the backdrop to many of the studies which we read of the conservation work of the Wildlife Branch and the mammal/plant/bird research of the Ecology Division of the DSIR.

The chapter which concerns us most is, of course, that on " Birds " by Gordon Williams, editor of the whole work. An admirably condensed introduction is given to the history of the New Zealand bird fauna, what has come, whence they came and when, much of this admittedly following Fleming but none the less welcome for its integration here. A tabular analysis of the composition of the recent avifauna based on the OSNZ 1970 Checklist is shown together with a novel " environmental distribution." A summary of migration, both external and internal, follows. An important section now comes — " Changes in the avifauna in European times." The much argued relationship between introduction of predatory mammals and the vulnerability of birds that have evolved in the absence of carnivorous mammals is examined all too briefly for this author seems to reach less sweeping conclusions than others reach notably Gibb & Flux in this same volume even though they restrain Fleming's belief that native rats may have killed Moas.

Dr Williams devotes five of his pages to a history of bird study in New Zealand which would have been good to have included in the recent special issue of *The Emu*. Some living ornithologists have been lauded but it is difficult, if not invidious, to give credit where it is due especially in a field of study where so many genuine amateurs have made notable contributions. There is particular interest in Dr Williams' discussion of the attention paid to rare species notably in the attempts that have been made to discover general principles or " understanding better what has been going on in New Zealand." New maps of the distribution of the kiwis in relation to forest areas and of the Huia are shown. Some evidence of the basic philosophy of the field and captivity studies by the Wildlife Branch is evident in Dr Williams' hopes — " As a result of the study of the extinction — or reduction — patterns of various species, there is a chance that a common pattern in time, space, or both may emerge . . . When these and other similarities (or differences) are analysed in detail it may be possible to understand some of the changes in the avifauna that have occurred over the last 200 or more years."

The avifauna of offshore and outlying islands is discussed and Dr Williams' table of endemic breeding species of these islands will be found useful to read in conjunction with Atkinson & Bell's review in the same volume. A short section on " Disease " is welcome since this is a topic not well known about by the average bird man in New Zealand but one that might play or have played as equally an

important part as predation in the reduction of species both endemic and introduced. More might have been said about " environmental factors " where Dr Williams writes briefly of climatic accidents, altitude and species composition and correlations of the occurrence of species and their abundance with vegetation types, the latter topic being of particular relevance to the current Beech/Pine controversy. As Dr Williams notes — " The common conclusion is that food is the prime determiner of both numbers and distribution." An " ecological survey," as the book says it is, should really have developed these themes further but the lack of this may be rather a reflection on the slender state of knowledge of such a vital aspect of our avifauna and one that will continue to hang a question mark over the whole of the Forest Service's well-intentioned management of beech forests. Population studies, a pet theme of the author's, are well summarised but again show that there is much to do. " Birds as pests " and " Food habit studies " reveal more of the work of Ecology Division and the Wildlife Service. Ethology is shown to be a neglected aspect of ornithology in New Zealand and one that even direct copying of what has been done elsewhere would reap valuable rewards when applied to our local species. Avian physiology is little further advanced and one might wonder that the increased amount of university work in ornithology has not included this approach. " Birds " concludes with a review of new developments related largely to " the upsurge in exploitation of the environment " which has forced " the realisation that a parallel upsurge is needed in the effort to learn more about the numbers and distribution of as many species of birds as possible, especially some of the rarer species, and to determine their habitat requirements so that suitable areas may be set aside as reserves of various kinds." The OSNZ bird mapping scheme, the Wildlife forest, wetland, coastal, and island surveys, and the Mt Bruce Native Bird Reserve, the Ecology Division's Orongorongo Ranges field station and the OSNZ Nest Record Scheme and Beach Patrol Scheme are all mentioned as contributing materially to this aim.

Finally, Dr Williams makes an assessment of ornithological research in New Zealand as he sees it and points to the future. Apart from the weakness in ethology and physiology, the following needs are stated:

> " There is still need for critical re-examination of the taxonomy and distribution of such well-known genera as the kiwis and parakeets: Little is known of the details of distribution where the various species of each are sympatric, or about the factors that are responsible for maintaining their ecological separation. And there is still much to be learnt about the factors that separate sympatric species of shags. In fact, there are large gaps in our knowledge of the basic biology of many native — and introduced — species. And although there would be wide interest in quantitative comparisons of aspects of the ecology of introduced species between their native and " adopted " countries, little work has been done . . . Quantitative studies of predation and other interactions between species . . . also call for more attention and, in spite of their intrinsic difficulties, will no doubt get it eventually."

Such a tabulation of desiderata is a challenge to all ornithologists, both professional and amateur. It will be rather interesting to read what will be said in, say, 25 years hence in a similar " assessment and prospect."

But perhaps the most timely (even if written as of 1971) and unquestionably stimulating contribution comes from the hand of Professor J. T. Salmon, well known for his outspoken views on environmental matters, who tries to answer the " so what ? " and " where do we go from here ? " kinds of questions that must have been suggesting themselves as we read the earlier chapters. Not much of what he says is necessarily new, naturally enough, but related to what has gone before, it represents Professor Salmon's finest attempt to bring home to all of us, whether we are fighters for the cause or content to lurk in our ivory towers, that conservation *is* an issue that concerns each one of us. True, we must know *what* we are attempting to conserve and whether all of it is equally important in this day when the ecological balance has to be tipped one way or the other if the " quality of life " (a well worked expression which, nevertheless, means an acceptable standard of life, as well as progress and a bouyant economy, but with a profound regard for our grandchildren's place on earth) is to be maintained or even improved. Professor Salmon pulls no punches and we may squirm ourselves at his finger pointing at our lack of concern or involvement. A particularly useful feature is his listing of all the Acts which relate to environmental matters, a guaranteed surprise for even the supposedly well-informed conservationist !

Taken together the various contributions of the *Natural History of New Zealand,* linked by Salmon's message of concern brightened by hope, is a most commendable effort. One sympathises with the editor's task of reducing the original bulk of the manuscripts for which even a two-volume treatment would have been welcome as users will agree when they want more from their favourite authors; thirty odd pages sometimes stimulate as much as they inform ! We may look elsewhere for some particular information or for alternative interpretations of natural phenomena such as in the not yet useless *N.Z. Junior Encyclopaedia* (N.Z. Educational Institute, 1960) or the *Encyclopaedia of New Zealand* (Government Printer, 1966) as well as in the specialised papers and monographs to which the authors refer us. Even Homer nods, we are told, so the user may well find errors or faults that irk him in this regrettably little-publicised volume but those who want to be " up to date " on good authority on nature or the natural history of our country can turn to no other place than *The Natural History of New Zealand — An ecological survey.* As Sheila Natusch has remarked in her review of this book *(N.Z. Book World* No. 10, June/July 1974: 22-23) — " A panel of authors of this calibre deserves a panel of equally reputable reviewers. The trouble is that nobody as good as that has the time — and who would have the space ? " So let us be content and agree with her that " . . . this reference work is ' right as right can be ' almost to the present published minute."

E. W. D.