

It is interesting to note that among the many Birds-of-Paradise kept at Taronga Park, Rudolf's Blue-Bird has taken three years to reach full plumage. In 1917 there were no plumes visible, though the bird was fully adult and performed his "display." In 1918 the plumes were about 2 inches in length, and double that in 1919, but this year they appear to be fairly fully developed, and the two long black feathers in the centre of the tail have appeared for the first time. The bird spends an hour or so every day in display. This is done by hanging down beneath a bough and working the feathers of the breast and abdomen with a rhythmic motion and uttering a soft creak the while.

Most of the branches of the Gould League are active, and the spirit of the work is being kept up. Many centres have urged that Quail and Pigeon slaughter of indiscriminate nature be stopped, and a general interest in the value and beauty of bird-life is manifest.

Messrs. Angus and Robertson are endeavouring to fill a decided want among ornithologists in bringing out a book on the Australian birds that will contain a coloured illustration, full description, and a few notes on the habits, &c., of every species recognized by the R.A.O.U. "Check-list." This work will be in a handy form and issued at a reasonable price. It will first come out in parts. Mr. A. S. Le Souëf is doing the letterpress and Mr. Neville Cayley has the illustrations in hand.

The new Act for the protection of the birds and animals of New South Wales is now in force, and has been found to be effective, but it will require the whole-hearted co-operation of the land-owners and more general education as to the objects aimed at for it to get the backing that it deserves. This Act is largely the work of the Wild Life Preservation Society—a body which is doing excellent work and will make it their business to see that its provisions are carried out as far as lies in their power.

A. S. LE SOUËF, *State Secretary.*

Reviews.

THE EVOLUTION OF GREGORY M. MATHEWS'S "CHECK-LIST" OF THE BIRDS OF AUSTRALIA.

By A. F. BASSET HULL, President R.A.O.U., Hon. Ornithologist Australian Museum, Sydney.

As a necessary preliminary to the preparation of his "Birds of Australia," Gregory M. Mathews published a "Hand-list of the Birds of Australia."* He admitted that this "Hand-list" was imperfect, especially as regards knowledge of the geographical distribution of species. The nomenclature was in so far at fault as the starting-point was Linné's twelfth edition (1766), instead of

* *The Emu*, vol. vii., January, 1908.

the tenth edition (1758), as required by the laws of the International Zoological Congresses. The "Hand-list" was, nevertheless, gratefully accepted by Australian ornithologists, as it was based on Bowdler Sharpe's "Hand-list of Birds," and was a distinct advance on Hall's "Key,"* comprising 883 species as compared with Hall's 816. The "Hand-list," however, included the species found on Lord Howe and Norfolk Islands.

This "Hand-list" did not retain its usefulness for Mathews's purposes for any lengthy period, and upon completion of the first volume of his *magnum opus* he published "A Reference-list† to the Birds of Australia," following the style of the "Check-list" of the American Ornithological Union. Whereas the "Hand-list" afforded no indication of the relationship of any one species to another, the "Reference-list" distinguished what Mathews regarded as sub-species by the adoption of the trinomial system in all cases where varieties were listed. Where there were no recorded sub-species the species name was given in binomial form. The inclusion of his numerous sub-species increased the total number of species listed to 1,451, exclusive of the birds of Lord Howe and Norfolk Islands, which were separately listed in accordance with my proposal that the birds of these islands should be included in the "Phillipian" sub-region.‡

The printing ink of the "Reference-list" had hardly dried before Mathews published "A List of the Birds of Australia" (November, 1913) as a "logical sequence" to the "Reference-list." The introduction to this "List," however, shows that its publication was largely influenced by the appearance of the "Official Check-list" prepared by the Committee of the Royal Australasian Ornithologists' Union.§ The Report of the Committee was severely criticised, and the only part of this report in respect of which he expressed approval was my suggestion that "the inclusion of all described sub-species under the dominant species-number would enable the general collector to confine himself to dominants only." The "List" was prepared under this suggestion:—"Every sub-species at present recognizable is admitted, but they are grouped under the oldest name which appears as a binomial for the species-name, and is placed in heavier type." The number of species was thus contracted to 663, but the sub-species numbered nearly 1,000! The birds of Lord Howe and Norfolk Islands were again separately listed under the Phillipian sub-region.

Valuable as this "List" undoubtedly was, as a further guide to the relationship of certain sub-species, its usefulness became gradually discounted by the frequent alterations and emendations appearing from time to time in the pages of the *Austral Avian Record*, a journal edited by Mathews and "issued in connection

* "A Key to the Birds of Australia," Robert Hall, 2nd ed., 1906.

† *Novitates Zoologicae*, vol. xviii., January, 1912.

‡ *The Emu*, vol. xi., p. 58, July, 1911.

§ *Id.*, vol. xii., January, 1913.

with the Austral Avian Museum, Watford, Herts., England." It was in this journal * that Mathews commenced to split the genera *Menura*, *Micraea*, *Petroica*, *Pachycephala*, *Arlamus*, *Malurus*, and others—a feature which marked the "List," and, as subsequent events go far to prove, was of doubtful utility.

I have recently had the pleasure of perusing Mathews's "Check-list of the Birds of Australia," published on 16th February, 1920, as Supplement No. I. to his folio work. This "Check-list" contains the Orders *Casuariiformes* to *Menuriformes*, and numbers 334 distinct species. In the introduction Mathews says: "All sub-species are grouped upon a binomial species heading, as there can be no doubt that lists prepared in this way will be more useful to the general worker. The first-named species is given in heavier type, but this must not be taken to indicate that that is the only sub-species I recognize. The number of sub-species accepted must always be a variable one, according to the material available and to a certain extent upon the personal idiosyncrasy of the worker, even if such be quite unprejudiced in the matter."

While the 1913 "List" assigned trinomials to *all* the sub-species grouped under each species (to which I applied the term "dominant" in my note to the R.A.O.U. "Check-list"), the 1920 "Check-list" recognizes the author's right to an exact quotation of his name, and thus the sub-species are listed in binomial or trinomial form as originally described. This arrangement of sub-species is a long step in the direction of sinking all such varieties in the comparative oblivion of synonymy.

The introduction also contains a brief defence of "genus-splitting," with a comparison between the author's efforts in this direction with the "B.O.U. List" for 1915.

In a most useful Appendix Mathews lists the casual visitors, the occurrence of which has been recorded less than three times. This Appendix is prefaced by the following: "In dividing the work up like this I have put in the main list all the birds that can properly be called Australian, and in the Appendix all those that so far are only recorded as visitors." With regard to some of these "visitors" one cannot help thinking that their exclusion from the main list is a mistake, as their breeding-places are so near to the Australian coast, and their feeding range is so extensive, that the paucity of records must be largely due to the fact that they have been accepted as Australian and their occurrence not stressed by observers. I refer particularly to *Fregatta tropica*, *F. tubulata*, *Procellaria parkinsoni*, *Pterodroma cinereus*, *Pterodroma melanopus*, and *Phaethria fusca*.

This "Check-list," though the latest, will probably not be the last of Mathews's lists. The second volume will, no doubt, be constructed on similar lines to the first, but I live in hope that the completed work will be followed by a final crowning work in which the sub-species will be listed as geographical varieties of

* *The Austral Avian Record*, vol. i., No. 5, December, 1912.

the dominant species, and the split genera will be once more lumped, as in the 1908 "Hand-list." Mathews's three genera, *Pachyptila*, *Pseudoprion*, and *Heteroprion*, with their four species and twelve sub-species, have been "lumped" by Loomis in one genus and species,* *Pachyptila vittata* breeding only in the southern hemisphere. Townsend and Wetmore,† in commenting on Mathews's separation of the Australian representatives of the *Sulidæ* into four genera, say:—"There is no question that the three species of Gannets form a well-characterized genus; but that there are trenchant lines separating the smaller species known as the Boobies into groups that may be considered of generic rank seems at present uncertain. The differences indicated rather signify only sub-generic differences. For the present it is proposed to ignore them and to include all of the smaller *Sulidæ* in *Sula*, pending further study of available material that may throw light on the subject from another angle."

It will be seen from the foregoing notes on the four lists issued by Mathews that he built up a great edifice of sub-species only to proceed to pull it down again. Perhaps it would have been better for the peace of mind of Australian students if the erection and demolition had been confined to the author's study; but the details of the work having been exhibited to the public, it remains only to render a merited tribute of praise and appreciation of the vast amount of care and concentrated labour that has been expended on the work. The indefatigable author will permit me, perhaps, in rendering him this tribute, to couple with his name that of Tom Iredale, one of the most capable taxonomists of the present day, and whose talents in that direction have, we know, been at the author's disposal. The labours of Mathews and Iredale in seeking out the solution to the puzzle of priority are worthily evidenced in the monumental folio work, "The Birds of Australia," and the "Check-list."

MR. MATHEWS'S 1920 "LIST."

AUSTRALIAN ornithologists have given a hearty welcome to Mr. Mathews's latest List—the fourth so far in his series, and certainly not the last. It is marked "Part I.," and contains names of about half the birds of Australia, from the Emu to the Lyre-Birds.

At length, having been legally authorized to begin operations and anxious to see that Australia plays its part in the great world-struggle to reach finality by means of an authoritative list of the birds of the world, the members of the "Check-list" Committee are keenly at work using the mass of valuable material so painstakingly gathered and so well displayed by Mr. Mathews. The

* "A Review of the Albatrosses, Petrels, and Diving Petrels," Leverett Mills Loomis, Proc. Cal. Acad. Sci., 4th series, vol. xi., 1918.

† *Bulletin of the Museum of Comparative Zoology at Harvard College*, Cambridge, Mass., Aug., 1919.

British Ornithologists' Union has a committee at work on the birds of the Old World; the American Ornithologists' Union has a committee at work on the birds of the New World; and it is fitting that the Australian committee should "do its bit" towards the preparation of the great "Systema Avium" which is to end the troublous ten years and more of unrest in ornithological circles.

Members of the R.A.O.U. Check-list Committee, elected at the special general meeting on 9th June, 1920, are indeed fortunate. The results of the researches and labours of the past twelve years and more by Mr. Mathews have been placed in such a full, clear form that the complete evidence connected with almost every disputed point in the nomenclature of Australian ornithology is plainly and succinctly stated. The "List" is a model of good arrangement and thoroughness.

Mr. Mathews is to be complimented, too, on his candour and fairness. There is no attempt anywhere to influence the position or to impress his own opinion. There is "no prejudice"—just the statement of the facts and the decision which, in each case, agrees with the evidence submitted.

The differences between the "Official Check-list" and Mr. Mathews's 1920 "List" are less than might have been expected. Of course, the generic names of some of the cosmopolitan birds, being listed by Mathews according to priority, based, as the American "Check-list" was, on the tenth edition of Linné's "Systema Naturæ" (1758), differ from those used in the "Official Check-list," which were based, as British lists previously were, on the twelfth edition of the "Systema Naturæ" (1766). The names of only about 15 purely Australian genera are in question. This is apart from the "generic standard," which, of course, is not fixed—indeed, does not exist, and is largely a matter of "personal idiosyncrasy" or opinion, as Mr. Mathews has clearly shown. First he was a "lumper" in the "Reference-list," and then a "splitter" in the 1913 "List"; but now he is revealed in the 1920 "List" as adopting a middle course, tending back to the "happy medium." He further stated, when desiring that Australians should co-operate in the great world work, that he was "without prejudice," and was ready to take his place as one of a committee, and would abide by the decision of the majority.

The "Official Check-list" and the 1920 "List" agree well as to the "specific standard," the standard of division, and of the species listed. Two main causes of differences are the ignorance of early ornithologists of the Asiatic migration of many Australian birds, with the result that some, though really Asiatic birds, were named as separate species here. A second cause of difference is due to a practice that hampered students and hindered knowledge by naming forms from remote places as distinct until they were proved to be the same. Mr. Mathews shows many species to be the same as those of other lands, and the Australian names become synonyms or serve for the sub-species. This is appreciated by student and ornithologist, as it shows the relation more clearly of the Australian avifauna to that of other regions.

Mr. Mathews's thoroughness in collecting evidence regarding the date of publication of works connected with Australian ornithology is apparent in the complete data given. It is shown that some changes are necessary. One of the most noticeable, perhaps, is the work of Vieillot, published in April, 1816, antedating the often-used work of Cuvier, published in December, 1816. *Rostratula*, Vieillot's name for the Painted Snipe, supersedes Cuvier's *Rhynchæa*.

Not fewer than 134 of the 212 generic names of the Official "Check-list" are also used in Mr. Mathews's 1920 "List." Apart from "splitting," 33 of the generic names of the Official "Check-list" require investigation for various reasons—priority, 18 (4 purely Australian); "one-letterism," 4 (3 Australian); type designation (3 Australian); disputed names, 6 (3 Australian); pre-occupied names (3); and "indeterminable" (2, *Catarrhætes* and *Prion*). Thus, 15 Australian generic names are in question.

The names for the splitting of 68 of the "Check-list" genera by other authors have been accepted by Mr. Mathews, who gives the names for 57 cases of splitting genera proposed by himself. He has, however, already reduced 18 of these to synonyms. Few authors are so candid or fair-minded; still, 18 generic names withdrawn out of 57 proposed for splitting by Mr. Mathews—i.e., 31.9 per cent.—is a very large margin for hasty work.

Thirteen Mathewsian generic names to be used as substitutes for others rendered invalid for various reasons have been listed by Mr. Mathews.

Thus this 1920 "List"—half a list of the birds of Australia—perhaps indicates the long-looked-for reaction in the direction of attaining a sound standard for genera. Mr. Mathews has swung away from the extreme position of 309 genera for the 346 species of "List" and Appendix—practically 9 genera for every 10 species—a ridiculous position, indeed, when it is considered that a genus is a *group of related species*, though to the man in the street it may be considered farcical to form 9 groups from 10 species, and that not in one order, but, on the average, for half the birds of a continent. However, Mr. Mathews has now retreated to 291 genera for the 346 species, or 6 genera for each 7 species, and it is hoped that his present frame of mind will continue until he strikes the happy mean between the "lumping" position of the "Reference-list" and the excessively fine "splitting" of the 1920 "List."

Mr. Mathews's reference to the B.O.U. "List" for 1915, with an average of 1.82 species to each of the 146 genera used for the birds of the corresponding section of the work, is unfortunate for his case. When making a comparison, it is usual to compare likes. Here, however, Mr. Mathews compares the list of a small area, little larger than that of Victoria and Tasmania, and not containing even one genus, with that of a continent, with the complete distribution of most genera. The result is really to emphasize strongly his fine splitting (1.19 species for a continent

as against 1.82 for a small fragment), and not to excuse it, as he perhaps intended. He uses capital letters to emphasize the point that the B.O.U. "List" uses NINETY genera containing one species each on that small area, but 236 of the 279 genera (84 per cent.) of his half-list proper are monotype for a continent, and only 6 genera (3 with 3 species each, 2 with 4, and 1 with 7 species) contain more than 2 species each.

At the end of the list Mr. Mathews gives a table of the authors responsible for the names of Australian species. He is credited with a modest 5, while Gould has 65, Latham 38, Linné 32, Gmelin 30, Temminck 24, Vieillot 16, and Gray 11. Had Mr. Mathews listed the generic authors the effects of his splitting would possibly have been more apparent to him. The chief authors so responsible are Mathews 52 (all splitting—practically no new forms), Prince Bonaparte (1856) 31, Reichenbach (1852) 19, Brisson (about 1760) 15, Gould 15, Kaup (1844) 15, and Linné 12.

Priority has recently caused considerable stir in ornithological circles in Australia. It is surprising to find that only 4 generic names of purely Australian birds are concerned. The "Official Check-list" uses *Cathartus*, Swainson, 1837, for *Alectura*, Latham (disputed), 1824, the Brush-Turkey; *Rhynchæa*, Cuvier, Dec., 1816, for *Rostratula*, Vieillot, April, 1816, the Painted Snipe; *Chlamydochen*, Bonaparte, 1856, for *Chenonetta*, Brandt, 1836, the Maned Goose; and *Calopsitta*, Lesson, 1835, for *Leptolophus*, Swainson, 1832, the Cockatoo-Parrot. *Cacatua* (the White Cockatoo) and *Dromaius* (the Emu) are spelt *Kakaloe* and *Dromiceius* respectively. Of 20 specific names in question through priority, 11 of the older names were quoted by Gould in his synonymy. Gould changed two in his "Handbook," 1865, though the "Official Check-list" followed the older "Birds of Australia," completed in 1848. It is also a surprise to find that only 3 specific names of purely Australian birds are involved under "priority"—those for the Brown Quail, the Native Companion (Crane), and the Glossy Black Cockatoo. Priority, when it can apply to only 1.8 per cent. of the genera and less than 1 per cent. of the species, ceases to be of importance as a disturbing factor.

Sub-species, the most noticeable feature of Mr. Mathews's Reference and 1913 "Lists," are not conspicuous in this "List." They are placed with the synonyms under the binomial species heading, one line being usually devoted to each. This is a simple method of disposing of a difficult phase of the list, and one that the "Check-list" Committee could follow with advantage. Mr. Mathews adds:—"The number of sub-species accepted must always be a variable one, according to the material available, and to a certain extent upon the personal idiosyncrasy of the worker, even if such be quite unprejudiced in the matter." It is hoped that Mr. Mathews will apply this fair, broad-minded view when the matter of the number of genera is being finally settled. It is hoped further that the second part of Mr. Mathews's new list will be available at an early date.