REVIEWS

Edited by B. GILLIES

Eagles, Hawks and Falcons of Australia by David Hollands, 1984. Melbourne: Nelson. Pp 212, col. pl1 150, b. & w. 24. $49.95.

Too often in ornithology today, time is of the essence, patience a forgotten virtue and the written word dry and academic, a mere shadow of its former self. *Eagles, Hawks and Falcons* comes as a breath of fresh air. Long hours of searching, observation and photography of all of Australia's 24 'diurnal' raptors, over many years, have gone into this book. That its author David Hollands, a busy country doctor, revelled in the task he set himself is obvious. The text rings with delight, shines with understanding of the birds and glows with atmosphere in its description of their surroundings. It should be compulsory reading for all those who fear and despise hawks for they could not help but be affected by Hollands' infectious enthusiasm for his subject.

A find foreward by Graham Pizzey is followed by acknowledgements and then a brief preface explaining the book's aims and limitations. A map showing all the locations mentioned in the text preceeds the 24 species' accounts. Each of these is essentially a personal narration of observations of the birds and their surroundings accompanied by a small black and white photo and between two and ten colour plates. A section entitled 'Field Guide' contains short descriptions of field characters, voice, food and hunting, breeding, habitat and distribution, condensed from the main text and drawn from the general literature. Finally there is a glossary, some references and an index.

Hollands is a good observer with an inquiring mind. He recounts a lot of interesting, and sometimes new, observations of behaviour and presents equally interesting interpretations of their significance. However, on occasion he puts forward notions unsubstantiated by his observations, this is particularly evident in the chapter on Letter-winged Kite (e.g. that they are capable of breeding 'within weeks of leaving the nest', p. 22), although to his credit he allows that they are his personal opinions. He makes a few bold statements, for example, that the Square-tailed Kite has the longest wings, for its body size, of any hawk in Australia. (p. 43), that the Wedge-tailed Eagle is the second largest *Aquila* (p. 108), that the Black-breasted Buzzard is Australia's third biggest raptor (p. 191) and, as a photo caption, that the male Grey Goshawk is barely half the size of the female. These statements are not substantiated by his own measurements and are somewhat meaningless unless made more specific — are they largest in terms of wing, length, weight, body length or general appearance?

Several times (e.g. p. 79) he states that chicks are unable to tear up food at a certain age — it is often more likely that they prefer not to when a parent is there to do it for them, and would be perfectly capable of ripping up a horse if they were desperate enough. There are overgeneralisations, for example, that the Whistling Kite is an everyday sight throughout the country (p. 61) when in fact it is seldom seen in the western deserts and only occasionally seen in other places such as Canberra. I would question some of the hard data: in my experience Black-shouldered Kites do not always 'hatch within 1-2 days of each other' (p. 187) and some of the incubation times given are rather longer than I have recorded, for example, for the Brown Goshawk (p. 194) and Peregrine Falcon (p. 202).

Unfortunately, Hollands uses fledged to mean both fully-feathered (e.g. dead Black Falcon nestling p. 141) and having left the nest (e.g. caption to Osprey colour plate), happenings that are seldom synchronous. I find some of the jargon unnecessary and disruptive to an otherwise eminently readable text. Does 'working' a nest mean making it run around the block a couple of times? Falconry terminology (hack, eyass, tiercel etc) crops up repeatedly and only makes it hard for those unfamiliar with it.

I was pleased to see a warning against disturbance at the nest, with fratricide listed as one of the possible hazards, and expressions of concern over various other threats to birds of prey in this country.

The photographs are generally of high quality with quite a few difficult to obtain action shots, some of which he admits are of trained birds. The little black and white shots at the beginning of each species account add a nice touch.

Inevitably, comparisons will be made with his friends', Jack and Lindsay Cupper, book *Hawks in Focus* published in 1981. It too is a collection of photos of all of Australia's birds of prey, accompanied by a personal account of each species and a field guide. Both represent a mammoth achievement in terms of time and physical effort. As a 'first' the Cupper's book dazzled. Hollands' book is of superior quality and presentation and the text is more lyrical and scholarly. It compares unfavourably in price. At $50 it is not for everyone. Nevertheless, it is an attractive book, with a lot of clearly stated information, and for anyone with an interest in nature it is a good read.

Penny Olsen

Field Guide to the Birds of North America by the National Geographic Society, 1983. Washington: Paul Sampson, National Geographic Society. Pp 464, col. pl1 220. 125 × 223 mm, approx US$30.

This book is one of those remarkable achievements: a successful and quality product from a committee. With a team of eight writers, eight researchers and thirteen artists, the National Geographic Society has produced a field guide of such a standard that it was selected by *British Birds* magazine as Bird Book of the Year for 1984. The composite authorship aside, it is all the more remarkable that such a success was earned while entering a field so long dominated by the Chandler S. Robbins and Roger Tory Peterson field guide series. The National Geographic Society's book has achieved this with a high quality presentation. Unlike the Peterson guides (or the Australian ones by Peter Slater and Graham Pizzey), all the necessary information for species identification - text, illustration, map - are arranged together on facing pages. The text is concise, concentrating on the prime function of a field guide: field identification, omitting other information, such as details of nests, eggs, diet, etc. As a result, over 800 species are encompassed in a single volume smaller than Pizzey's hardcover edition. With the array of artists, some variation in quality of the species' reproductions is inevitable. It is very much to the book's credit that they are almost uniformly excellent; indeed, some rank among the best paintings ever to grace a field guide

for any part of the world. The inclusion of plumages of different ages, sexes, seasons, breeding conditions and/or geographical forms, as necessary, should serve as a standard for future works of this nature. The maps are attractively done in three colours to denote contrasting seasonal distributions.

Although this guide, because of its regional coverage, will have limited value to Australian field observers, the sections on seabirds, waders and gulls may be of particular interest. Most of the North American gulls which could conceivably show up in Australia as vagrants have three or four, often confusing, plumages. These are well depicted and thus comprise one of the best references for these species. Likewise, the excellent portraits of sandpipers will be of considerable value to wader enthusiasts.

The cover is sturdy softback while the pages are made from high quality paper. The book is intended to stand up to use in the field. Herein, however, lies one of the few possible criticisms. The thickness of the paper raises the weight of the volume to 700 g, twice that of Robbin's guide, possibly a bit excessive for optimally comfortable field use (though substantially less than either Pizzey's hardback or Slater's two volumes). The Society guide, while of smaller dimensions than Pizzey's, is still larger than one volume of Slater's or either of its North American competitors, another minor drawback.

The National Geographic Society *Field Guide to the Birds of North America* is also available as part of a set which includes a small three record collection of bird calls cross referenced to entries in the book, a map of North American migratory pathways and a handsomely produced book offering a non-technical introduction to aspects of avian biology, *The Wonder of Birds.* The map and records may have restricted appeal in Australia but the book, produced up to National Geographic standards, combines an interesting, easy-to-read text with some outstanding photographs, which would find an appreciative audience here despite its North American bias.

The field guide, by itself or in combination with the other items, is an excellent tribute to the care and efforts of its producers. It will remain for some time as a model of what field guides can (and should) be.

Walter E. Boles

The Bee-eaters by C.H. Fry, 1984. Claton: T. & A.D. Poyser. Pp 304. col. pl1 8, many b. & w. drawings & maps. 162 × 240 mm. £19.60.

Here we have a delightful species of bird book. A comprehensive but very readable account of a small but beautiful and fascinating bird family, by its acknowledged world authority.

The 24 species of bee-eaters, with their centre of abundance in Africa, are only represented in Australia by the Rainbow Bee-eater (or Rainbowbird in this book) *Merops ornatus.* It is summarized in 7½ pages (not as long as those species more familiar to the author), thoroughly covering not only published information but much new information from unpublished sources (characteristic of all species accounts). Amongst the several other species reaching the nearby islands of Indonesia and New Guinea are representatives of the remarkable 'bearded' bee-eaters, *Nyctyornis* and *Meropogon* (the latter endemic to Celebes, or Sulawesi). Apart from these two genera of three species, all bee-eaters are included in *Merops* (an arrangement first proposed by Fry in 1969, Ibis 111: 557-592).

The colour plates (painted by the author, with maps opposite) and over 100 line drawings (by J. Busby), not only accurately portray the birds, but capture their 'jizz' (that distinctive look of the live bird used to great effect in P. Harrison's *Seabirds*, 1982).

The bulk of the book (pp 28-193) is devoted to the species accounts, with five other chapters covering the origins of bee-eaters, food and foraging, social and reproductive life, evolving species differences, and bee-eaters and apiculture. The latter is an absorbing account of the much maligned (and persecuted) bee-eater by bee-keepers. Other useful data are summarized in nine appendices (especially 5-8 on the diets of four species). If you are at all intrigued by the many and varied lives of the bird world, this book offers a 'good read' as well as serving as a useful reference.

Murray D. Bruce

A Field Guide to the Birds of the USSR by V.E. Flint, R.L. Boehme, Y.V. Kostin & A.A. Kuznetsov, 1984. Princeton: Princeton Univ. Press. Pp xxxvi + 353, col. pl1 48, b. & w. drawings 71, maps 303. 160 × 234 mm. US$65.00.

This is the first field guide to Soviet birds in English, but it is actually a much revised version of one published in Russian in 1968, with the same colour plates. The senior author, Flint, is also the editor of a new 10 volume handbook of the birds of the USSR (vol. 1 appeared in 1982 and will soon be published in German). This book has also benefited from recent Russian handbooks, in particular the two volume distributional analysis by L.S. Stepanyan (1975-1978), which is a very useful checklist (vol. 2, p. 379, records the first occurrence of a hummingbird *Selasphorus rufus*, not only from the USSR, but from the Old World, but the record is overlooked in the new guide), and the revised 'Catalogue' of Soviet birds by A.I. Ivanov (1976). This demonstrates that ornithological activity in the USSR continues at an unabated pace. Also cited in the new guide is an invaluable and compact *Brief Guide to Birds of USSR* by A.I. Ivanov & B.K. Shtegmann (1978), with basic identification details keyed out with the support of diagrams and black-and-white photographs; it would also be a worthy subject of an English translation. Also now available (but not cited) is a comprehensive bibliography of Soviet ornithology (2 vols so far, published 1972-1979, covering 1881-1945), making essential reading for all serious students of Soviet ornithology. The previous major English work on Soviet birds is the six volume translation of *The Birds of the Soviet Union* (1966-1968, originally published in Russian in 1951-1954), which remains a valuable handbook on basic descriptive and biological data on Soviet birds.

Returning to the guide under review, the coverage is 728 species, with 303 maps depicting the ranges of a large number of birds (summer and winter ranges, where required, are designated). The 71 black-and-white drawings supplement the colour coverage. Such a vast region, of 22 million km² (one-sixth of the earth's land surface), 12 000 km from west to east (in 10 major habitat and 8 time zones), makes one appreciate the complexity of the area encompassed by this single volume. Soviet geography and bird habitats are well covered in the introduction. Each species' account provides field marks, habits (including nesting, calls, status), range and distribution, and similar species, also Russian names in Roman script, and all are cross-referenced to plates and maps (where provided). For the benefit of those accustomed to the English names used in standard European and North American field guides, Peter Alden has provided a very useful cross-reference list (also indexed to plates and maps). The plates are not too crowded and of good quality in style and reproduction. It is the first time

that many of the birds have appeared in colour in an English book and they are welcome addition for those that collect guides in order to have illustrations of the world's birds.

Although most bird-watching visitors to the USSR will carry other guides (as anticipated by this book), its approach to identification is sufficient for this field guide to be used on its own. It is the essential companion for seeing and learning about the diverse bird life of the world's largest country.

Murray D. Bruce

The Birds of Australia. A Book of Identification by Ken Simpson & Nicolas Day, 1984. Melbourne: Currey O'Neil. Pp 352, col. pl1 128, numerous colour vignettes, many b. & w. illustrations, maps 218 × 288 mm. $35.95.

My first reaction to this book is one of relief. At last we have a lavishly illustrated volume designed strictly as an indentification tool where the minimum of text (plus range maps) is opposite the plate of the species concerned. It is certainly long overdue in Australia. Regrettably, it is not a compact, field-guide size, but then one could not fully appreciate the vivid and captivating, as well as accurate, art work of Nicolas Day.

Over 50 ornithologists contributed to the text, under the editorship of Ken Simpson, who was also one of the major contributors. Seven artists also contributed supplementary illustrations to enhance the major work of Day. Such a co-operative effort in the production of this book is also expressed in the book's Introduction, where it is stressed that this book should be used in conjunction with existing bird guides.

Apart from the convenience of having the text opposite plates, it is also the first guide to illustrate *every* species recorded in Australia (even a few discredited species — just in case they do appear). This is a total of 758 species, and with many birds illustrated to show differences between males, females, immatures and other variations (including line drawings of nestlings and other identification features), it comes to over 2 000 birds shown.

Other useful features are found in the book. There is a fold-out colour map of Australia at the front (with a 'how to use this book' feature revealed on the back of the map fold that can be kept open while using the book), and a 'key to families' with colour illustrations by Jeremy Boot. After the section on 'Field Information' covering the bird plates, there is a 70 page 'handbook' section covering a bird's life cycle, modern avifaunal regions, prehistoric birds, where birds live, hints for bird watchers, and a family by family summary of their taxonomy and breeding biology (also illustrated). Lastly, the back endpapers provide life-size profiles of the bills of albatrosses, petrels, shearwaters etc., designed for identifying birds washed up on beaches. This is indeed a valuable feature with 27 species covered (as well as a more convenient extension of the bill profile plates done by Peter Slater a decade ago).

While this book is intended for all birds enthusiasts for use in the field, it will also be very helpful for those who would like an introduction to bird watching in Australia. It is successful in its objective as a guide in the field despite its large size and weight. For those who have grown up on earlier bird guides (especially Cayley's *What Bird is That?*, as noted by Simpson), this book will surely be welcomed, if only as a refreshing new way to appreciate the diversity of Australia's bird life.

Murray D. Bruce

Avian Biology edited by D.S. Farner and J.R. King, taxonomic editor K.C. Parkes. London: Academic Press. Vol. 6, 1982 Pp xxiv + 490. Vol. 7, 1983 Pp xxiv 542. b. & w. pl1, figs. 150 × 235 mm. Approx $112 for each vol.

Volumes of this unique and outstanding treatise keep on coming; just when it appears the series has concluded another volume is released. Originally, in 1971, with the first volume, the editors aimed to review the facts and principles of avian biology and this has been done. In the present volumes they continue with that goal in addition to the task of treating uniquely avian features, such as the uropygial gland, stomach oils, the Bursa of Fabricus and the glycogen body. The series has taken so long, on the other hand, that it is possible for research developments to make reviews in earlier volumes obsolete. Thus, recent developments in avian respiration (Vol. 6) have rendered the review in Volume 2 (1972) completely outdated. It is probably time for the series to evolve into an irregular journal of review of avian biology. The somewhat ephemeral nature of some contributions and the complete absence of any theme and cross-referencing of the volumes makes such a transition all the easier. The accompanying reduction in cost of each issue would be welcomed.

The editors continue their limited role in the production of the series. They select the contributors and topics and ensure that the writing and taxonomy are consistent. The volumes have no theme, there is no separate preface for each volume, no cross-referencing and no attempt at integration. The chapters, which stand on their own, often overlap with one another. On the other hand, the contributors are authentic experts in their respective fields and the treatment is advanced, often stimulating and invariably of high quality. Overall, the writing is concise and lucid and may be comprehended by the diligent non-specialist. Unfortunately, a few chapters are written for specialists only.

Chapter 1 of Volume 6 is by L.W. Oring on avian mating systems. This is basically an elaboration and updating of his theory on the environmental potential for the monopolization of mates first described by Oring and S. Emlem in 1977. Consequently, it is not surprising that most of the article is devoted to mating systems other than monogamy. He reviews the recent findings on helper systems, polygyny, leks and polyandry as well as a number of extraordinary and unbelievable variations. It is fair to say however, that the exceptional and weird mating systems displays by the 10% of avian species has captured the attention of most workers at the expense of the orthodox monogamous system displayed by the remainder. Perennial monogamy is still poorly understood and data on primary and operational sex ratios and measures of maternity and paternity are necessary. Despite this imbalance, Oring provides a useful compilation of the literature in addition to a summary of theories and principles. He repeatedly points out gaps in understanding and makes suggestions for future research.

S.A. Gauthreaux has written a long wide-ranging review of avian migrating systems and their ecological and evolutionary determinants. I believe he could have dispensed with the long historical review and elaborated instead, the modern theories, especially his own, on the role of social dominance as a factor causing dispersal and migration. Nevertheless, he reviews phenomena such as; dispersal, partial migration, irruptions, invasions, short and long migration, site fidelity and nomadism. The treatment centres almost exclusively on Nearctic and Neotropical species; there are but two lines on the Australian phenomena. It is interesting to note, however, that another bias is being corrected: researchers who are mostly resident in temperate zones have realized that migrants that breed in temperate zones are not simply refugees on holidays in the

tropics but can be regarded as fully adapted and integrated tropical species that happen to increase their fitness by breeding in temperate zones.

In a very concise and stimulating essay H.R. Pulliam and G.C. Millikan examine the costs and benefits of different forms of social organization displayed by birds in the non-reproductive season. Their approach is a deductive one whereby hypotheses generated from models are examined in terms of costs and benefits to group members and predictions are made about outcomes under a range of conditions. Experimental and other evidence is used for verification. They conclude that birds in social groups enjoy increased protection against predators, furthermore, group foraging will reduce the risk of starvation, especially in subordinates and will actually increase the mean rate of food intake in all flock members when food occurs in large ephemeral patches. A number of challenging hypotheses that require verification are provided.

The uropygial gland (J. Jacob and V. Ziswiler), stomach oils (J. Jacob) and the glycogen body (L.D. De Gennaro) are the subjects of the next three chapters respectively. The structure of the uropygial gland and its secretions are described in exhausting detail for 150 species, including 80 species of parrots. How birds extract and use the oils from the gland, however, are mostly ignored. General readers will be interested in the finding that the chemical structure of the lipids from the gland has taxonomic affinities within and between families. For example, in the inclusive family, the Ploceidae, those uropygial lipids of the sparrows (Passerinae) stand apart, yet they show striking similarities with those found in fringillids. The chapters on stomach oils and the glycogen body will be of interst to specialists only.

R. Sossinka reviews the principles and results of what he calls the 'great experiment of domestication' that began in times immemorial. He clearly differentiates the changes brought by domestication due to genetic selection, both intentional and unintentional from the environmental changes due to captivity. Appropriately, he concludes the essay with a case history of domestication using the Zebra Finch *Poephila guttata* as an example.

The last chapter of Volume 6 is by P. Schied on the respiration and control of breathing. Unfortunately, this is written for other respiratory physiologists and no consideration is given for the general reader. In comparison with the mammalian system, respiration and breathing in birds is enigmatic. The lungs are rigid and air flows through them in one direction, irrespective of whether the bird is inhaling or exhaling; this is all due to the complicated system of air sacs and their connections.

It is surprising to find the first four chapters of Volume 7 following somewhat the same theme. R.E. Ricklefs writes on avian postnatal development in which he considers general patterns of development, the atricial-precocial continuum, developmental change and the energetics of nutrition and growth. The mathematical descriptions of growth and the genetics of growth are too concise for me, a non-specialist in this area. He concludes with an examination of factors that affect growth within and between species. To appreciate this chapter the reader requires a good grounding in the field.

S.M. Smith wrote the chapter on the ontogeny of avian behaviour. She reviews sensory and motor behaviour of the embryo and describes hatching behaviour. Imprinting behaviour and the development of songs and calls, food and feeding migration and orientation and play are then reviewed. Smith writes in a clear readable style, in contrast to most other contributors. She takes controversial issues head on and frequently attempts to resolve them in a sensible and fearless way. She is a frequent user of the unfashionable term innate ('behaviour patterns that young individuals can perform as soon as they reach an appropriate age in a somewhat restricted developing environment'). Although I can recommend this chapter for its clarity, breadth and thoroughness I found the introduction on the principles of ontogeny to be somewhat simplistic and warn the reader that other views frequently prevail.

Avian ecological energetics, a new and rapidly developing discipline, is the subject of Chapter 3 by G.E. Walsberg. It has roots in ecology, behavioural ecology and environmental physiology. He examines the energetics of the avian life cycle (resource defense, gonadal growth, egg synthesis, incubation, care of young and moult) in which he attempts to reconcile accurate but irrelevant laboratory results with pertinent but inaccurate data from field studies. The energetics of moult is still poorly understood but recent studies of the energetic costs of incubation indicate a 20-30% increase in energy demand that may be offset by the insulation qualities of the nest. Brood size is also a crucial factor. It is clear from this impressive essay that avian ecologists and ethologists need to understand the energetics of their subjects and this chapter is an excellent place to start.

J. Balthazart's chapter on the hormonal correlates of behaviour is the longest in the series. His review includes some 750 references yet only covers the last 20 years; such has been the extraordinary activity in this field. Nevertheless, many findings have been contradictory and enigmatic and have proved to have little biological relevance. Recently, radioimmunoassay and other refined methods have rendered many earlier studies invalid, however the interaction of hormones and behaviour is still far from clear. The field is obfuscated by 'noise' produced by variables such as photoperiod, social behaviour of subjects, housing conditions, species, strain and individual differences. The confusing metabolism of steroids in the brain accounts for other subtle and conflicting effects. Balthazart however, admirably leads the reader through many of these problems and in numerous instances points to areas of ignorance and to the way ahead. The chapter should prove invaluable to the specialist and non-specialist alike.

Most birds in most families have helminth parasites according to R.L. Rauch (Chapter 5) yet their pathological effect is rarely apparent.

The Bursa of Fabricus, that dorsal diverticulum of the cloaca, peculiar to birds has long mystified anatomists and physiologists alike. In the concluding chapter, B. Glick, the discover of its function, writes enthusiastically about its crucial role in the immune response.

In conclusion, *Avian Biology* Volumes 6 and 7 are essential reading for ornithologists and other biologists, both professional and non-professional. The reviews will be invaluable to those about to begin research projects. The prohibitive cost of the volumes however, means that few readers can afford their own copies so should prevail on their libraries and institutions to make them available for loan.

R. Zann

John Gould The Bird Man A Chronology and Bibliography by Gordon C. Sauer, 1982. Melbourne: Lansdowne Editions. Pp xxiv + 416. Figs b. & w. 80, col. pl1. 36. Collector's Edition 250 copies numbered and signed by the author, three-quarter leather bound, gold lettering on spine. 190 × 282 mm. $70 (standard edition) $150 (limited edition).

Although interest in John Gould and his work is long-standing much that has been written about him is repetitive. There is relatively little in print, upon aspects of his life and work, containing information that is widely gathered, well documented, and written with a scholarly feeling for accuracy and detail. The present book is not only such a work but it is an outstanding one that is immediately an essential reference for anyone carrying out research upon, or even seriously interested in, John Gould or Gouldiana. It is also a most distinctive and original book in that it bears the stamp of the author's individuality of approach and because at times it leads the reader into avenues unexpected, and only indirectly associated with Gould, but well justified and extremely interesting.

Gordon Sauer M.D., for whose research in this field I have a long-standing respect, has pursued his study of Gould for some forty years. Having given attention to all aspects of Gouldiana he is very well equipped to produce a chronology and bibliography relating to John Gould.

The book is divided into four parts: the genealogy of John Gould and his wife Elizabeth (Coxen) pp 3-10; Gould's major published works pp 13-86; a chronology of the life and works of John Gould pp 89-156; and a bibliography of published work relating to John Gould, his family and associates, pp 159-394. Within these broad and well chosen boundaries, Dr Sauer has gathered remarkably varied information. The fourth section is especially valuable, being made the more so by the author's informed, often extensive, and always interesting comments.

The work is reasonably well produced and generously illustrated with black and white and coloured reproductions of 'Gould' drawings, both preliminary and finely finished, of stages of lithographs, maps, photographic portraits and other items of interest. Some minor points of criticism may be mentioned. The search for bibliographic references is, of course, an unending task; for example A.C. Townsend in *A New Dictionary of Birds* 1964, provides a ready but here unmentioned reference to Gould under 'Illustration, Bird' and Strickland in *The Annals and Magazine of Natural History including botany, zoology and geology,* X1 1843, pp 333-8, a less ready one, but Dr Sauer's is a magnificent basic list — add to it who can. The colour reproduction is not always accurate, e.g. plate 21 is probably distinctly too heavy in colour. Some typographical errors occurs, e.g. p 304 line 17, 'drawing force' instead of the correct 'driving force' alters the sense somewhat. Some reproductions of printed items, especially where small print is present, are poor, but in general such matters are indeed small in light of the wealth of interesting historical fact and opinion that the book makes available. The extensive index is to be highly commended.

Although much of the material recorded or summarized is from secondary sources, the putting together of such material with adequate reference, appropriate quotation from the secondary source, and informed comment from the author (Sauer) is the essence of the work.

One hardly knows what to choose to exemplify the range of fare. How helpful, for example, it is to have reproduced for one the entire section pertaining to Gould's published works from Zimmer's classic *Catalogue of the Edward E. Ayer Ornithological Library* and the same from Casey Wood's *An Introduction to the Literature of Vertebrate Zoology.* The Gould genealogies, pp 3-10, are nowhere else available. Page 160 gives an unexpected reference to a title-vignette 'done by Gould' for another author's work. There are excellent details of the twelve lithographic stones in the splendid Kenneth Spencer Research Library at the University of Kansas, on p. 226. Impressions of Gould as related by Gunther of the British Museum (Nat. Hist.) are on p. 265. There is the sad but engrossing account of Ralph Ellis Jr the book collector who gathered the outstanding collection of 'Gould' drawings as part of his even more outstanding Ralph N. Ellis Collection within the Kenneth Spencer Research Library Collections, on p. 332. A complete list of references to Gould in Whittell's *The Literature of Australian Birds* is provided (pp 365-8). The picture and note from *The Illustrated London News, 1853,* concerning the dinner party, including Owen, Gould and others as guests, in the belly of the model of the Iguanodon at the Crystal Palace are reproduced on p. 134. This latter and other items of the 19th century help to build acquaintance with the era in which Gould played out his dominating role in the publication of major regional works in ornithology.

For any 'Gould' drawings or paintings the question of how much of the original art work was actually John Gould's and how much was the work of one of his artists, is always a subject of much interest, especially to the art historian and the print collector. Thus the attribution of unsigned preliminary sketches whether done in pencil, pastel, crayon, chalk or watercolour is a central question in that special field of Gouldiana. In this book Dr Sauer's attribution of a number of such preliminary drawings of birds and mammals to John Gould is of special interest to the writer of this review. It is appropriate to say therefore that I think that the drawings in Fig 15 p. 49 and Fig 22 p. 60, in their sureness and finish show a surprising competence for John Gould' hand to which they are here attributed.

Dr Sauer would no doubt be the first to agree that there is still a great deal of gathering of information to be done and of research to be carried out on Gould and Gouldiana (and one hopes that he will continue to work upon a Gould biography and collections of Gould letters, fields in which he has special interest) but it is a pleasure to be able to hold this book up not only as an essential reference on Gouldiana, and not only as one that is extremely interesting, but especially as one of scholarly value that could have emanated only from long, devoted and careful study.

A. McEvey