

LITERATURE

Edited by A. R. McEVEY

SPECIAL REVIEW

Continental Drift and the evolution of the biota on southern continents by Allen Keast. *Q. Rev. Biol.* 46 (4), Dec. 1971: 335-378.

The proper study of mankind being man, many people probably look to biology as the most stimulating of the sciences intellectually. Darwin provided a theory that, by putting man in his proper place as an animal in his environment, released discussion from the shackles of the past and allowed laymen to discuss metaphysics more rationally. But Darwin's theory was the culmination of 100 years' work that started with Linnaeus, and one tends to think that the intellectual pre-eminence of biology among the sciences reached back to early in the eighteenth century. This was not so. During those 100 years geology was probably the most stimulating science under the leadership of men like Hutton, Playfair and Lyell. It was becalmed and overshadowed by biology when Darwin published his work, so that by the first half of this century it had no theories as intellectually stimulating as those of biology. A now-eminent embryologist, whose formal training was in geology and palaeontology, told me just before the last war that he could not stand geology because 'it was so damned dead' and that therefore he had turned to zoology.

But a cloud, no bigger than a man's hand, had risen on the geological horizon about 1910 when Taylor and Wegener independently published their ideas on continental drift. They were opposed or disregarded by earth-scientists to such an extent that the august institution, where I studied from 1935 to 1938, did not then allow a mention of continental drift in its formal geological course, and the librarian, a prominent anti-Christ, was able to exclude all books on continental drift from his fold. Since the last war, opinion has changed dramatically with new discoveries provided by new techniques, so that during the 1950s more and more earth-scientists came to take Wegener's theory seriously and then to believe ardently. His theory, modified into those of plate-tectonics (PT) and ocean-floor spreading (OFS), now rivals Darwin's as an intellectual stimulant and is doing for the earth-sciences what Darwin's did for biology. The modification of Wegener's theory does not affect the conclusion that the continents during geological time have moved about and now are in different positions from those that they formerly held. Among earth-scientists and perhaps among zoogeographers the theory is now fashionable and runs the risk of too enthusiastic support, as does anything else when in vogue.

Zoogeographers have always worked closely with geologists and palaeontologists, not so much to provide proof for continental drift, which Dr Keast rightly emphasizes they can never do, but to explain sensibly the distribution of animals and so provide a valuable and interesting support for the theory. Until recently they have been controlled, so to speak, by the orthodox geological view of the permanence of ocean basins. Now that that has broken down, they too realize that they must re-appraise the situation.

In this paper Dr Keast, who is to the front in zoo-

geographical re-appraisal, lays out the whole position fully and fairly with much detail, both zoologically and geologically. He particularly stresses the geological arguments with copious references because this is where zoologists naturally tend to be weakest. There is already an immense volume of literature on the combined subject and it increases monthly. Only a specialist can argue the case in detail, but Dr Keast's exposition could not be bettered for those who are not specialized on one side or the other, or who, though specialized, have not yet become aware of the implication of the new global tectonics.

In a review one might simply leave it at that and say that any zoologist who wants to have a reasonable understanding of the present position and future possibilities of zoogeography must read it, and that any Australian bird-watcher would certainly find the general principles interesting and stimulating. But, having, I suppose, a toe-hold in either science I would like to look a little more deeply.

Such an argument is now raging in the earth-sciences that it is difficult for anyone to present a balanced picture regarding PT and OFS. When all the *pro* arguments have been presented, there is danger of destroying them with the *cons*, so that a reader, unfamiliar with the topics, is left bewildered, as he is at the end of a Shavian play. For non-specialists I think that Dr Keast may have been a little too fair in places. Some of the evidence for PT/OFS is more cogent than the rest, and we can recognize three general kinds—physical, geophysical and geological, and the rest.

The arguments of physics are mostly negative; no one has yet produced an adequate cause for the shifting of continents acceptable within the laws of physics. Wegener's theory was stopped in its tracks because the physicists said that it demanded a physical impossibility. One may well recall that, when geologists were demanding a remote origin for the earth, Kelvin stated categorically that it could not have been earlier than 70 m.y. ago; but then he did not know about radio-activity and now we all accept that the earth is about 4,000 m.y. old. In 1938 I heard a physicist, still among the foremost, deny Wegener equally categorically; now he has had to shift his ground because facts, then unthought of, have come to light. So we need not be unduly overawed by the physicists. Geological facts have a way of prevailing. Indeed, some people think that the onus is on physicists to produce a cause for OFS and that it is about time that they stopped fighting a rear-guard action.

Of the geological and geophysical evidence, some is best regarded as not completely substantiated in the way that is often claimed. Dr Keast, like so many others, says: 'A striking feature of the magnetic anomaly profiles is that they are symmetrical about the axis of the [mid-ocean] ridge. The exact mirror image (diagrams in Heirtzler, 1968) on either side of the ridge. . .'. I have not seen Heirtzler's diagrams, but a lot of others, recently published by Meyerhoff and Meyerhoff (1972, *Bull. Am. Ass. Pet. Geol.* 56: 337-359), are certainly not mirror

images and hardly symmetrical. The Meyerhoffs (*op. cit.*) also throw grave doubt on the identification of basement in deep-sea cores. Many people, beside Dr Keast, build their case largely on these two lines of evidence, but I suspect that, in the way men have of fitting what they see to their wishes, some of it may have been stretched if not distorted. Probably it all ought to be rigorously reviewed to see how far it supports the generalizations already built on it. On the other hand the evidence from palaeomagnetism for polar wandering (PW), to which Dr Keast gives little space, seems much more difficult to shake. In the nature of things the results of different palaeomagnetic measurements cannot be expected to produce palaeo-poles at exactly the same co-ordinates; there is much latitude; but the curves of PW, drawn between the average positions for different geological periods in different continents, coincide so well until the Triassic and then diverge so wildly that one can only believe that the continents must have separated and moved in different directions.

The rest of the evidence is from climatology, stratigraphy and palaeontology. All of this is much weaker; none of it can really prove or disprove OFS. The fossil record, which is incomplete and often merely fragmentary, is always susceptible to improvement; and a palaeontological species is certainly not the same as a modern biological one. The lithologies and sequences of rocks are controlled by local environment and sedimentary facies, neither of which is necessarily correlated with locality. The general coincidence of past desert conditions with present-day dry or arid zones seems to me to be far too broad and inexact to have much weight, and the same goes for other speculations about past climatic conditions. Efforts to retain previous glaciated areas where they are found today seem to me to be special pleading. In any case, evaporites could have been laid down in one place and later moved by drifting elsewhere, both places having the same general relation to the equator.

Thus, I think that it is reasonable to be a little more definite than Dr Keast and say that the concept of a single Gondwanaland till about the end of the Trias is inescapable from PW alone; that the mad desire to squeeze every ounce of support out of deep-sea coring and magnetic anomalies may be laying up a store of suspect generalizations about OFS that will hardly benefit the enquiry; that objections by physicists are not insuperable and that it is up to the physicists to remove them; and that the rest of the evidence is ancillary anyway. Moreover PT and OFS are the only theories to date that satisfactorily explain the facts of Benioff zones, the world-wide distribution of earthquakes and the topography of the ocean-floor (mid-ocean ridges), and they do it to perfection.

When it comes to zoogeography I think that the argument becomes clouded. The distribution of plants and animals has been interpreted since Darwin and Wallace in terms of modern geography; the explanations can always be made in this way, but they range from the acceptable and convincing to the frankly unconvincing. One of my memories of palaeontological instruction is that even as an undergraduate I was incredulous of the fantastic invocation of land-bridges to explain the distribution of Palaeozoic and later life; the suggestions seemed to raise more problems of isostasy and the like than they solved in zoology. Fortunately the idea of land-bridges except in the simple natural places as between Tasmania and the mainland of Australia has gone, but if there is argument about the dispersal routes of a group of animals, is it worth wasting time trying to justify them in terms of modern geography? We all know that can be

done after a fashion. It seems to me more interesting to pick out the unconvincing or apparently artificial aspects of those explanations and then to see whether a dispersal through Gondwanaland can provide a simpler, more natural and more convincing explanation. And we do not have to bother too much about the minutiae at this stage. The data on which PT/OFS are founded are all so gross that we cannot reconstruct Gondwanaland year by year and kilometre by kilometre, and never will be able to do so. Moreover, the efficacy of barriers to dispersal, at any rate for birds, are completely debatable. At present some species cannot apparently cross Wallace's line, a mere 50 km wide at its narrowest; yet, others can cross the North Atlantic in either direction or colonize New Zealand from Australia. What this really amounts to is that, because zoogeography cannot prove continental drift, because the routes of dispersal of animals in the past can never be proved either, the detailed evidence having been lost long ago, and because we are still far from having a reasonably certain answer in every nook and cranny of Gondwanaland, we are faced with a choice of two zoogeographical plausibilities. Neither of them is susceptible to the sort of proof by experiment that one gets in physics or chemistry; they have to be judged by plausibility. We simply face the classical Aristotelian dilemma, between an unconvincing possibility presented by the orthodox explanation and a plausible impossibility via Gondwanaland. I am all for choosing the latter as was Aristotle. Remember how hopelessly wrong Kelvin was. A short cut of this sort sounds superficial and unscientific, but because some measure of OFS seems inescapable we are in a position to see, without interminable argument, where it *could* provide a more convincing answer than orthodoxy. Darwin in *The Descent of Man* commended those who were prepared to chance their arms and make mistakes because he thought that this was the way in which the truth was advanced most quickly.

As an example of the rather profitless debate that arises in matters of continental drift when applied to zoogeography we may take an example from Dr Keast's paper. He, and many others, say simply that Africa separated from Antarctica in the Jurassic and also say or imply by diagrams that it was 30° away at the start of the Tertiary. The evidence for this is from PW and does *not* justify this contention. Palaeomagnetic measurements for the Triassic are not available from Antarctica; so we do not know Antarctica's relations to other continents in that period, though it would be silly to suggest that it was anywhere except centrally in Gondwanaland. The anomaly of PW in the Trias is that South America, Africa and India were contiguous, but that *Australia* was 20° away from them. (This may be an artefact). However, the position of Australia and Africa relative to one another remained virtually unchanged during the Jurassic and Cretaceous; they began their drift from those positions seriously only in the early Tertiary. Thus, in whatever way one re-arranges Gondwanaland, Australia, Antarctica and Africa must remain either fairly closely clustered together or strung out in a line with fairly narrow gaps. Zoogeographically, surely the point is not the exact position of each continent period by period, but the fact that all three remained pretty close together throughout the Jurassic and Cretaceous in the same relative positions—not far enough apart to form serious barriers to any except the most stay-at-home animals. And here we can start arguing again about the dispersive powers of birds.

There is a final point of special interest to Australians. If you agree that there has been a measure of OFS and

yet want to introduce flora and fauna into Australia by island-hopping in an orthodox manner from the north, remember this. You are denied the opportunity to do so certainly before the Tertiary, probably before the Miocene and perhaps before the Pliocene. In other words you have at most 65 m.y., but probably less than 20 m.y., perhaps much less, for a lot of evolution in some groups. The arguments about Timor being part of the Australasian plate mean nothing. Even if it was, it must be separated from the rest of the Indonesian archipelago on the evidence of geology and PT, and in any case the arguments for joining it to Australia are presented as

assertions and not by reasoning (see Audley-Charles, reference given by Dr Keast).

Whatever the outcome of the debate, clearly the new global tectonics have rejuvenated earth-science and the theories now rival Darwin's as a general intellectual stimulant. We must be grateful to Dr Keast for his services to biologists in spreading the gospel. His paper is the basis for a chapter in the forthcoming book *Evolution, Mammals, and Southern Continents*, to be published by the State University of New York Press in Spring 1972.

S.M.

BOOKS

Annotated Checklist of the birds of New Zealand including the birds of the Ross Dependency by the Checklist Committee (F. C. Kinsky, Convener) Ornithological Society of New Zealand, Inc., 1970. Wellington: A. H. & A. W. Reed for the Society. Pp 96, figs 1-4 (maps), 156 × 245 mm. \$NZ4.95.

In size, style and general format this handy reference work bears a strong resemblance to its predecessor (*Checklist of New Zealand Birds*) published in 1953. Though the text has been expanded and brought up to date, the actual wording in many instances has not been changed. As in the original publication, vernacular names are supplied for subspecies as well as species, a procedure which is not considered good practice, although it must be admitted that many of the subspecies breeding in the New Zealand region are very distinctive and some are still regarded as full species by some authors.

One of the few defects of the 1953 Checklist was the numbering system in which species and subspecies were given equal rank or importance. It is pleasing to note that numbers have been retained only for full species in the new list, subspecies, when more than one are recognized under a species, being given letters of the alphabet with the sequence as before being a geographical progression from north to south.

As in the earlier Checklist, no synonymy of scientific names is given, and, except for the date, there is no clue or reference to the source of the species-name preceding that of its author. This practice may be a source of inconvenience to readers. Taxonomic treatment is orthodox and modern; it should be acceptable to most workers. The classification generally follows the arrangement of orders, families and subfamilies in Niethammer's *Übersicht über die Ordnungen und Familien der Vögel* 1967; grouping of genera and species in the Procellariiformes, Anatiformes and Charadriiformes is based on recent proposals by specialists.

Slightly unusual is the placing of the gulls and terns in two separate families instead of subfamilies as recommended by several authorities. On the other hand, a step in the opposite direction has been taken by recognizing only one family (Strigidae) for the owls instead of the more usual two. Many authors believe that barn owls are not closely related to typical owls, but whether this is best indicated by distinguishing separate families must be a matter of personal preference at present.

Altogether there are 282 species in the main list, which include 34 introductions, 42 regular migrants and sporadic visitors, 57 rare stragglers (less than 10 records) and 10 species breeding in the Ross Dependency in south-polar latitudes.

Distribution and occurrence, always an important part of a checklist, are stated precisely for indigenous, migratory and introduced species; in wide-ranging forms

the extra-limital range is summarized. For species rarely reported in New Zealand the locality and date of each record are given. New Zealand, as defined, includes many islands from the Kermadecs in the north to Chatham, Bounty and Antipodes Islands in the east, and The Snares, Auckland and Campbell Islands in the south. Place names in the text are shown on four excellent maps.

There are three appendices, as follows:

(A) suspense list: 15 species which have been reported from New Zealand without proper substantiation; (B) fossil birds: 15 species; (C) birds of New Zealand that became extinct before about 1800 A.D. and are known from subfossil remains only: 24 species of moas; a large form of the Australian Pelican (the introduction of a subspecific name, *novaezealandiae*, for this extinct race necessitates the use of a trinomial for the living populations in Australia); seven members of the duck family; four diurnal birds of prey; six rails and a coot; and one species each of snipe, nightjar and crow.

A very fine index of scientific and vernacular names is provided and a synopsis of the orders, suborders, families and subfamilies that are dealt with is given at the beginning. The book, which was typeset in Wellington and printed in Hong Kong, is nicely produced and has a stiff cover. It is highly recommended.

H.T.C.

The Handbook of Australian Sea-birds by D. L. Serventy, Vincent Serventy and John Warham, 1971. Sydney: A. H. & A. W. Reed. Pp 254. b & w pll, maps and text drawings 127, col. pll 15, end-paper maps. 255 × 190 mm. \$A8.95.

To some there is a special appeal about seabirds. Ardent bands of beach-combers, island explorers, sea-watchers and voyagers have increased rapidly recently. In Australia, the upsurge of interest with its demand for an informative reference work has now been met by this book, which is no disappointment. The authors have laid a firm foundation on which enthusiasts can build.

The book deals with just over 100 species of penguins, albatrosses, petrels, frigatebirds, tropicbirds, cormorants, boobies, gannets, pelican, skuas, gulls and terns. The species included are those recorded to the satisfaction of the authors within Australian seas, i.e., in waters adjacent to the continent and reaching to the edge of the continental shelf. Although Cocos Keeling, Lord Howe and Macquarie Is are said to be excluded, because they are politically rather than geographically Australian, they often need to be mentioned in the text. Lord Howe is, for example, covered fully.

Thus perhaps the chosen restriction was unfortunate. These adjacent territories and also Christmas Island, Norfolk Island and the Australian Antarctic region would not have caused great problems with so few

additional species to include. The recent New Zealand Checklist (1970) has gone some way towards adopting a logical approach in that it covers all neighbouring islands regardless of political attachment to as far south as New Zealand's zone of Antarctic Dependency. Indeed our book might as well have gone the whole way and dealt with the additional New Zealand species, necessitating an extra dozen or so accounts. One author is a resident there, and in fact much use is made of New Zealand knowledge and material throughout the text. If this had been done the book would have served as a work of reference to the seabirds of a large segment of the southern oceans, complementing R. C. Murphy's classic handbook, *Oceanic Birds of South America*.

The book is divided into two parts. The first attempts a general account of Australian seabirds. It begins with an outline of the characteristics of the oceanic regions and zones of water of the area, discusses breeding habitats and comments on environmental changes since the Pleistocene. This is a concise presentation illustrated with some maps and photographs of habitat. It continues with a section on distribution that also treats biological aspects of particular relevance. The discussion on proventricular oil in petrels seems to have laid an old chestnut finally to rest. The same, perhaps, cannot be said concerning the periodic and huge mortalities of Short-tailed Shearwaters along the eastern Australian coastline nor the problem of nocturnal orientation at breeding colonies. Persistent use of the term 'rookery' for the nesting sites of seabirds may raise an eyebrow from some quarters! The first part ends with a short section on research and a brief discussion on conservation. We may take heed of the warning given by the authors of the menace of oil pollution. This is a threat from which, so far, the Australasian region fortunately has been spared. In the northern hemisphere it has already reached alarming frequency, with severe consequences to seabirds.

The real meat of the book follows in the second part that deals with each species of the area. For each a summary of knowledge is presented under field characteristics and general habits, status in Australia, migration, voice, display, breeding, enemies and mortality, and breeding distribution. There are general introductions to orders, families and genera and for most species the text runs to a couple of pages of reasonably carefully sifted facts. There are errors of course in a first edition. Is there value in presenting racial characteristics that appear to rely on small samples of measurements, especially when they are presented only as means with ranges that often almost wholly overlap, e.g. Little Shearwater, Fleishy-footed Shearwater?

About three out of four species are illustrated, at least by a black-and-white photograph, most by Warham and mostly of the high standard expected. Coloured illustrations, all too few, have nevertheless been well selected. The picture of the Soft-plumaged Petrel at Antipodes Island is obviously a late inclusion, but in the text little light is thrown on this intriguing discovery. Surely some more explanation is called for when the few comments given suggest an exciting extension to the known range of this species? The whole business of this new discovery was disclosed with the publication of the latest New Zealand Checklist in 1970. It seems casual, therefore, for more not to have been said in the text when the picture is included.

There is still scope for better choice of illustrations because there are old friends that have already frequently appeared. For many species a good photograph was presumably not available, but a sprinkling of line drawings partly overcomes this deficiency. Most are

used to emphasize features useful in field identification or help description of displays. They are generally clear and acceptable.

Clues for field identification are occasionally poor. For example, not very much help is given in the problem of separating Common, Arctic, Roseate and White-fronted Terns. The extraordinary statement that it is beyond the abilities of the authors to distinguish between the three *Anous* terns at sea is surely over-emphasizing the difficulties that these species present.

For species breeding in Australia a valuable inclusion is an attempted inventory of known breeding localities. The book ends with an excellent selection of references and a good index. The production is commendably compact, pleasing and certainly very good value. 'Handbook' is perhaps not the best choice of title to convey the scope of the contents, because this book is not as detailed and definitive as this might imply. But it must on merit take its place as a work essential to all Australians working on seabirds.

A general comment must be that the book has obviously taken a while to produce. Perhaps it lacks up-to-date information that must have been available to the authors at the stated time of publication, 1971. But as they say in the preface, 'the major purpose of this book is to enable sea-birds to be correctly identified and to record the known facts of their habits. However, we hope that it will also prove a stimulus to naturalists to fill in the gaps in our knowledge and we shall be grateful for information to make the book more complete or to correct errors'. They should now be taken at their word!

P.J.F.

Land of Wonder: The Best Australian Nature Writing selected and edited by Alec H. Chisholm, 1971. Sydney: Pacific Books. Pp xxii + 313, 180 × 110 mm. \$A1.25.

This anthology, containing in all 162 brief extracts from over 100 authors, and first published in 1964, has now been made available to a wider audience as a paperback. Although the selections are necessarily brief, they serve as an introduction to the extensive descriptive literature on Australian natural history from the early days of settlement. Much of this is now out of print and available only in older libraries. It is unfortunate that, despite the fact that less than half of the extracts were written before 1930, the vision is a nineteenth century view of the bush, unfamiliar to the twentieth century's urban Australian. Too often the reader feels that what is being described is remote and irrelevant. The task of a writer in this field today is to link the experience of urban life with an awareness of the closeness and ubiquity of the natural world.

R.A.B.

Birds of Victoria, Oceans, Bays, Beaches by A. J. Reid, N. J. Shaw and W. R. Wheeler, 1971. Melbourne: Gould League, Victoria. Pp 72, col. pl 28, figs 31, maps 2, 170 × 115 mm. \$A1.50.

Victoria has 1,100 km of coastline along which very many Victorians are accustomed to spend their summer holidays. For them the oceans, bays and beaches are the most familiar habitat after the city. People on holidays have time to notice birds, and want aids to identification. The third volume in the Gould League series of field-guides will thus fill an often-felt need.

It is unfortunate that seabirds present to the casual observer problems of identification that are difficult to deal with in an inexpensive text designed for laymen. This book will not enable the inexperienced observer to distinguish between species of shearwater, albatross or

wader, but it will open his eyes to the number of species to be found where land and sea meet and to the ecological variety of this habitat. This process will be assisted by the introductory articles, particularly those on island breeding and migration across Bass Strait.

The general approach of the first two volumes, already reviewed (Emu 70: 39 and 71: 185), is continued; again, this volume includes birds already dealt with in other volumes and is thus designed to be self-sufficient for its habitat.

Some users of this series may be stimulated to want more assistance with identification than the series is intended to give, and its hoped that later volumes will guide readers in the selection and use of more elaborate and ambitious field-guides.

R.A.B.

Kookaburras by Veronica A. Parry. 1970. Lansdowne Press: Melbourne. Pp 110, b & w pll 31, col. pll 4, figs 8, 250 mm × 190 mm. \$A4.25.

The Laughing Kookaburra *Dacelo gigas* is one of Australia's most widely known and popular birds. Specimens were collected two hundred years ago on Cook's voyage in the *Endeavour* (1769-71); so, one can hardly say there has been any hurry to write a book about it.

Miss Parry came from America on a post-graduate scholarship to study the breeding biology of the species, and no doubt some of the material in this book will form the basis of a scientific paper. This book makes the results of her work generally available, and the non-technical language is easy to follow. Her enthusiasm for her subject is apparent and contributes to the reader's enjoyment. Chapters give detailed information on plumage, voice, food, territory, breeding and mortality, but the author's main interest is stated clearly on p. 98: 'As you will remember, the basic aim of our enquiry into the kookaburra's breeding biology was to find out what advantages family groups had over solitary pairs'. The

study of this facet of the birds' life-cycle depended on recognition of individual birds, and patagial wing-marking with plastic strips was the method used.

By mapping territories of groups of banded birds the author found that larger groups defended bigger territories; these and the territories defended by only two birds averaged approximately 1.2 hectares. Breeding of one-year-old birds was proved; yet continued observations on one banded female, three years old, proved that after an attempted mating she returned to her family group and as an auxiliary aided her parents for another year. Banding also showed that family groups with auxiliaries were generally more successful in raising young than were pairs.

On p. 41 an important conclusion is stated: 'Thus, auxiliaries, non-breeding adult birds, occupy the same optimum habitat and have the same territorial requirements as do breeding birds. By "padding" this optimum space, auxiliaries are virtually reducing the reproductive potential of the population to a point below that expected if all territory occupants bred. Here then territorial behaviour is acting through sociality as a method of birth control'. It is suggested that, because this highly evolved social system is shared by several unrelated species of Australian birds, there may be something peculiar in the Australian environment that gives the practice special adaptive value. The long lives of some sedentary Australian species and Australia's mild winters and fluctuating supplies of food are noted as probably influencing evolution of auxiliary social systems.

Books like this help to bridge the gap between scientists and interested bird-observers who want something more than a page of text to each illustration. Minor criticisms are that some of the black-and-white reproductions are not sharp and that there is no illustration nor description of the similar Blue-winged Kookaburra *D. leachii*, the range of which overlaps that of *D. gigas*.

E.M.McC.

AUSTRALASIAN ORNITHOLOGY

A continuing and selected catalogue of papers

New Guinea Bird Society Newsletter (72) January 1972
Sundry brief observations, including local records, by R. D. Mackay, N. Stanton, T. Weston and W. Filewood.

New Guinea Bird Society Third Ornitholon Results
The Ornitholon was held over the Easter weekend at Popondetta. A complete list of birds recorded (138 species).

New Guinea Bird Society Newsletter (73) March 1972
Sundry brief observations, including local records by R. D. Mackay, Mr and Mrs T. Weston, Mrs M. Mackay, Mrs L. Luckin, J. Fowler and W. D. Dyson.
Outing: Moitaka Sewage Ponds. Over 50 species recorded, with brief notes on some.

New Guinea Bird Society Newsletter (74) April 1972
Note on common names of *Timeliopsis griseigula*.

New Guinea Bird Society Newsletter (75) May 1972
Note on appreciation of work of R. D. and M. Mackay in ornithology of New Guinea.
Sundry brief observations, including local records, by R. D. Mackay, R. Holloway, and W. A. Layton and E. Patterson.

Ornitholon—addendum: Sooty Rail *Porzana tabuensis*. Correction to reference to *R. pectoralis* (actually *Rallina tricolor*) in Newsletter No. 72 (actually No. 73).

April Excursion to Gerehu Creek: 34 species recorded, with notes on some.
List of birds noted at Tapini 30 Jan. to 1 Feb. 1972: 61 species listed.

New Guinea Bird Society Newsletter (76) June 1972
Summary of Presidential Address by Mr W. Filewood on Vernacular Bird Names.
Sundry brief observations, including local records, by K. Kimmorley, M. Dyson, W. Dyson, W. Filewood, J. Glucksman and L. Luckin.
Excursion to Mount Diamond; brief notes on some species.

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Birds that fly by echoes (J. H. Prince) 9

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