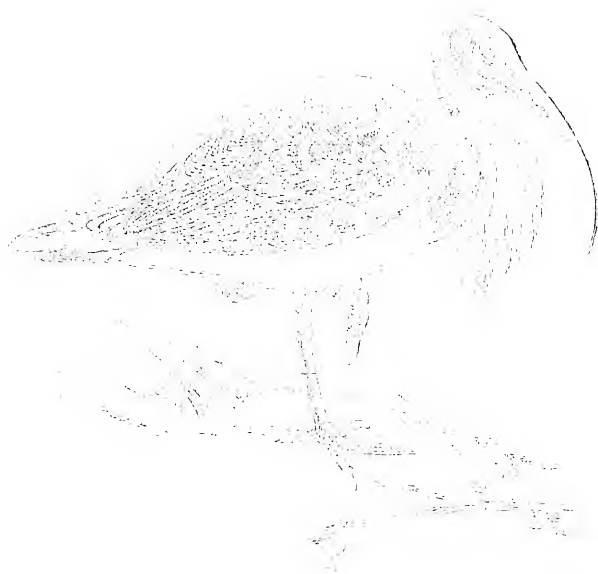


THE
AUSTRALIAN BIRDS



Walter H. Froggatt, F.L.S., Ed. 3.

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DEPARTMENT OF AGRICULTURE,
NEW SOUTH WALES.

SOME USEFUL
AUSTRALIAN BIRDS.

WALTER W. FROGGATT, F.L.S., F.E.S.,

Government Entomologist; President Royal Zoological Society, N.S.W.; Vice-pres. Wild
Life Preservation Society; Vice-pres. Gould League of Bird Lovers; Vice-pres.
Field Naturalists' Society, N.S.W; Pres. Wattle Day League.

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PREFACE.

In the *Agricultural Gazette* of New South Wales, of January, 1896, the late Mr. A. J. North, Ornithologist to the Australian Museum, commenced a series of papers under the title of "A List of the Insectivorous Birds of New South Wales," which appeared at irregular intervals in 1896, 1897, 1900, 1901, 1902, and 1905. The list comprised brief descriptions of 160 birds, and was illustrated with a number of lithographic plates in colours. Three parts were afterwards issued separately, but such was the demand that the supply was soon exhausted. So many inquiries were made concerning the articles that it was decided to issue a second series. The editor at that time of the *Agricultural Gazette*, Mr. J. E. O'Grady, undertook the work of the letterpress and the plates were copied from the figures in Gould's great folio work "Handbook of the Birds of Australia" and reproduced by the three-colour process. This series commenced in the April number of the *Gazette*, 1910. In 1912 Mr. O'Grady severed his connection with the Department of Agriculture, and I was asked to supply the letterpress and supervise the preparation of the plates of this second series. October, 1915, saw the conclusion of the series, designed at that period for republishing in the form of a bulletin. The conditions affecting the output of all publications during the war period has deferred their reappearance until now.

To make the work uniform I have added a chapter on bird protection and allied questions, and have rewritten the letterpress contributed in the first place by Mr. O'Grady. The plates for the present work were printed at the same time as those for the *Agricultural Gazette* some years ago, and the names (popular and specific) were worked at the same time. It has been deemed advisable in the letterpress, however, to adopt in some cases a later nomenclature.

The popular and scientific name of each species, and the page reference to Gould's "Handbook of the Birds of Australia" (a standard authority) has been given; and for the field naturalist, for whom this book has been chiefly prepared, a reference to Leach's "Bird Book" has also been added. Among the works consulted in the compilation of this book, the following may be mentioned in particular:—"Nests and Eggs of Australian Birds" (A. J. Campbell), vols. 1-11, 1901; "The Useful Birds of Southern Australia" (Robert Hall), 1907; "Key to the Birds of Australia and Tasmania" (Robert Hall), 1899; "Wanderings of a Bush Naturalist" (J. Wheelright), 1861; "Handbook of the Birds of Australia" (J. Gould), vol. 1-11, 1865; "Voyage to New South Wales" (John White), 1790, in which a number of plates of birds are given with brief descriptions; "Birds of New Holland" (John Lewin), 1822, in which hand-coloured plates of many of our birds are given; "An Australian Bird Book" (Dr. J. A. Leach, 1911), a pocket-book for field use; "Nests and Eggs of Birds found Breeding in Australia and Tasmania" (A. J. North), 1889, catalogue No. 12, Australian Museum.

W. W. F.

DEPARTMENT OF AGRICULTURE,
NEW SOUTH WALES.

Some Useful Australian Birds.

INTRODUCTION.

THE birds and animals of Australia won my affection in earliest boyhood, and the matter of their protection, for both economic and less material reasons, has appealed to me ever since. Like all bird and animal lovers, I look forward to the day when we may see the existing Acts simplified and their application enforced by some recognised authority, but that the issue must depend finally upon the popular attitude to the subject seems to be obvious. Unless the people themselves are awakened to the beauty and value of our fauna, no Act, however perfect, can be of much use.

The protection of our native fauna must start from an economic basis, not a sentimental one. First, show the man on the land the economic value of the bird or beast; demonstrate that they work for him by devouring destructive insects, or have a value as game, and he will not allow their wanton destruction, and you will need neither policeman nor warden to enforce the clauses of the act. Then let the teacher come along and show our rising generation the beauty of form and colour, and the place in the woods and fields of each living creature. He will soon awaken a sympathy with the sentimental aspect of the question. Then our birds and beasts will be protected simply because they are birds and beasts, doing no harm but adding to the beauty and cheerfulness of the surroundings.

Even now, we less often see strings of birds' eggs, collected by a misguided student of nature, festooning the master's study, or—though the factor of changing fashion must qualify our optimism—the ladies adorning their hats with the more or less grotesquely-stuffed skins or heads of birds that have been unfortunate enough when alive to be good looking. If the fashionable lady with heron plumes in her hat thought of the nestlings left to starve to death because their poor mother had some fine feathers on her head, would she wear them for a single day? There are many side issues in a matter of this kind (some of which I have tried to point out in these notes) which are not taken into consideration by many people.

To protect our animals and birds in a practical manner, from both a scientific and an economic point of view, we must know something about the habits of the creatures we are protecting, so that we do not include any species that the man on the land can prove to be injurious. We would do well to look round and see what is happening in other parts of the world. Though many countries have had game laws in force for hundreds of years,

with very drastic punishments to be meted out to the man who transgressed, it is only within quite modern times that such a thing as protecting birds and animals has been considered in any other manner. The first acts to come into force have always been game laws—not to protect the birds for their beauty or use to the community, but to enable them to breed and increase in order to furnish sport to hunters. Later on, game laws were modified on a more honest plan to protect the animals and birds with a “close season,” so that they could breed without being molested, their cash value as game having been recognised. Next came the practical observer, who pointed out that the birds that fed upon insects that destroyed plants, pasturage, and crops must also have a cash value to the man who made his living on the land. Then we had the first bird protection acts for the preservation of insectivorous birds.

Bird Protection in Australia.

It was a very long time, however, before the many Australian Game Acts were framed to include anything but game birds, which were protected by a close season during the time they were nesting. The value or beauty of insectivorous or harmless birds was not considered; the acts were simply game acts.

One of the forerunners of legal protection for harmless and useful birds was the publication by the Department of Education in Victoria of a “Chart of the Insectivorous Birds of Victoria.” This gave coloured representations of a number of the best known useful birds, and was hung in all the country schools about thirty years ago. In his “Report upon Insect and Fungus Pests in Queensland,” in 1889, Tryon published some interesting notes on the value of insectivorous birds, and gave a list of those found in the Toowoomba district. Later, French added plates and popular descriptions of insectivorous birds to his “Handbook of the Injurious Insects of Victoria.”

In the Victorian Bird Protection Act of 1890, in addition to the close season for game birds, fifty groups of insectivorous birds were scheduled, including a number of introduced species that were to be protected all the year round. Some of these introduced species are now looked upon as pests. Since then, all the Australian States have made additions to their old acts, or brought out more modern ones, and sanctuaries have been created in lakes, swamps, estuaries, and forest areas. Many private landowners are now protecting the wild life on their estates. In 1901, the New South Wales Bird Protection Act came into force. This included a list of 105 species of insectivorous birds, absolutely protected from the 31st of October, 1905, until the same date of 1915. In a proclamation issued early in 1907 other birds were added to this list, and twelve groups of introduced game and song birds were also included.

The Bird and Animals Protection Act of 1918, now in force, is very much in advance of all the previous acts; as, unencumbered with long lists of the scientific names of the protected birds and animals, it simply gives a list of

those that are not protected in the first and second schedules. Therefore all the birds and animals not black-listed are given complete or partial protection, with a close season while breeding. Included in the Act is a description of all the sanctuaries (where no one is allowed to shoot any kind of bird or animal) in the State. A license fee of £5 is charged all persons who shoot game for sale, and the number of game birds that the holder of a license is allowed to shoot each day is regulated. Besides the members of the police force, about 300 honorary rangers have been appointed and gazetted, including stock inspectors, forest-rangers, officers of the Department of Agriculture, and the Council of the Wild Life Preservation Society.

Work of Protective Societies.

Perhaps first in order of the educational agencies active in New South Wales comes the Wild Life Preservation Society of Australia, which was founded in 1909 to encourage the protection and preservation of the Australian fauna and flora. Besides giving popular lectures in town and country centres, and publishing reports, the members have taken a keen interest in all legislation dealing with wild life and the protection of game birds and animals. It was a committee of this society that drew up the original draft of the latest New South Wales act.

Under the new incorporation, the members of the Royal Zoological Society are actively promoting the spread of knowledge of our birds and animals, and with the splendid collection that is being located at Taronga Park, many town children will be able to know something of the Australian fauna.

The Gould League of Bird Lovers was founded by some enthusiastic officers in the Department of Education in 1910, as a result of which, thousands of school children receive a certificate, and promise to protect the birds, their nests, and eggs.

The Influence of Literature.

The description and illustration of the habits of our insectivorous birds, by the various authors who have devoted their attention to them, has also gone far to enlist the sympathy of the average man as well as materially to benefit producers. Among the first books on our birds was Lewin's "Australian Birds," with hand-coloured plates, which appeared in 1822; but it was John Gould who did in Australia what Audubon had done in North America. Gould issued his great work, in seven folio volumes, giving a complete list, with coloured plates and life histories of all the Australian birds described up to that date (1848-69). The publication of his "Handbook of the Birds of Australia" in 1865 enabled all bird lovers and students to acquire a scientific and general idea of Australian birds which was not previously obtainable. It was a happy thought of the educational officers interested in nature-study to call their children's association "The Gould League of Bird Lovers." In 1911 Leach's "Australian Bird Book,"—one of the most useful field-books that was ever brought out—was published in Melbourne by an arrangement with the Education Department of Victoria.

The Necessity for Effective Administration.

The movement before the lovers of animal and bird life is to have the protection acts administered as the framers intended, and further still, to have all the State laws dealing with the matter embodied in a comprehensive federal act. It is only a few years ago that the citizens of the United States arrived at the same conclusion; their laws were in even a more complicated condition than ours are at the present time, for not only did each State (and there are forty-eight of them) have a different game and bird protection act within its boundaries, but in some cases several counties of a single State had different regulations and close seasons, so that the unscrupulous pot-hunter could step across the boundary line and kill all he wanted with impunity. The laws of the United States are considered perfect now, in theory at any rate; but it is not so much from what they are doing now as from what was done in spite of the old acts, that we can learn some lessons. All their big game—bison and deer in their countless thousands—have vanished off the great plains in one generation. Mr. Mitchell, of Victoria, Texas, who came to the "Lone Star State" fifty years ago, told me that he could remember the time when there were more deer on the prairie than there are cattle at the present time. You have only to take up the works of any of the writers of thirty or forty years ago to read how prolific life was on those rich lands. What has become of the countless millions of the passenger pigeons that used to take their flight every year over the North American forests, and which comprised one of the regular food supplies of the settlers? They are reduced to a few isolated flocks now nesting in the Michigan woods.

When the fashion set in for sea-birds' wings to trim ladies' hats some twenty years ago, there were countless flocks of that beautiful tern known as the Sea Swallow on all the sands and islands from Cape Cod to Southern Florida; to-day there are only two small islands in the north where a few of these birds can be found nesting, and the Government keeps paid wardens on these islands for their protection. All these great hosts have been slaughtered to deck ladies' hats with their plumage. In our own State what is more common than to see wanton shooting of birds of every kind?

The question then arises, who is to administer an effective fauna protection act? And this question has been answered by the only two great agricultural countries that have taken up the protection in a practical manner—the Kingdom of Hungary and the United States of America.

The United States has solved the matter by making this necessary protection a branch of the Department of Agriculture; and the officials of the Department, in conjunction with the officers of the Forestry Departments, look after birds and beasts, and study the many side issues that come up through a more or less artificial condition when absolute protection is enforced. About 1858 several workers began to examine the stomachs of birds; and in 1880 Professor S. A. Forbes, of Illinois, tabulated all the work done in this

direction and placed the birds in three groups—injurious, neutral, and beneficial. On the 1st of July, 1885, the United States Congress established a section of Economic Ornithology, under the direction of Dr. D. Hart Merriam, to carry out investigations, including inquiry into the food habits, distribution, and migrations of North American birds and mammals in relation to agriculture, horticulture, and forestry. In 1896 this branch became a division, under the broader title of the Division of Biological Survey.

In the offices of this division at Washington there are thousands of stomachs of birds which have been examined and their contents tabulated, so that the food habits can be determined, and their value as insect destroyers or otherwise, demonstrated. Maps are prepared showing the migration and range of the different birds and animals; and, while the protection of useful ones is advocated, the methods of dealing with noxious ones are also closely studied.

The Hungarian Central Office for Ornithology was instituted in 1894 by Count Albon Caaky, Minister of Public Instruction, and after having been an appendage of the Royal Museum for some years, it was transferred to the Department of Agriculture. In 1901 Ignác Daránye, Minister of Agriculture, issued a circular decree, which is one of the most complete and well-thought-out bird and animal protection acts in existence. In 1908 the writer met Dr. Otto Herman who had charge of the Office for Ornithology in Budapest, whose untiring energy has made for such successful protection; not only did he protect all the useful birds, but he showed the people all through the country their value. A map was compiled in which were marked 150 stations scattered all over Hungary, where professional ornithologists recorded the migration of as many species as possible; besides this, 1,300 State foresters recorded the movements of the commoner species.

Artificial nesting-boxes were found so useful to all birds that nest in holes in trees, that a factory for making them was started; and fourteen years ago (1906) the Minister ordered the Hungarian Central Office for Ornithology to present a scheme for the supply of these artificial nesting-boxes to the State forests, comprising 5,000,000 acres. This work was carried out.

History of Protection in other Countries.

In 1845 the protection of mid-European insectivorous birds was advocated by Edward Buldamus, a German enthusiast, and at the initiation of representative German farmers and foresters, an agreement was later made between the latter and the Austrian and Hungarian authorities. This was followed by a number of zoologists, in 1873, framing rules for the protection of birds of economic value. Further efforts were made in 1876, which resulted in an international conference meeting in Vienna in 1884. Bird life protection during the next few years attracted fresh countries to its standard, and at a meeting in Paris, in 1895, at which numerous countries were represented, an international convention for the protection of birds

useful to agriculture was founded, and rules for their protection drawn up. A movement of a related character was started at Berne, in 1913, its object being the consideration of the best methods to be adopted to preserve the natural beauty of the world, and to prevent the rapid extermination of both animal and plant life threatened by the expansion of civilisation and agriculture. Further developments were interrupted by the war.

In British possessions much has been attempted by legislation to protect useful birds. The Wild Birds Protection Act came into force in British India in 1887, prohibiting the possession or importation of birds into municipal and cantonment areas during the close season. As it was found that this Act did not protect the birds with feathers or skins of commercial value, a notification was issued in 1902, under a section of the Sea Customs Act, which stopped the export by land or sea of any plumes or feathers of useful birds. In Great Britain the Wild Birds Protection Act, of 1880, prohibited the taking or killing of wild birds between March and August, so that they were protected during the breeding season. Eighty-six species were listed under this act, but as sixty were game birds or sea birds, a very small number of insectivorous birds obtained legal protection. In 1894 another Act was brought into force with the object of protecting the eggs and nestlings; but it was only a partial protection, and as the administration was left in the hands of the county councils no one saw that the clauses were carried out. The Royal Society for the Protection of Birds has taken up the movement of providing nesting boxes in the forests, and issues quarterly reports on "Bird Notes and News." A strong popular sentiment is fostered by "Bird Days," and by the society giving prizes for the best essays on bird protection.

Sanctuaries.

One of the most practical and effective ways of stopping the rapid extinction of wild life is to create sanctuaries, where, under natural conditions, "man is passive and the rest of nature is active." With their natural food supplies in these reservations, animals and birds breed freely, and as they increase in numbers and outstrip the food supplies, they overflow into the surrounding country. This applies to all kinds of birds and animals, but particularly to game; and while sanctuaries should protect wild fowl there is no reason why the overflow of game outside them should not be shot, and so form a valuable addition to the food supplies of the State, just as fish supplies do. Thus a well-situated sanctuary, besides being a home for all kinds of useful birds, would be a *dépôt* for the breeding up of our game birds—a point that is sometimes lost sight of by sentimental bird lovers. There is no reason why the true sportsman should not be a nature lover.

In Great Britain many of the large landed estates are virtually sanctuaries. Several societies have also been formed to protect both the flora and fauna, one of the latest being the Society for the Promotion of

Nature Reserves. Its aims as stated in its prospectus are:—"In view of the dangers which at present seriously threaten our indigenous fauna and flora with extinction, to obtain land reserves by gift or purchase." One of the first nature reserves which was acquired was Wicken Fen, near Cambridge. In Hungary a large number of the forest areas in the north were treated as game reserves, and in Germany there was, together with many smaller reserves, a sanctuary of 16,000 acres in the Bavarian Alps, and another of 5,000 acres in East Prussia.

Everybody has heard of the great sanctuary at Yellowstone Park in the United States, where a small herd of bison, the last of the great mobs of American buffaloes have been placed in safety. In Uganda, East Africa, where the great lakes and forests are the last stronghold of the big game that once spread right down to Capetown, the British authorities have formulated well thought-out game laws, and created several huge sanctuaries into which hunters are not allowed to penetrate.

Holland has purchased Naader Mere as a sanctuary for the nesting waterfowl, and in Denmark a large tract of heath land has been dedicated as a nature reserve for the fauna and flora of Jutland. In Switzerland a national park of 50,000 acres has been made in the Southern Engadine.

In Australia, as will be seen by the following notes, most of the States have made large reservations of waste lands as national parks, nature reserves, or sanctuaries, but no provision has been made to ensure that the regulations are respected. In Tasmania a number of the smaller islands have been given over to the sea birds, and the curious neck of land, Freycinet Peninsula, was dedicated as an area for the preservation of animals in 1906. In Victoria one of the best known sanctuaries is the National Park at Wilson's Promontory, which contains 101,730 acres. With the adjoining islands it is controlled by a board of management, which has an annual grant of £500; with this they pay two rangers, and the trustees are re-stocking the place with native birds and animals. Three other reservations on the coast total about 25,000 acres. Inland they have Buffalo Park of 25,980 acres, Lake Wongon of 9,600 acres, and a smaller one at Tower Hill, in the Grampians, of 1,360 acres; and besides these there are many local areas carefully protected.

In Queensland there are seven sanctuaries which have been proclaimed Wild Life Protection Reserves, where wild animals and birds are supposed to be safe; but little or no supervision is carried out. In addition, there are several large forest reserves that should be proclaimed sanctuaries, such as that at the Bunya Mountains, which comprises 22,500 acres. Under the Wild Animals Protection Act, a number of landowners have had their places gazetted as sanctuaries, and act as honorary rangers. In South Australia, Kangaroo Island Reserve comprises 93,440 acres, and is a sanctuary where fauna and flora are absolutely protected. The National Park, Belair, of 2,000 acres, is only a nature reserve. In New South Wales two great

national parks in the vicinity of Sydney—National Park, Port Hacking, of 33,719 acres, and Kuring-gai Chase, of 35,300 acres—are sanctuaries, together with the reserves round the different caves, ranging from 6,000 acres at Jenolan to 1,400 at Colong. There are also a number of so-called sanctuaries which exist in name only.

The Migration of Birds.

Though the movements and migrations of animals and birds have been recorded since a very early date in a general way, it is remarkable how little was actually known, even down to modern times, about this habit. One would have thought that the educated observer of the time would have known something definite of the movements of the migratory birds of Northern Europe, that congregated together, and every year winged their way southward in search of food and warmth as the winter months drew near, returning with the northland summer to rest in their native land. Yet we find Gilbert White (in that classic, "The Natural History of Selborne.") gravely stating (Letter LV, October, 1781) that he believed that the great flocks of martins hibernated during the winter months in or under the dense thickets of beech scrub near Selborne. The great naturalist, Cuvier, in his "Natural History," published in 1820, said, "It appears certain that swallows become torpid during winter, and even that they pass the season at the bottom of the water in the marshes." Other writers were inclined to doubt their living under the water, and explained their disappearance by stating that they slept through the winter months in recesses of mountain caves.

The question of migration has, however, been carefully studied during the last twenty-five years from a scientific standpoint, and as one of international importance to be considered when drawing up a comprehensive scheme for the protection of useful birds. It has been for a long time a burning question in Europe, because of the value of the insectivorous birds to the northern countries. Countless flocks of migratory insectivorous and song birds, returning from their winter residence in Africa to Europe for the summer, rest on the southern shore on their homeward flight. These birds are met and caught on the Italian coast; bird-lime, snares, nets, and permanent traps being used. To give some idea of the extent of this destruction, Professor Vallon stated at an International Convention in Hungary that, in October, 1890, 500,000 small birds passed through the Customs House at Bressica, chiefly flycatchers, tit-mice, white-throats, and rock-pipets. At Undine 200,000 similar birds were caught; at Montegrade in three days 14,000 swallows were killed, while at Crao enormous numbers of swallows were netted.

Careful observations have been carried out by marking large numbers of migratory birds nesting in the north of Europe and making records of the limits of their southward flight. As an example: among the birds noticed

feeding upon the plague locusts in Basutoland, South Africa, during the locusts' invasion of 1909, were many White Storks (*Cinconia alba*), which spend the summer in Northern Europe, building their nests on the roofs of the Northman's house. Several of these storks, over-gorged with grasshoppers, were caught by the Government officials, and found to have metal rings on their legs dated the previous season, and which had been affixed to them by the observers of the Vogelwarte Institution at Rositten on the Baltic Sea.

In Canada, the importance of having a Migratory Birds Convention between Great Britain and the United States was considered in 1916. The migration of birds from Canada to the United States and their return northward in the summer was of such importance that some years ago the Canadian Government considered that a uniform close season for game birds nesting in that country should be passed by the federal authorities of the United States. After a considerable amount of correspondence, a convention was signed at Washington for the protection of certain migratory birds in Canada and the United States. This was known as the Migratory Birds Convention Act for the Protection of Migratory Birds in Canada; it came into force in 1917. It covers both migratory game and insectivorous birds.

Many of our Australian birds, though they do not leave this island continent, travel every year from south to north as the winter comes round, returning from Queensland in the early summer. Among many others the wood-swallows (*Artamus sp.*) always reach Victoria before Christmas, nesting in the low gum scrub, and are thus popularly known by the school children as "small summer birds," while the Black-faced Graucalus which arrives about the same time is known as the "large summer bird."

The Australian Snipe (*Gallinago australis*), which goes as far south as Tasmania in the summer months, flies northward at the first hint of winter, nests in Japan from May to August, and returns to New South Wales in September and October. Other Australian birds go to the great plains of Siberia to bring up their nestlings, while the swifts and swallows flitting about the ponds in Melbourne parks may, a few days later, be twittering on the telegraph wires at Bourke or far away in central Queensland. I remember over thirty years ago, watching the gathering together of immense flocks of swallows, which camped for several nights on the lignum swamps in north-western Victoria before starting on their northern journey to avoid the approaching winter.

The local migrations of Australian birds from one part of the continent to another, and the gathering together of enormous swarms of certain species of birds, together with their sudden appearance in localities in which they were previously unknown or comparatively rare, is very interesting and worthy of careful record. Dr. George Bennett in his "Gatherings of a Naturalist in Australia," gives an instance: In 1833 the little Water-hen invaded the settlers' gardens in the Swan River Colony, Western Australia, though they had never been seen previously on the coast. Captain Sturt recorded a

similar migration of the Black-tailed Native-hen into South Australia in 1840, when these birds appeared in numbers in the streets of Adelaide. Gould quotes similar observations in the introduction to the "Birds of Australia." In 1906, on the swampy land of the Darling and Barwon rivers, I saw these birds covering acres of land. These and other birds come and go; but we have other experiences where strange birds extend their range southward or coastward from the interior, and finding the new location suitable, either take up their abode there, or else return regularly each season to nest. South of the Murray, in the Gunbower district, no pelicans were known when selectors began to occupy the lands in 1875, but five years later, large numbers appeared on the Kow Swamp. They are now to be found all over the larger swamps and lakes, fishing in all the creeks and lagoons.

Effect of Changing Environment on the Habits of Birds.

In going into the matter of wild life protection we will find that there are many unnoticed influences which affect the distinctive fauna of any new country like Australia. There is not the least doubt that with the advance of civilisation, when cities spring up, the forest disappears; and where the farmer ploughs the land the natural herbage vanishes, and so thousands of little creatures, from insects to birds and animals die out or move on as their food supply fails. It is not only the gun of the hunter that kills. If you destroy the natural food of any bird or animal, it may, if of an adaptable nature, find some of the crops grown by the farmer or gardener just as suitable for food as the original supply; and so a creature which was under natural conditions, if not useful, at least harmless, becomes a pest.

The same state of things comes about when, through the destruction of a natural check upon its undue increase, a useful insectivorous bird increases more rapidly than under the original conditions of life, so that the food supply is insufficient. The farmers' crops are then affected, perhaps not sufficiently to wholly counterbalance the good the birds do in the destruction of pestiferous insects, but to such an extent that the practical farmer takes steps to destroy with poison or gun, a bird he once looked upon with a friendly eye. On the northern plains of Victoria I once watched this evolution of useful to injurious birds take place in the course of a very few years. When I first went on the land it was subdivided into very large paddocks, in which the squatter grazed sheep. Then came the selectors under the new Land Acts; the station holdings were cut up into small blocks, and fenced into smaller holdings of 320 acres, or even less. Under the old regime bird and animal life had not altered much from earlier normal conditions, under which it is quite safe to say that from 25 to 50 per cent. of the eggs and nestlings of the magpies, Magpie-larks, and numbers of other insectivorous birds fell victims to hawks, crows, Whistling-jackasses and to our innocent-looking friend the Laughing-jackass. With settlement came sheep-worrying dogs, and the squatter and selector laid poisoned baits or poisoned the body of a sheep that had been

worried, with the result that the hawks, crows, and other flesh-eaters were killed as well as the dogs. Within a few years the increase of the insectivorous birds on the plains was very noticeable ; as the ploughman sent his team along turning over the furrow, one would see a whole string of magpies and Magpie-larks behind him picking up the grubs and worms exposed. The plough and cultivator brought to hand a fresh, if temporary, increase of food, which meant more nestlings. Then the reaction commenced, the food limit was reached ; one morning the farmer saw magpies hunting over a paddock where the wheat was just showing. At first he rejoiced to see his feathered friends at work for him, probably at a plague of cut-worms or caterpillars. Later on he crossed the paddock and found many young wheat plants pulled up and the soft wheat at the rootlets bitten off. His scientific friend across the creek, to whom he complained, said it was impossible ; magpies would not eat wheat, they were insectivorous ; if they had pulled the wheat seedling up it was to get at some grub on the roots. Unconvinced, the farmer a few days later shot a couple of magpies that he had watched at work on his paddock, and on making a rough post-mortem examination of their stomachs, found the bulk of the contents to be soft, spongy wheat grains from the ravished wheatfield.

Then he took action and shot magpies until the survivors flew away in disgust. Since then many thousands of magpies have been shot in both Victoria and New South Wales for this acquired food habit.

Again, we have several remarkable groups of birds in Australia which have the tip of their tongue formed like regular little camel's hair brushes, so that they can be inserted into the cup-like calyx of the eucalyptus and other honey-bearing flowers, and the nectar thus drawn up into the mouth. These honey-suckers, belonging to the family *Meliphagide*, comprise over fifty species of very beautiful birds. Gould says, "They are, in fact, to the fauna, what the eucalypti, Banksiæ, and Melaleuca are to the flora of Australia. The economy of these birds is so strictly adapted for those trees that the one appears essential to the other ; for what can be more plain than that the brush-like tongue so especially formed for gathering the honey from the flower cups of the eucalypti, or that their diminutive stomachs are especially formed for this kind of food, and the peculiar insects that form a part of it." Yet the very possession of this wonderful mechanism has been the undoing of several groups of the family ; orchards have been planted near the forest or in land that once was forest, and the birds, investigating, found that ripe fruit is just as good as honey, and when dead ripe is just as easily sucked up into the mouth. Every orchardist knows what damage a party of Leather-heads or Friar-birds can do in an orchard of ripe fruit.

Then there is the White-eye or Silver-eye, a dainty little bird closely allied to the honey-suckers, and usually considered a useful bird (in some places called the Blight-bird, for like the Blue-wren it comes flying through our gardens in little flocks, creeping through the bushes and picking off the aphid in large

quantities in the early part of the year); yet later on these birds can do quite a lot of damage in a fruit orchard among ripe fruit, and can clean out a ripe pear or persimmon when once they get an opening in the side. The bird-lover knows of a number of his feathered friends in this doubtful position. We have the pretty little Rosella parrot, a seed-eater all through the winter months, but capable of doing a lot of damage in an apple orchard when once he takes to fruit, and shot as a pest in many of our southern orchards. Quite a number of the green "keets" are the greatest enemies that the cherry-growers have in the north.

Yet again we have the Bee-bird (*Merops ornatus*), and the Wood-swallows (*Artamus*); they are purely insectivorous in their diet, and must kill an enormous number of insects, and as the wood-swallows often come south in the early summer to nest, just at the time when the grasshoppers are travelling in the same direction, they are friends of no small importance to the farmer. But let them come into the bee-keeper's country, and their fondness for honey-bees make them his bitterest enemies.

Returning to the difference, or change, in our fauna produced by systematic rabbit poisoning, the writer thinks a great many loose statements are made. In the first instance, it is not from the actual eating of the poisoned pollard baits that native birds are killed, but from feeding upon the dead bodies of the poisoned rabbits, and, therefore, it is among the larger carnivorous birds that the death-roll is greatest. Many of these destroy eggs and nestlings of birds quite as useful as themselves. One of the most deadly enemies of nestling birds, particularly of those birds that nest in holes in trees, is the large monitor lizard (the "gohanna" of the bushman), so common in all inland forest country. The poisoning of rabbits has caused the death of thousands of these iguanas, and while in the Brewarrina district I noted that wherever there were baits or dead rabbits, dead iguanas were to be found near every tank or dam.

When bringing in laws to protect our native fauna we must remember, when dealing with the larger birds and animals, that at one time before settlement the blacks and their dogs always acted as a corrective influence on the breeding of wild animals, and the great droughts that passed over the interior were a great check on over-population of forest and plain. It is only a few years ago that the Victorian Government made a strict close season for the larger kangaroos in the Gippsland forests, yet, in 1909, some of the farmers in the protected areas found their crops so badly damaged by the increasing numbers of kangaroos that they waited upon the Premier and asked that the close season be altered. If a protected bird or animal becomes a pest, owing to this protection, its numbers must be reduced. In the United States, under the game laws this is recognised, and permission to shoot in protected areas granted, the quantity of game per man being regulated by the State authorities and game wardens. In California and Texas, in certain

districts, each man of a shooting party can shoot three deer, but no more, in the season, while in some States a farmer can shoot animals and birds on his own land as pests, but not outside the boundaries of his farm.

In going through the works of the earlier naturalists one is often struck with the remarks they make on the early extinction of our larger birds and animals. Dr. George Bennett in his "Gatherings of a Naturalist in Australia," published in 1860, says: "We find in England many useful birds (designated by the ignorant as vermin) have been exterminated, and in consequence of the increase of destructive insects they have had to be reintroduced. Now the Australians ought to take a lesson from the experience of others; for under the present system of destruction many valuable species of that country will be swept away. It is requisite to preserve the indigenous birds which are now destroyed, not for food, but for mere wantonness, regardless of whether they are useful or obnoxious. In the settled parts of the colony, many of the more common tribes indigenous to the country are no longer seen, and the kangaroos and emu are fast sharing the same fate." Gould said: "I must content myself by praying that protection may be afforded to that noble bird the emu in order that it may not be extirpated from the continent as it nearly has been from Tasmania." Yet experience has since shown us that many of our birds and animals not only have held their own, but have increased, regardless of advancing civilisation, to such an extent as to become pests. In spite of all its enemies the emu requires very little protection to multiply beyond what was normal before the white man reached these shores. Yet the emu has no friends among the squatters. In Queensland especially, perhaps, this bird has been treated very badly and is denied the protection through breeding-time accorded to nearly all others.

Introduction of Foreign Animals and Birds.

The alteration of the balance of power in nature by the introduction of foreign animals and birds is worthy of careful consideration. The far-reaching complications that have arisen over the greater part of Australia through the abnormal increase and spread of the rabbit, and by the destruction of native animal life through the methods adopted by the landholders to destroy this pest, have already been touched upon. Poisoned baits are responsible for the death of some birds; but the poisoning of water in summer to kill the rabbits is much more deadly to bird life, and it is a method that should only be permitted under proper supervision by stock inspectors. The domestic cat is a very much more serious manace to bird life than most people imagine. Numbers of ownerless cats are roaming over our parks and gardens about Sydney, and as they have to steal or catch their food, they are responsible for the disappearance of hundreds of our most valuable insectivorous birds. In the country, cats wander away from the homesteads or shepherds' huts, and taking to the bush, revert to their natural hunting habits, and bring up families more predaceous than themselves.

During the height of the rabbit invasion in western New South Wales, some landholders liberated numbers of cats in their paddocks in the hope that they would multiply and help to check the rabbits, but the latter were so numerous, and easy to catch, that the cats that confined their attention to rabbits developed hair balls in their stomachs and died; only those that varied their diet with birds survived.

The introduction of the fox, and its rapid spread of late years right into the interior of Australia, was another destructive agent in the diminution of bird life. All the ground-nesting birds of the plains, such as plovers, bustards, ducks and quail, are at the mercy of the night-prowling fox, while in the forest the lyre-bird, scrub-turkey and many other birds are threatened with extinction.

Turning to the introduced birds we are faced with other serious problems. The ubiquitous sparrow follows the railway lines into the country and sets up in competition with our useful native birds. Before they were so numerous in England, house-martins were found in every village and kept down many insect pests, but the sparrow, taking possession of their nests and otherwise persecuting them, has driven them out of many of their old haunts during the last few years. The common starling is another bird that thrives and multiplies wherever it finds suitable surroundings; one has only to see the enormous flocks in New England and on the Liverpool Plains to understand how they have must have altered the conditions of native bird life. They, like the sparrow, follow the railway lines into the country, and I have seen them at Byrock and other western towns quite fitting into their new surroundings. Not only do they devour large quantities of the natural food supplies of our native birds, but they nest in hollow trees and interfere with the local birds. It is a well-known fact that in England they often raid dovecots and eat the pigeons' eggs. Both in size and cunning they are superior to the sparrow and more difficult to trap or shoot.

The time has gone by when stockowners considered every native bird or animal that ate grass or trampled the herbage, a pest and an enemy in competition with sheep and cattle, and that by destroying them as such they civilised the country. We have learnt much in the last decade, and in the rising generation are many young landowners who, profiting by the educational facilities won for them by their pioneer fathers, and a perhaps wider outlook, are interesting themselves in the fauna and flora of their native land and co-operating with nature lovers in their preservation. There are many Australian estates to-day where nobody is allowed to shoot or hunt, and these are virtually private sanctuaries; others have been actually dedicated with the approval of the State authorities. Many other landowners need only to have the facts brought under their notice to induce them to follow suit. The zoological and field naturalists' societies now include many country members, and each one becomes an agent for good in his own district. Surely there is room in this broad land for all of us—man, beast,

bird, and tiny bush ally ! I do not for a moment suggest that the man on the land is not entitled to protect his crops of field or garden, but there are thousands of square miles of forest, plain, swamp, lake, and mountain in Australia, where wild creatures do no harm, but add to the beauty of nature. It should be our aim to stop all wanton destruction in such places, but such an aim can only be achieved by so educating our people that they appreciate the value, the interest, and the beauty to be discovered in the little creatures of the fields.

The Classification Adopted in this Work.

In order that the descriptions of our birds in the following pages may be more convenient, a classification consisting of three main sections, according to the environment of the bird, has been adopted, as follows :—

Section I.—Birds of the Garden, Orchard, and Field.

Section II.—Birds of the Forests and Brushes.

Section III.—Birds of the Inland Plains, Swamps, Open Forests, and Scrubs.

Obviously these sections must overlap somewhat. For example, some birds found in the coastal forests of New South Wales may also be found in the suburban gardens of Sydney, or again others may be found equally at home in the box forests of the western plains. Where this is the case, the bird is described under one or other of the headings, and reference is made in the text to its range.

SECTION I.

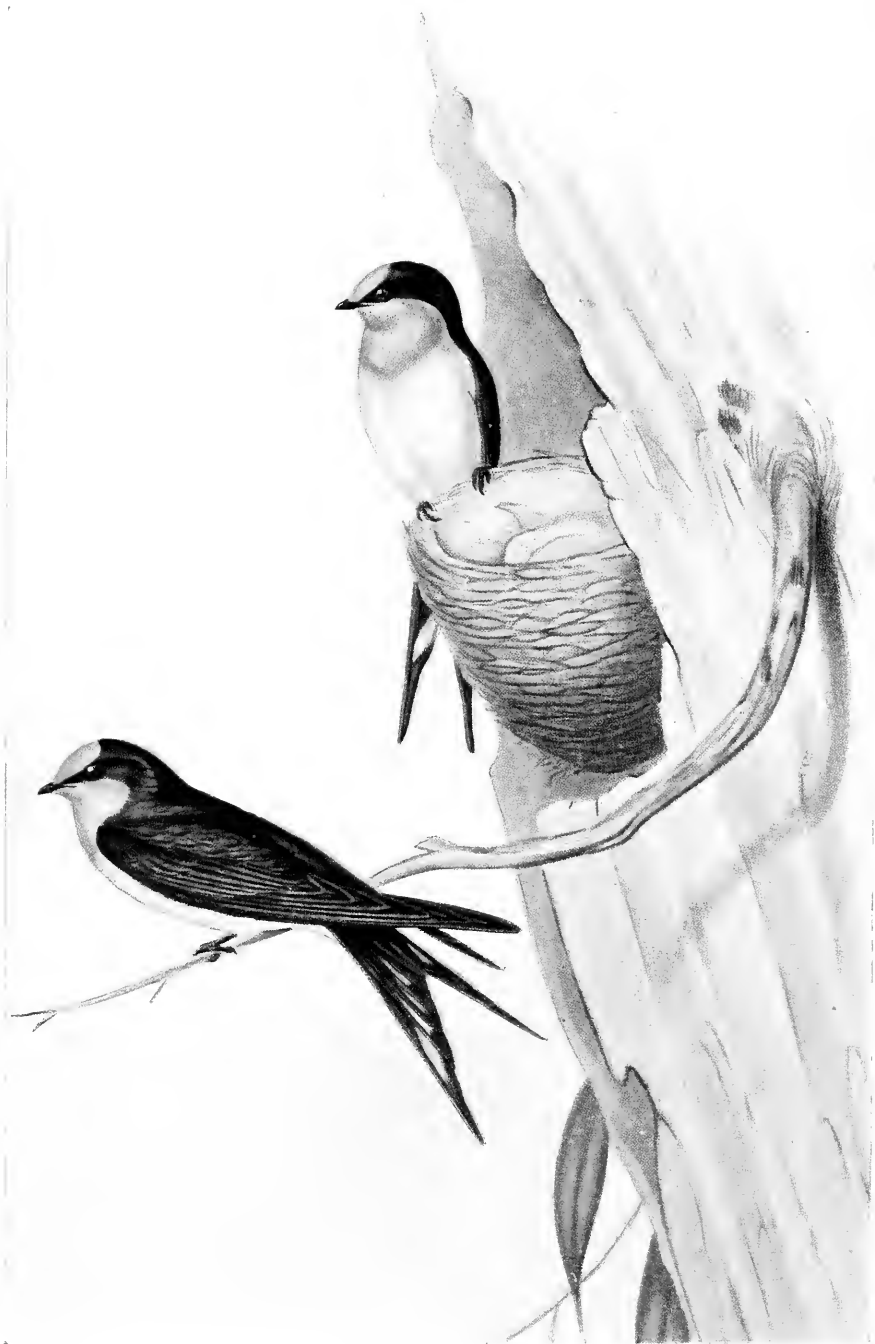
Birds of the Garden, Orchard and Field.

The birds included in this division may also be classed under the heading "semi-domesticated"; they come from the ranks of the second and sometimes even the third section. This section includes not only the birds of the the suburban gardens of Sydney and the orchards of the County of Cumberland, but those of gardens, orchards, and fields all over Australia. The description of a number of birds such as the Cobler's-awl or Spine-bill (*Acanthorhynchus tenuirostris*) and other honey-eaters that are garden visitants, is prohibited by exigencies of space.

The question of the value of the common introduced birds such as the sparrow is an open one. Gurney, in his work on the common sparrow, states that they destroy £770,000 worth of food annually in Great Britain, while Captain White has recently stated that they do an immense amount of good in devouring the seeds of weeds. The Sydney gardener certainly finds them a very destructive pest amongst his fruit and vegetables, eating far more than they save from the noxious insects they at other times devour. The starling, another garden bird, chiefly lives at the expense of the fowls in the suburban chicken yards: and the claims made by landowners who have been recklessly spreading them on the western sheep stations under the impression that they catch blowflies, are only bringing another useless omnivorous bird to compete for the food of our more useful native birds. The dainty introduced doves do no harm at present; but it would be quite possible for them to increase in such numbers as to become a seed pest. The common English Ring-dove is at times a very serious pest to the pea crops in Great Britain.

The birds dealt with under our first section are as follows:—

Welcome Swallow (<i>Hirundo neorena</i>).	Yellow-rumped Tit
Fairy Martin (<i>Petrochelidon ariel</i>).	(<i>Acanthiza chrysorrhoa</i>).
Willie-wagtail (<i>Rhipidura tricolor</i>).	White-browed Wood-swallow
Jacky-winter (<i>Microæca fuscina</i>).	(<i>Artamus superciliosus</i>).
Grinder (<i>Sisura inquieta</i>).	Masked Wood-swallow
Magpie-lark (<i>Grallina picata</i>).	(<i>Artamus personatus</i>).
Magpie (<i>Gymnorhina tibicen</i>).	Red-capped Robin (<i>Petroæca goodenorii</i>).
Silver-eye (<i>Zosterops œrulescens</i>).	Scarlet-breasted Robin (<i>Petroæca leggii</i>).
Ground Lark (<i>Anthus australis</i>).	Flame-breasted Robin
Bronze Cuckoo (<i>Chalcococcyx plajosus</i>).	(<i>Petroæca phœnicea</i>).
Fantailed Cuckoo	Miner or Soldier-bird
(<i>Cacomantis flabelliformis</i>).	(<i>Myzantha garrula</i>).
Blue Wren (<i>Malurus cyaneus</i>).	Laughing-jackass (<i>Dacelo gigas</i>).



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“WELCOME SWALLOW.”

Hirundo neoxena, Gould.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ FAIRY MARTIN.”

Petrochelidon ariel, Gould.

The Welcome Swallow (*Hirundo neoxena* Gould).

Gould's Handbook, vol. I, p. 107, No. 53; Leach's Bird Book, p. 120, No. 238.

The members of the swallow family all the world over have been studied on account of their semi-domestic habits, their numbers, their curious nesting habits, and their habit of regularly migrating from the cold lands at the approach of winter to follow the summer.

Following the rule of the European swallows, our birds migrate and travel from the northern parts of Australia to reach Tasmania about the end of September; after rearing two broods they leave that island for the mainland in March. I have noted them about this period in north-western Victoria, gathering together in great flocks and camping at night in the lignum swamps for some days before they started on their return northward.

In the northern parts of New South Wales and Queensland, though some of the swallows migrate, there are always a number that remain all through the year, as long as food supplies are plentiful. In the north and north-western districts the swallows are often nesting right up to the end of the year. They place their nests under iron roofs and low sheds, and when a heat wave comes along, with a hot wind and a shade temperature of over 100 deg., hundreds of young swallows die in the nests.

The bowl-shaped nest is composed of pellets of clay strengthened with bits of grass, and forms a solid mud nest which is lined with feathers, wool, hair, and other soft materials; it contains from three to five glossy, white eggs, speckled and spotted with reddish-brown and slate-grey, thickest upon the larger end.

These nests are placed in all kinds of curious situations; the reader is referred to Campbell's "Nests and Eggs of Australian Birds" for an account of the many places where they have been recorded. They are usually constructed against a wall or cliff; but, with the advance of civilisation, the birds have adapted themselves to their surroundings and now place them under bridges, along the rafters of woolsheds and stables, and under the shelter of the verandah of country and suburban houses. They give a certain amount of trouble to the housewife by the mess and litter they make. In the country it is often claimed that their presence brings snakes about, and it is not an uncommon thing to see strings and paper or empty bottles suspended along the underside of the homestead verandah to discourage the swallows. In spite of this, their cheerful, happy chirping notes, and their dainty ways as they rest on fence, clothes line, or telephone wires, endear them to everybody, and few persons would kill a swallow—"it would be unlucky," some people will tell you.

The immense value of the flocks of swallows from an insectivorous point of view, is hard to estimate, but they play a very important part in keeping down the swarms of mosquitos, gnats, and other pests, and therefore should be most carefully protected.

We have a second species of swallow, the White-backed Swallow (*Cheramonca leucostereum*), which is non-migratory and seldom goes in flocks of more than ten or twenty. It hawks for insects much higher in the air than the Welcome Swallow, though sometimes it flies with the latter. It also has very distinct nesting habits, drilling small holes into sandy banks, and excavating a small chamber at the end. This it lines with leaves and grass, before depositing its eggs.

The Fairy Martin (*Petrochelidon ariel* Gould).

Gould's Handbook, vol. I, p. 113, No. 56; Leach's Bird Book, p. 121, No. 241.

Like the Welcome Swallow, this beautiful little bird is migratory. It arrives in the south about August, rears two broods, and leaves for the north in February or March. A remarkable characteristic of this little martin is its habit of shunning the coast, and not nesting about the coastal towns. The nearest point to Sydney at which I have seen the nests of these birds is the old church at Richmond, which always has a fine community of nests. They are also plentiful about Maitland.

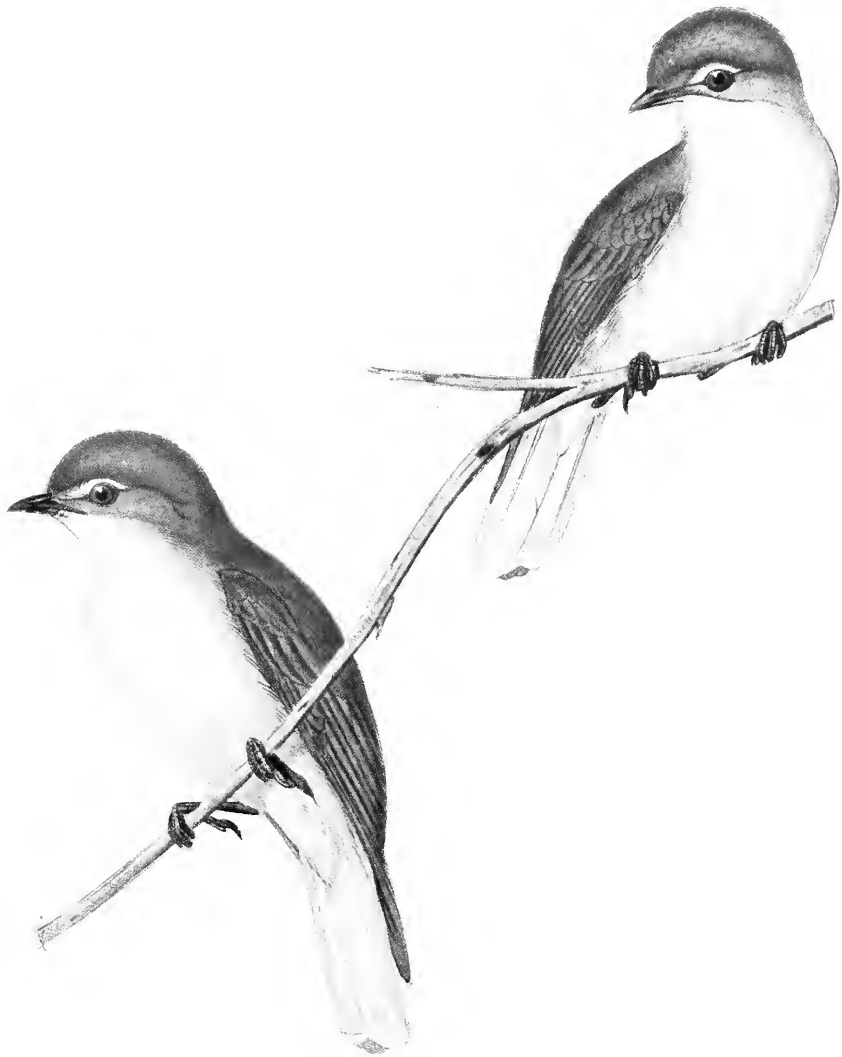
The nests are often packed so close together, under the shelter of overhanging rocks or the eaves of houses, that they lose their regular shape and are built into each other, but the regular spout-like neck always projects outward. On account of the shape of their nests the birds are often called Bottle-nest Swallows. Sometimes the nests are built in the cavities of hollow or decayed trees, or under the high river banks. It is remarkable what a large amount of clay is used by such a small bird to construct each nest. According to Gould, a number of birds often work together in building, some bringing the supplies of clay pellets, others receiving them and moulding the nest. The nest is deeply lined with feathers and other soft material, and contains four or five eggs—some pure-white, and others spotted with red. The nests of this bird often contain a small circular or oval flattened tick, related to the fowl tick, *Argus lagenoplastes*.

The Tree Swallow, which Gould placed in the genus *Hylchelidon*, is now placed in the same genus as the Fairy Martin, and known as *Petrochelidon nigricans*. It is a very common visitor as far south as Hobart in the summer months; it "nests" in holes in trees, making actually no nest, but placing its eggs on the soft decayed wood.

The Jacky-winter (*Micræca fascians* Latham).

Gould's Handbook, vol. I, p. 258, No. 149; Leach's Bird Book, p. 121, No. 242.

This popular name sticks to this little bird, although his more accurate designation would be the Brown Flycatcher. He is one of the most active little flycatchers, darting from a twig or post to snap up any small moth, beetle, or other insect flying carelessly by, or picking up some small creature incautiously showing itself on the ground. His purpose accomplished, he flies



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“JACKY WINTER.”

MICRECA FASCINANS, *Lath.*



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“SCISSORS GRINDER.”

SISURA INQUIETA, *Lath.*

back chattering to his resting place, frequently flirting his tail backwards and forwards to show the outer white feathers that contrast with his uniform, dull-brown tints.

This little bird has a wide range over the greater portion of New South Wales, Victoria, South Australia, and Queensland. It makes a small, shallow nest of fine grass, matted together with spiders' web, and ornamented with bits of bark and lichen. The nest is usually placed at the end of a horizontal branch, and contains two (rarely three) greyish-blue eggs, blotched with reddish-brown and purple. The note of this bird, particularly when busy or excited, is translated by our school children as "Peter, Peter," so that he is sometimes called after his call note, instead of Jacky-winter. Some half-dozen other common names indicate his popularity with the children.

The Grinder or Restless Flycatcher (*Sisura inquieta*, Latham).

Gould's Handbook, vol. I, p. 246, No. 141; Leach's Bird Book, p. 125, No. 259.

This busy and fussy flycatcher might at first sight be taken for the Willie-wagtail, but observation of the two together would soon make plain a difference. The Grinder is more slender in form, with the whole of the under surface right to the beak, white, while the throat of the Willie-wagtail is black; the whole of the former's upper surface is, too, a shining glossy black, and when hovering and emitting its harsh grinding note it erects the feathers on its head into a regular crest. The female is not so richly tinted, her wings and sides being of a rusty-brown.

About a house, these birds often hover for some time in front of a window, uttering their harsh cry. At a station homestead a lady told me that if she left her bedroom window open, one used to come regularly into the room and hover in front of the looking-glass on the dressing table, chattering away at his own reflection. This species has a wide range over the greater part of Australia with the exception of the tropical north, and frequents all classes of country; it is a very active hunter of small insects, catching its food on the ground, or hovering in the air with a rapid motion of the wings like one of our wind-hover hawks. Specimens shot in the Trangie district in the early summer were found to have been feeding upon blow-flies belonging to the yellow and green varieties. Their stomachs were packed with the remains.

The Grinder's usual note is a loud harsh call (from which it gets its popular name of Grinder or Scissors-grinder), but it sometimes emits a loud, clear whistle. When hovering it comes down very quickly to the ground to pick up any stray insect. Gilbert recorded it as plentiful in Western Australia, where it frequented the mangroves and scrubs, making, while feeding on the ground, a call like the croak of a frog. It builds a small cup-shaped nest composed of stringy-bark fibre and cobwebs mixed together, and closely lined. The nest contains a pair of bluish-white eggs, blotched and spotted all over with olive and greyish-brown.

The Willie-wagtail (*Rhipidura tricolor* Vieillot).

Gould's Handbook, vol. I, p. 238, No. 134; Leach's Bird Book, p. 125, No. 256.

While this bird is preening himself in the morning sun his restless black tail is constantly on the wag; hence his popular name of Willie-wagtail. He is not, however, a true wagtail; and, though he somewhat resembles the pied-wagtails of Europe in outward appearance and coloration, he is properly a flycatcher, flirting his tail from side to side instead of wagging up and down—the orthodox direction. In the inland districts he is well-known under the name of Shepherd's Companion, because there are few shepherd's butts in the west where you will not find a pair of these birds. There are always a few about every home station, and they are regular visitors in our suburban gardens and parks. Willie-wagtail is one of the few restless, day-flying birds that talks all through the night, and his chattering note, which the bush children translate as "sweet pretty creature," adds another popular name to this list. He is properly known as the Black-and-white Fantail.

This little bird has a wide range over the whole of Australia, extending into New Guinea, Aru Islands, Solomon Islands, and New Ireland. He is one of our most active insectivorous birds, following sheep about when feeding, and snapping up the moths, flies, and other small insects that the flock disturbs, hopping on and off the backs of horses and cattle (which he uses as stations of observation for moving insects) and picking the parasites and flies that infest the animals' skin. In the garden he is just as busy; while he is also one of the few native birds that I have observed hunting round dead animals for blow-flies. Like many of their group, these birds are dainty artificers, constructing a beautiful, soft, cup-shaped nest composed of grass, bits of bark, wool, hair, and any other suitable material they come across. This mass is delicately woven into a soft-felted mass, and bound all over and around with spiders' web, so that when the labours of the builders are finished the nest is so neatly attached to its limb that it has no angles or sharp outlines. Indeed, it blends into the surroundings so completely that the casual observer would scarcely suspect it was a nest, and would pass it quite closely under the impression that it was simply a natural excrescence on the tree's limb. The nest is very often placed on a dead limb standing out from a living tree, frequently so low that one can see the mother snuggled down with the tip of her tail and her beak extending beyond the rim of the nest.

The eggs are four in number, oval, and broadly rounded at one end; they are of dull yellowish-white, marked and spotted with an olive and grey band round the upper half. Campbell confirms the statement that the Willie-wagtail sometimes rears three broods of nestlings in a season—so they certainly ought to be considered "good Australians."

For their size the birds are good fighters, and will drive larger ones away from their nests. On a lawn in the Botanic Gardens last summer I watched one attack a stray cat that crawled out from some bushes to



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“WILLIE WAGTAIL.”

RHIPIDURA TRICOLOR. *Vieill.*



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ PEE-WEE.”

Grallina picata, Lath.

get some remnants of a lunch on the grass. The little bird flew over him chattering all the time, and finally drove him back into the shelter of the bushes.

The *Victorian Naturalist* has several records of the Pallid Cuckoo placing her egg in the nest of this bird, and using her as a foster-mother. Dr. Bennett, in his "Gatherings of a Naturalist in Australasia" (p. 208), gives a wood-cut showing a Fantailed Flycatcher feeding a young Bronze Cuckoo. He says: "It was ludicrous to observe the large and apparently well-fed bird filling up with its corpulent body the entire nest, receiving daily the sustenance intended for several young flycatchers; and we could imagine underneath the nest the skeletons of the former tenants sacrificed to the rearing of this parasitical cuckoo."

The Magpie-lark (*Grallina picata* Latham).

Gould's Handbook, vol. I, page 118, No. 123; Leach's Bird Book, p. 148, No. 314.

There is not a more dainty or a more fearless grass-hunting bird than the Magpie-lark. It is cosmopolitan in its range. All over Australia, wherever fresh water is found and there is timber, you will hear the plaintive call of the Pied Grallina or Magpie-lark—a bird note that has led to its gaining also the name of Pee-weet, which we hope, because of its application to a well-known European sea-shore bird, will be dropped for the more original name.

These birds are not uncommonly seen in our suburban gardens hunting over the lawns for grass insects, and if it were not for that curse of bird life, the domestic cat, they would soon increase in numbers. The flight of the Magpie-lark is undulating, and as she settles down on roof or grass she sends forth her clear note "pee-weet," repeated several times. Coming to a water-hole to drink or hunt for insects she has a dainty mincing strut which is very characteristic. At Warrah Experimental Station I was interested in watching a Magpie-lark that spends all its spare time resting on a spout and pecking at the office window. The manager said that this had been going on for three years; and that, viewed from the outside, the bird could see its reflection in the sheet of glass—evidently the attraction.

There seems to be no valid reason why some birds, delicate and graceful, should adopt the habit of plasterers, and make solid large nests of mud, such as those of the swallows, martins, Black-magpies, and our Magpie-lark. The nest is generally built on a stout stem of a gum-tree adjacent to the water, well up from the ground and out of reach of enemies; but she often builds some distance away from water, and I once saw a nest on an ornamental gum-tree on the main street of Moree, in quite an exposed position. The nest is shaped like a round basin; it has a solid base and well-built sides, and is lined inside with grass and feathers on which are laid three, four, or sometimes five pyriform pearly-white eggs marked with a mottled

band of purple, red, and pink of various shades around the upper half. According to Campbell, the Pallid Cuckoo sometimes adopts the Magpie-lark as a mother for her baby and places her egg in the nest. When hawks and Butcher-birds were plentiful in the Murray swamps of north-western Victoria, a very large percentage of the young nestlings of the Magpie-larks were destroyed by these carnivorous birds; while the big lizards ("gohannas") accounted for many more. With the passing of these enemies, and with the adaptation of these birds to their surroundings, their numbers are increasing in all suitable localities. When the great wheat stacks were built at White Bay and Enfield, it was remarkable how many Magpie-larks were attracted to these localities, the swarms of insects breeding from the wheat being the attraction. The deserted nests of these birds are often occupied later in the season, and after they have reared their broods, by the wood-swallows, *Graucalus*, and other birds.

The Magpie-lark, though it will sometimes pick up bits of maize and grain in the chicken yard, is almost entirely insectivorous in its food. Under normal conditions, ants, small ground beetles, and moth larvæ form a considerable portion of its diet. When the locust plagues appear, and the young are in the nest, the birds have a busy time. I once watched a pair of Magpie-larks bring forty well-grown grasshoppers to their lusty babies in half an hour. This bird is also recorded to be a formidable enemy of the fresh-water snail that is the intermediate host of the liver fluke of sheep, and for this work alone it should have the protection of all stockowners. The males and females can be easily distinguished from each other by the white face of the female and the black face of her mate.

The Magpie (*Gymnorhina tibicen*, Latham).

Gould's Handbook, vol. I, p. 175, No. 92; Leach's Bird Book, p. 149, No. 316.

According to ornithologists there are four distinct species of magpies; according to the book they are "Piping Crow-shrikes," yet the man in the bush knows them all as magpies. There is one species restricted to Tasmania, another to south-western Australia, and two are found in the eastern States. Campbell considers that the White-backed Magpie (*Gymnorhina leucolata* Grey) is more a coastal bird in South Australia and Victoria, and that it "tapers out" in the inland districts, where the Black-backed Magpie is the most common. Our common species under review ranges over Victoria, South Australia, New South Wales, and Queensland, while the white-backed species does not extend into Queensland.

The magpies increase in number in areas where there are cultivation paddocks and the land is tilled. Inland, they are scantily scattered over the land in pairs or small families along the rivers and about the homesteads. In spite of the statement that rabbit-poisoning has killed out our magpies, let one go through the New England country when the ploughmen are at work and he will see dozens of them hunting over the freshly turned soil;



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“MAGPIE.”

Gymnorhina tibicen, Lath.

indeed, he will see them in suitable hunting grounds in many districts—such as, for instance, the Liverpool Plains. The magpie is one of the most important of our birds as an insect hunter and destroyer, hunting over paddocks (where it turns over cowdung and sticks to get at the hidden insects) and equally busy in the forests and farms. It is also a valuable ally in destroying mice. During the mice plague in 1917–18 large numbers of these birds congregated in the vicinity of the wheat stacks in the Riverina. At Lockhart I counted over a hundred, and when I turned over bags and a swarm of sheltering mice scattered over the yards the magpies often flew along and snapped up a mouse as he was running. At night the magpie rests in the timber, and pours forth at day-break its morning hymn “all’s well with the world.” There are few birds in the world that can send forth such a rich carol as a family of magpies on a summer morning in the Australian forests, or at night a pleasanter even-song.

The semi-domesticated magpie that comes round the homestead garden, often contracts bad habits; it pulls up plants and damages fruit, and sometimes, when food is short, it goes into the cultivation paddock and pulls up the green shoots peeping through the soil to eat the soft grain at the base. In such cases these roguish magpies have to be driven away and—if too persistent,—shot.

The magpie constructs an open round bowl-shaped nest composed of sticks, bark, and twigs, lined inside with finer material, such as hair and feathers. It is generally placed well out in the fork of a stout branch of a gum-tree. The clutch of eggs varies from three to five in number; the eggs are usually of a blue or greenish tint, thickly mottled or marbled with pink or brownish-red, but they are remarkable for their many changes in ground colour and markings—very often in the same nest.

There are no more interesting birds for pets than a pair of young magpies and none more easily fed and reared when plenty of fresh meat is available. When domesticated, they will soon learn to follow one round, and with their bright eyes on the watch they will snap up every grub or earthworm turned up in the garden soil. In the early morning it is interesting to watch one of these birds walking along the walls and picking off all stray flies and moths before the sun has roused them from their semi-torpid condition. During a visit to the New Hebrides, I was interested in noting how easy it is to alter the balance of power in insect or bird life by the introduction of a bird useful in its native country, into a new land under altered conditions of life. At Ringdove Bay in the New Hebrides the planters had imported some magpies from Sydney which roamed about the compound and lived almost exclusively upon the small insect-eating lizards so abundant in the islands, and which live among the foliage of the scrub trees. In destroying these lizards they were of course doing much more harm than good.

When nesting, the old magpies are often very savage, and will fly down and snap savagely over one's head to drive him away from the vicinity of their nests. In captivity the dispositions of magpies are markedly dissimilar; one may be quiet and friendly and will come squawking up in a very amicable manner, while another delights in waylaying the children and attacking their bare legs with its powerful sharp beak. A magpie under domestication learns many curious habits—some good and some bad. After watching the gardeners planting out seedlings he will often follow around and pull them them up through a spirit of mischievous curiosity. One magpie I owned imitated the cackling of a laying hen; it used to crawl under a hedge close to the fowl-house, and after cackling in a most perfect imitation of an old hen, would creep away when the owner came to look for the egg, as if he thoroughly enjoyed the joke. Some learn to whistle tunes, and others can talk with a more or less limited vocabulary; but in captivity one never hears the glorious trills and piping flute-like notes of the free magpie.

The Silver-eye (*Zosterops caeruleescens* Latham).

Gould's Handbook, vol. I, p. 587, No. 360; Leach's Bird Book, p. 155, No. 334.

These quaint little birds are well known in our suburban gardens, and might almost be considered semi-domesticated, they are so tame and fearless when hunting through the rose bushes and shrubs for aphides, small moths, and other soft-bodied insects. They are popularly known as Silver-eyes or White-eyes, on account of the curious ring of small white feathers round the eye, which gives them a rather comical but characteristic appearance. The Sydney schoolboy, who often clips his words, is content to call them just "Sivies." This species has a wide range around the Australian coast from South Australia to Queensland, but, though occasionally recorded from inland districts, it is only a stray visitor over the western side of the mountains. I have seen them in Bendigo, Victoria, and they have been noted as far north-west as the Murray. They have a wide range over Tasmania, and are established in New Zealand, where they were first noticed in 1856. There is some question as to whether they are indigenous, or emigrants from Australia, but as they are also common in Fiji, New Caledonia, and the New Hebrides, they may be natives of all these islands.

A second species, *Zosterops gouldi*, which takes the place of the species common in Western Australia, is known as the Grape-bird or Fig-bird. Though an insectivorous bird all through the winter months and early summer when insect pests are at their worst, the Silver-eye, like a number of other honey-suckers belonging to the family *Meliphagidæ*, has adapted its habits to its surroundings, and finds its curious brush-tipped tongue (which should be used for brushing up the honey on the flowers of the honey-suckles and other native flowering shrubs) admirably adapted, in conjunction with its sharp-pointed beak, for sucking up the juices of grapes, persimmons, figs, and other dead-ripe fruit. Though sometimes spoken of as the "blight bird," on



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"THE WHITE EYE OR SILVER EYE."
Zosterops caerulecens.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“GROUND LARK.”

ANTHUS AUSTRALIS, Vig. and Horsf.

account of its aphid-eating habits, it is also well known as a pest in summer, when, gathered together in little flocks of half a dozen or more, it appears among our grape-vines.

One of my earliest recollections of bird life is, when a very small boy, seeing my father, in an orchard near Melbourne, catch a Silver-eye in a large ripe pear, which it had with its friends nearly hollowed out on the tree.

The Silver-eye is one of the smallest of the honey-eaters, and is of a general olive-green colour, the back tinted with dark grey and the under surface lighter coloured; it is short and somewhat thick-set in form, and has a short whistle-like cry, by which its presence can be easily located, when flitting through the bushes. It forms a rounded cup-shaped nest, composed of grass, wool, and such-like material in any low bush, in which it lays three delicate pale-blue eggs, and it is not uncommon to find the speckled egg of the cuckoo also in the nest.

The Silver-eye must be included in any list of insectivorous birds, on account of the valuable work it does in destroying countless numbers of minute insect pests, but at the same time we must allow that in a trellis of unsheltered grape-vines he is a cunning little thief, and can do a considerable amount of damage.

The Ground Lark (*Anthus australis* Vig. and Horsf.)

Gould's Handbook, vol. I, p. 392, No. 240; Leach's Bird Book, p. 176, No. 370.

This common, and active little brown bird is frequently seen flying up from the roadside, running over the open grass lands, taking short flights or resting in the shade of a tussock of grass. If disturbed when on the nest, it slips away through the grass, pretending it has a damaged wing or leg, and goes through all kinds of tricks to lead the intruder away from its home. The nest is a well-built, circular, cup-shaped structure comprised of dead grass, lined with hair or feathers, placed in a depression in the ground among the grass. The clutch consists of three or four greyish or stone-coloured eggs, spotted and splashed with brown. The nest and eggs match and blend with the surroundings so well that, unless you stumble on one accidentally before the bird has time to get away, you are not likely to find the ground-larks at home.

Though spending most of her time on the ground, hunting for all kinds of ground insects such as beetles, moth larvæ, ants, and grubs, the Ground Lark has the habit of frequently flying up in the air, trilling out her delicate lark-like notes, both as she is rising and as she floats in the air. Though of a uniform plain, dull-brown colour, her plumage is admirably adapted for protective coloration against the many enemies that fly above all ground-dwelling birds. Her friendly, fearless habits of running along only a few yards away will always make her a popular and noticeable bird with our bush lovers.

The Ground Lark is sometimes called the Australian Pipit. It ranges all over Australia and Tasmania.

The Bronze Cuckoo [*Chalcococcyx (Lamprococcyx) plagosus*].

Gould's Handbook, vol. I, p. 623, No. 383; Leach's Bird Book, p. 111, No. 235.

Australia has a number of species of cuckoo in her bird fauna, but most of them are shy, retiring birds that are seldom noticed by the casual observer.

This pretty little cuckoo is one of the best known of the family, from its habit of coming into our gardens and orchards looking for insects. It is a great favourite with vine-growers, because it is one of the very few birds that will eat the vine-moth caterpillar (*Agarista glyeine*), which often does so much damage to the foliage and young grapes in the early part of the season.

It is not uncommon about the suburban gardens near Sydney, but is a quiet, shy bird, flitting about among the vines and trees hunting for insects, seldom when feeding giving its gentle whistle-like call note. Wheelwright, author of the "Bush Wanderings of a Naturalist," published in 1861, gives many notes on the birds in Victoria, and says: "The Bronze Cuckoos were very common in the honeysuckle scrub; they have a very loud cry for their size, resembling that of the English wryneck." The female has the true cuckoo instinct of finding a foster-mother for her offspring, and, laying aside all motherly feelings, hunts round until she finds the nest of either the little Blue Wren or the Silver-eye in which she places her olive-green eggs, and flies away with no family cares to worry her.

Like many of the other cuckoos, however, she has a large list of other small birds that she favours with her eggs. Campbell says, "She usually chooses the covered-in nests of the *Acanthizae* (tits) tribe, but other species of builders of dome-shaped or secluded nests are chosen," and he gives a list of twenty-seven small birds, of various families, in the nests of which this cuckoo's eggs have been recorded.

In this bird the scientific, as well as the popular, name is well chosen, as the generic name is composed of two Greek words (*Lampro* and *coccyx*), the first meaning shining and the second a cuckoo; it has been recently placed in the allied genus *Chalcococcyx*, but is better known under the old name.

In the Bronze Cuckoo we have a very friendly and useful bird in our gardens and orchards, but its value is discounted to a great extent by the fact that it is a parasite in the nests of so many other useful little birds.

The Fantailed Cuckoo (*Cacomantis flabelliformis* Latham).

Gould's Handbook, vol. II, p. 568, No. 451; Leach's Bird Book, p. 109, No. 230.

This appears to have been one of the first Australian cuckoos to attract the attention of the early settlers in the bush. It was called the Lesser Cuckoo, to distinguish it from the Pallid Cuckoo (*Cuculus pallidus*), which was known as the Greater Cuckoo. It must also have been a common bird known to collectors, for it had been described under eight different scientific names at



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

" THE BRONZE CUCKOO."

Chalcococcyx (Lamprococcyx) plagosus.

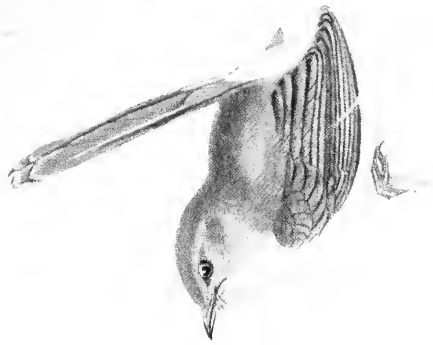
Young, male and female.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“FAN-TAILED CUCKOO.”

Cacomantis flabelliformis, Latham.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"BLUE WREN."
MALURUS AUSTRALIS, *North.*

the time when Gould published his handbook. This cuckoo is a migratory species in the southern portion of Australia; it arrives in Tasmania in September, returning to the mainland in the following January. Like all the members of the group, it is a solitary bird of a retiring nature. It does not come much into the open country, and if it were not for its loud call-note it would easily escape observation.

Campbell gives a list of eighteen different birds in whose nests the white freckled egg of this cuckoo has been collected, and they include tits, wrens, honey-eaters, robins, wood-swallows, and rock-warblers, most of which form domed or covered nests. Two different species of cuckoos have been recorded as laying their eggs in the same tit's nest. For a long time the naturalists were unable to decide how the cuckoo managed to lay her egg in such a small nest as that which she usually selected. Careful field observations have proved that after laying her egg upon the grass, the cuckoo watches her opportunity when the mother bird leaves her nest, to cuddle her egg up between the bill and the breast, and flying upward push it into the freshly built nest. Why such birds acquired these lazy parasitic habits it is very hard to understand, especially as we have in the Coucal a closely related bird that builds a large nest of her own and rears her own nestlings. Among the remarkable cuckoos is the Channel-bill (*Scythrops nova-hollandiæ*), a large bird ranging all over Australia to Tasmania, and also found in New Guinea. She adopts the crow, and some of the larger shrikes, as foster-mothers for her offspring.

The Blue Wren (*Malurus cyaneus* Ellis).

Gould's Handbook, vol. I, p. 317, No. 185; Leach's Bird Book, p. 144, No. 30.

Though this dainty little bird has been long known under the name of *Malurus cyaneus*, in Leach's book the specific name of *Cyanochlamys* is attached to it. This seems a great pity, for Leach's book was primarily intended for bird lovers and school children, and its author might have used the old name of *Cyaneus*, even if not quite the latest in modern classification.

It was figured and described in White's "Voyage to New South Wales" as the Superb-warbler. This name still sticks to it, though it has been gradually superseded by the more popular one of Blue Wren, which I hope in time to see universally adopted by the children of Australia, instead of Cocktail—a name by which it is often known in New South Wales, but which has nothing to recommend it in comparison with our typical and euphonious preference. Dr. Bennett, in his "Gatherings of a Naturalist in Australia" (1860), calls it the Purple-warbler, but I have not seen this most unsuitable name repeated by modern writers. It is certainly not a purple wren.

The wrens are well represented in Australia by sixteen species. They comprise some of our most beautiful little birds, usually moving about in small communities, and being found in all classes of country, from our

suburban gardens to the far western scrubs ; indeed, wherever there is water, one or more species may be found. The best place to study the Blue Wren is in a sheltered suburban garden ; here a day seldom passes without a little family flitting and creeping along through the trellis and shrubs, and hopping over the lawns in search of tiny moths, aphids, scale, and the many forms of soft-bodied insects that infest our garden plants. The difference in colour of the brilliant blue and black adult cock bird, the dull-coloured female, and the young birds, is well defined. For a short time, when he is moulting, the cock bird loses much of his showy appearance, but it is regained with his new coat. It is a well-established fact that the cock Blue Wren is a feathered mormon, and entertains a retinue of wives.

The nest of the Blue Wren is dome-shaped, with a small rounded hole on its side. It is usually composed of grass lined with hair, bits of wool, or feathers, and is placed in a low bush or tuft of grass. The eggs, usually four in number, are a delicate pink, and are banded on the larger end with reddish-brown spots.

The Yellow-rumped Tit (*Acanthiza chrysorrhoa*).

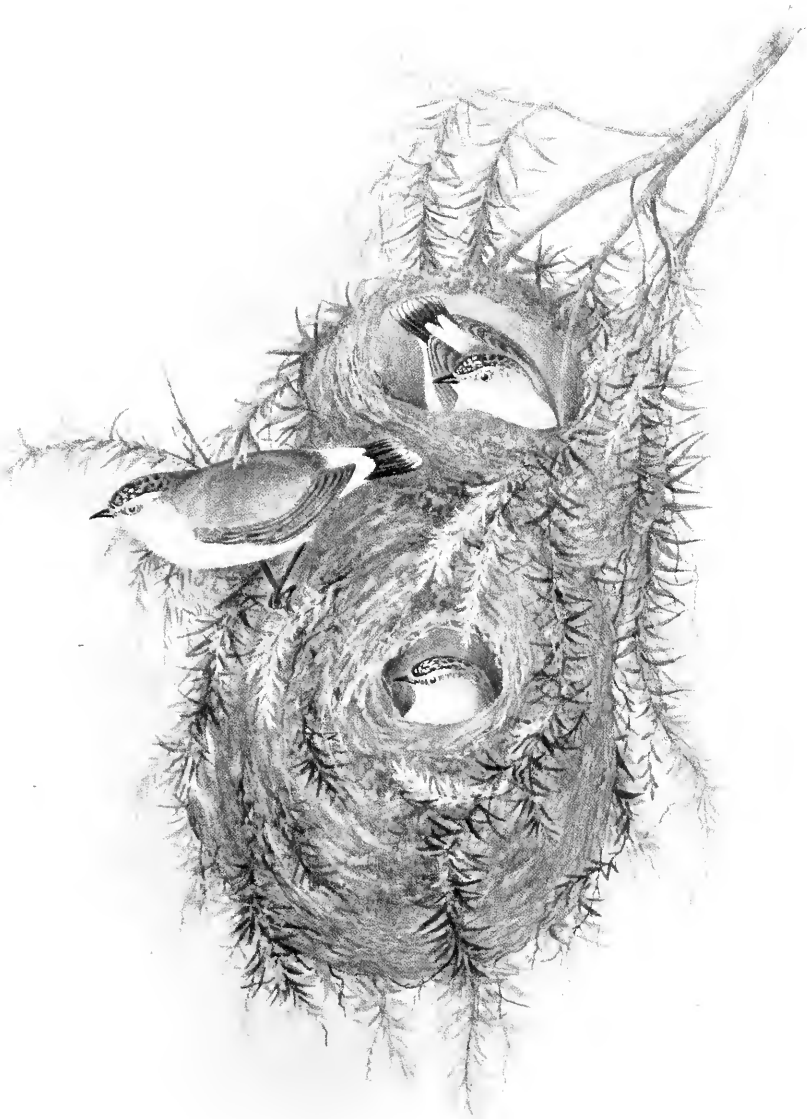
Gould's Handbook, vol. I, p. 374, No. 229 ; Leach's Bird Book, p. 143, No. 293.

The Yellow-rumped Tit is a typical representative of the genus *Acanthiza*, which contains twelve species peculiar to Australia. It is known as the Tomtit to many school children, but in Tasmania is popularly known as the Yellow-tail. It ranges over the greater part of Australia, usually going in small flocks, flying low, and giving a low chirping cry.

This little bird has the remarkable habit of constructing a double house, for on the top of its somewhat loosely woven oval structure it builds a circular rimmed dish like a second shallow nest. Naturalists have never given any satisfactory reason for this peculiar departure from the usual oval nest, but it has been suggested that it is a resting-place for the male bird, and perhaps for the mother bird when off duty.

The eggs, usually four in number, are somewhat elongate, pure-white, but sometimes slightly spotted. Campbell and other observers have recorded that these little birds have the curious habit of frequently building their nests beneath the larger nests of magpies, crows, and hawks. The little Bronze Cuckoo often imposes her eggs upon the Tomtit, and selects her comfortable nest as the home for her parasitic fledgling. These dainty little birds, though insignificant in size, are plentiful in gardens where they are not molested. As they are always at work, they must save a very large number of flowering plants from the smaller plant-infesting insects.

This is the same bird as that referred to as the "Yellow-rumped Thornbill" (*Geobasileus chrysorrhous*) in the list of birds protected in New South Wales, referred to on page 29 of the *Agricultural Gazette*, January, 1915.

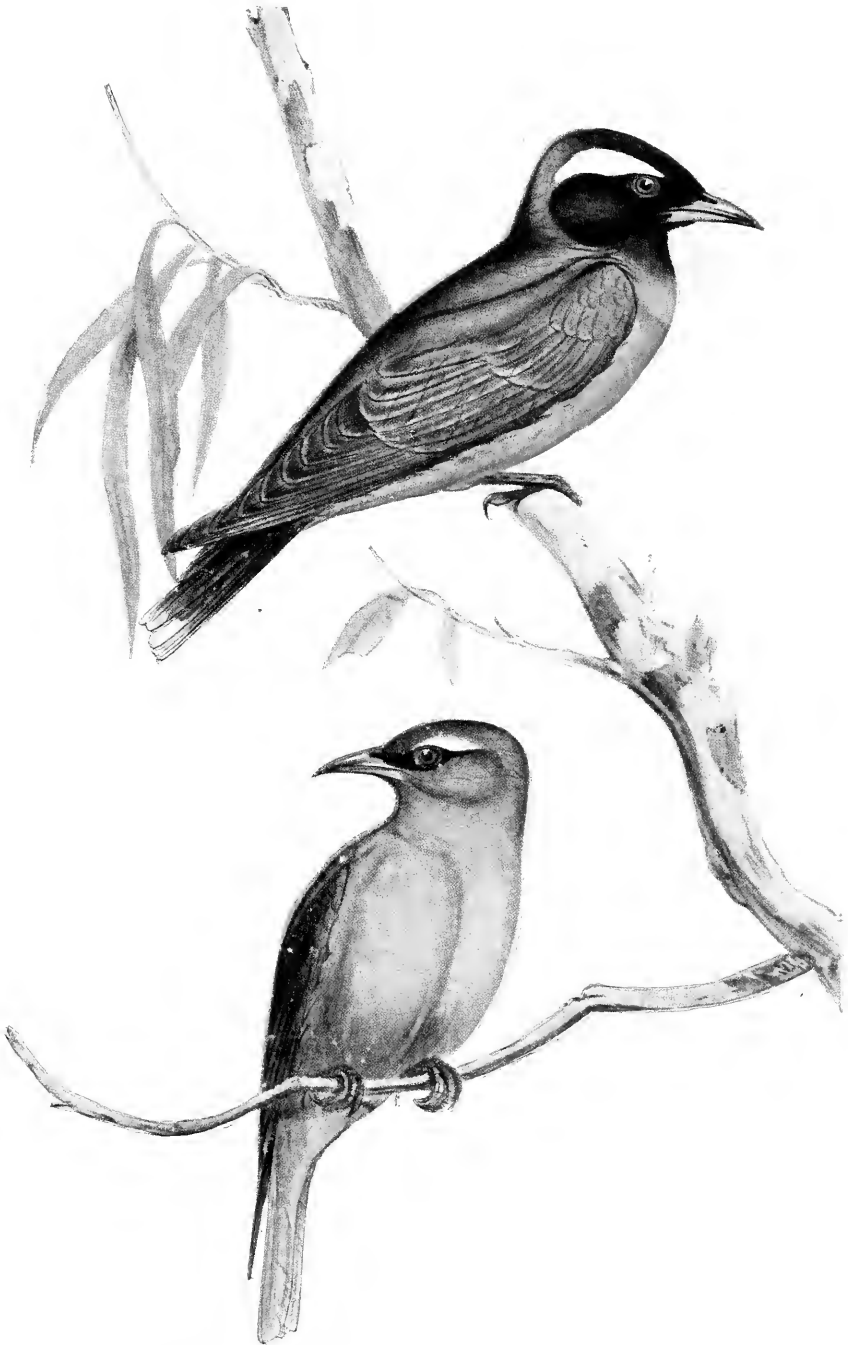


About one-half natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

"YELLOW-RUMPED TIT."

Acanthiza chrysorrhoa.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"WHITE-BROWED WOOD SWALLOW."
Artamus superciliosus, Gould.

White-browed Wood-swallow (*Artamus superciliosus* Gould).

Gould's Handbook, vol. I, p. 152, No. 79 ; Leach's Bird Book, p. 147, No. 311.

The early naturalists considered that the wood-swallows were related to the thrushes, and Latham called our commonest species the Sordid-thrush. Jerdon, studying the Indian forms, characterised them as swallow-shrikes ; but the popular name, wood-swallow, adopted by Gould, seems to define them more accurately for the bush naturalist, and has been universally adopted in Australia. These birds are also known locally as Blue-martins or Blue-birds, though they are not related to either the swallow or the martin, and only resemble them in their active gregarious habits, often congregating in immense flocks before they separate to nest. The home of the members of the genus *Artamus* is India, the Malay Archipelago, Australia, and the Pacific Islands. Nine species are described from Australia ; some of these remain on the continent all the year round, while others are migratory in their habits, crossing over to New Guinea before the winter sets in, and returning to us at the fall of the year. On this account this and other species are also popularly known as Summer-birds, coming southward into New South Wales and Victoria, where they settle down and nest in November and December.

The species now described is one of the most elegant in form and coloration of all the family. It is closely related to the more common wood-swallow, *Artamus sordidus* ; the latter is also about the size of a sparrow, but the whole of the plumage of its body is grey, it lacks the white brow and rich chestnut breast of the former, and its wings and tail are bluish-black. Though so distinctive in coloration and markings, naturalists consider these two species closely allied, for they often mingle together in flocks and nest in the same trees, while there are several authentic records of them mating together.

As insect destroyers, the wood-swallows play a very important part in keeping in check (and in some cases completely destroying) the armies of cut-worms and swarms of locusts (grasshoppers) that so often infest crops and grass in early summer. In the spring of 1919 in the Hunter River district, numbers of locusts swarmed out in the paddocks, but thousands of wood-swallows arrived from the north and attacked the locusts while in the hopper stage so vigorously that scarcely an insect escaped to reach the perfect flying stage. I visited the district at the end of November, 1919, and found the birds nesting all round the vineyards in the low scrub, each nest with its complement of well-feathered nestlings.

Both the White-browed and the Sordid Wood-swallows range all over eastern, southern, and north-western Australia ; and though migratory as a general rule, odd specimens may be found well south all the year round. They are not very particular about their nests, and often take possession of the deserted nests of other birds such as the Magpie-lark, re-lining their

second-hand homes with fresh feathers and grass. Their own nests are loosely constructed with small twigs, fibrous roots and grass, and are placed in a very haphazard way in the fork of a low bush or gum sapling. The eggs are white, spotted and marked with brown, and vary from two to six in number.

Masked Wood-swallow (*Artamus personatus*).

Gould's Handbook, vol. I, p. 150, No. 78 ; Leach's Bird Book, p. 147, No. 312.

The Masked Wood-swallow is recorded from all parts of Australia, except the far west and the Northern Territory ; it usually appears in small flocks towards the early part of October to nest in New South Wales. It is a very active bird and is usually seen in flocks that are small compared with those of the last-described species, darting in and out among the trees, with the flight of a swallow and the squeaky chirp of a sparrow. At night, when roosting on a bare branch, these birds have the curious habit possessed by some of the finches, of resting close together in a row, their black throats and light-coloured bodies forming a marked contrast in the bunch.

The nest of this wood-swallow is a very poorly constructed affair, chiefly composed of grass, loosely woven together, stuck in the fork of a branch, with hardly any attempt at concealment. The clutch consists of from two to three white eggs, spotted and splashed with brown. An insectivorous bird, the Masked Wood-swallow plays a useful part in the garden, paddock, and the forest. Bee-farmers sometimes complain that wood-swallows—and this species in particular—are finding out that the domestic honey-bees are good food and are easily caught ; and it is easily understood how much damage can be done by the advent of a flock of wood-swallows among the slow-flying bees. If a few are shot, however, they will soon move on, and their usefulness much outweighs the effect of their bad habit.

The Red-capped Robin (*Petræca goodenovii* Vig. and Horsf.).

Gould's Handbook, vol. I, p. 280, No. 166 ; Leach's Bird Book, p. 123, No. 248.

This is one of the smallest and most beautiful robin red-breasts, and has sweet song notes like that of the English robin ; it has a wide distribution, being found all over Australia, except in the far north. It frequents open forest and lightly timbered plains, and is just as much at home in the garden as in the mallee gum scrub or the open glades of the interior. Wherever there is bright sunlight and water you may meet this robin.

There are seven species of robins listed in the genus *Petræca*, and all have similar nesting habits. They are truly insectivorous, living chiefly upon small moths, flies, and other insects that they frequently capture on the wing. The dull-coloured females of several species are common residents of our gardens, where they become very tame. From the vantage point of fence or tree



Slightly less than half-size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE MASKED WOOD-SWALLOW.”

Artamus personatus.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ RED-CAPPED ROBIN.”

PETRŒCA GOODENOVII, *Vig.* and *Horsf.*



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“SCARLET-BREADED ROBIN.”

PETRÆCA LEGGII, *Sharpe.*

they scan the neighbourhood for flitting moth or creeping insect, returning after each successful dart to their observation post to flirt their tails in characteristic robin fashion. This bird forms a typical dainty cup-shaped nest of soft bark and grass, lined with fur, feathers, wool, or hair. When firmly fixed in the fork of a tree and coated on the outside with spiders' web, bits of bark, and lichens, it blends with the surrounding stems in a perfect outline. The eggs are round, pale green, and finely spotted round the apex with brown; they vary in number from two to four.

The Scarlet-breasted Robin (*Petroeca leggii* Sharpe).

Gould's Handbook, vol. I, p. 279, No. 165; Leach's Bird Book, p. 122, No. 244.

The scarlet-breasted Robin is common in Tasmania, and extends its range over the greater part of the eastern and southern portion of the mainland, but is not found in Western Australia or northern Queensland. It is an attractive little red-breast with the whole of the upper surface and head black, except for a white patch on the forehead and bands of the same colour on the wings; its breast is a rich red, and from the quality of this colour and by its large white top-knot this species is easily distinguished from the other two illustrated. It makes a cup-shaped nest of scraps of bark bound up with other fibre, matted together with spiders' web and lined with soft bark, fur, or feathers—"in the fern-tree gullies of Gippsland with the soft downy fibre from the fern trees," says North. The nest is placed in a cleft in a tree, and contains three or four light greenish-white eggs spotted and speckled (thickest on the upper half) with brown and grey. This robin is said to rear two and sometimes three broods in the year.

The species is described under the name of *Petroeca multicolor* Vig. and Horsf., in Gould's Handbook, but is now known under the specific name of *P. leggii*, Sharpe. Lewin called it the Red-breasted Warbler. Gould says, "Its song and call-note much resemble that of the European robin, but are more feeble and uttered with a more inward tone."

The Flame-breasted Robin (*Petroeca phoenicea* Gould).

Gould's Handbook, vol. I, p. 282, No. 167; Leach's Bird Book, p. 123, No. 245.

This species has a similar range to that of the Scarlet-breasted Robin. In the breeding season, says Campbell, it is more abundant in Tasmania and the islands in Bass Straits than on the mainland. Its favourite haunts are open valleys and mountain gullies. It builds the typical cup-shaped nest of the robins, composed of grass and fine roots, lined inside, and coated on the outside with spiders' web and bits of lichen and bark. The nest may be placed in the cleft of a rock, on the bank of a creek, or a hollow or depression in a tree stem. The clutch of eggs, three or sometimes four, are greenish-white, and spotted or blotched with brown or grey.

The Miner or Soldier-bird (*Myzantha garrula* Vig. and Horsf.).

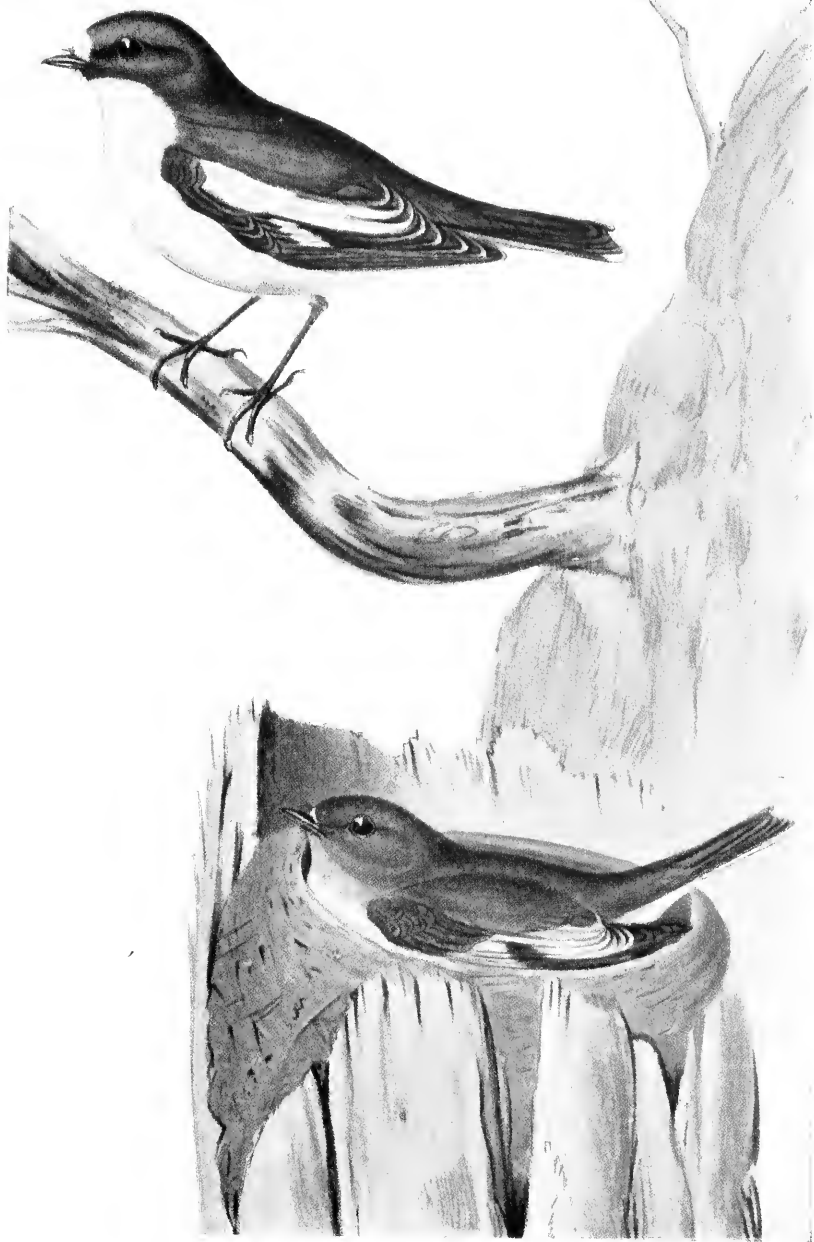
Gould's Handbook, vol. I, p. 574, No. 353; Leach's Bird Book, p. 173, No. 173.

This well-known honey-eater ranges all over Tasmania, Victoria, South Australia, New South Wales, and south-eastern Queensland; there are several other allied species with a more restricted habitat in the west, the interior, and northern Queensland. Wherever there are open eucalyptus trees growing you will find this noisy bird, popularly known as the Australian Miner, to distinguish him from the very different Indian Minah, which is somewhat of a house pest in some of our towns. It has a host of popular names, such as the Squeaker, Micky, Snake-bird, and Cherry-picker. I have also heard it called Cockney in Victoria from the fact that it usually fights in mobs.

Under natural conditions the Soldier-bird is very fearless and friendly, and will come round the camp to pick up scraps and even enter a house or fly into a tent. These birds are great fighters, and if one of their number gets into trouble his loud cries soon bring his comrades to his assistance. I recall hearing a great commotion among the Miners in my garden, and discovering the cat standing on one on a fence post; the bird was putting up a great fight, while about a dozen more were darting round, screaming and snapping at the cat's head. Unable to stand the stress of battle the cat released its victim and retreated under the house. On another occasion a small hawk was observed in the cat's predicament; it finally dropped the fighting Miner, though the latter lost half his feathers before he escaped.

Like a number of the other honey-eaters (*Meliphagidæ*), the Miner—having its brush-tipped tongue so admirably adapted for sucking up nectar from bush flowers—discovered it to be also very serviceable for feeding upon ripe fruit. Consequently it is often an orchard pest. Indeed, remembering the damage done by it in country gardens (particularly among the ripe grapes) the reader might debate its right to a place in our best of useful birds. It is one of the few birds, however, that feed both on blow-flies about the bush and upon their maggots when crawling out of a carcase. Miners often enter an open tent to snap up blow-flies buzzing on the roof. At Warrah Experiment Station one of these birds regularly takes up his station on the top of one of our fly traps, catching the hovering flies and picking on the gauze top at those imprisoned beneath. In the vicinity of a camp, Miners become cosmopolitan in their tastes, and will eat bread or meat and not neglect the carelessly left jam jar.

This bird is so universally known that it needs no close description. Its slate-grey plumage, marked on the head with black, makes it easily recognised, while the bare yellow spaces below the eyes, making it look as if it were blind, is a noticeable mark of identification. Its nest (usually placed in the fork of a small or medium-sized gum-tree) is a neatly made, open, cup-shaped structure, composed of grass and twigs, and lined with wool, hair, or feathers.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“FLAME-BREASTED ROBIN.”

PETRŒCA PHŒNICEA, *Gould.*



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

"LAUGHING JACKASS."

Dacelo gigas, Bodd.

The eggs, four in number, are bluish-white, marked all over with reddish-brown dots. The Miner thrives under domestic conditions, and is a popular bird despite its depredations in the fruit season.

Laughing-jackass (*Dacelo gigas* Boddart).

Gould's Handbook, vol. I, p. 122, No. 60; Leach's Bird Book, p. 105, No. 231.

The members of the genus *Dacelo* comprise some of the largest known specimens of the family. They are quite unlike the smaller and more typical kingfishers which are always found along the banks of creeks and rivers and (as their name implies) capture small fish. The Laughing-jackass knows little or nothing about fishing, and lives in the dry open forest country, often miles away from the water. As it feeds upon small mammals, young birds, lizards, earthworms, grubs, and earth-haunting insects, with an occasional small snake, it requires very little water. Gould says "I believe water is not essential to their existence, and that they seldom or never drink." It is rather curious that this bird is not found in Tasmania, where there is so much forest country similar to that on the mainland. It is not indigenous to Western Australia, but it was introduced there some years ago and is now well established.

There are three well-defined species of this genus peculiar to Australia. The Laughing-jackass (ranging from South Australia, Victoria, New South Wales and through the southern half of Queensland) gives place northward to Leach's Kingfisher (*Dacelo leachi*), which is slightly larger, has blue on the back and wings, is much more brilliantly coloured, and may be regarded as a tropical form of our first species. In this bird we have the phenomenon of a Laughing-jackass that cannot laugh, for its discordant note is far more of a bark. The third species, now often called a variety of Leach's Kingfisher, is the Fawn-breasted Kingfisher (*Dacelo cervina*), described by Gould under the name of *Dacelo occidentalis*. It is somewhat smaller than Leach's Kingfisher, frequents the tops of the tallest trees, and has a very discordant voice. It extends its range beyond that of Leach's Kingfisher, through the Northern Territory into Western Australia.

Of the many travellers and naturalists who have written about the Australian bush, none forget to make mention of the Laughing-jackass. It was described and figured in White's "Voyage to New South Wales" in 1790, under the name Great Brown Kingfisher, but the early pioneers' association of the bird's call with the "hee-haw" of the domestic donkey, made its more popular christening inevitable. Hence—though scientifically the Great Brown Kingfisher, and alternatively, the Kookaburra and Settlers' Clock (on account of its noisiness at daylight and dark), our jovial friend is likely to remain the Laughing-jackass to the good Australian on the land.

There are few places in our bush where one can camp without hearing the call of the Laughing-jackass at dawn and evening. In the evening in particular they have a habit of gathering together in a little family party of half-a-dozen or more, when they relate the experiences of the day in chuckles and laughs that almost appear intelligible to the meditative bushman.

Civilisation appears to agree with the Laughing-jackass, as it does with the magpies, and in the suburbs of Sydney it is commonly seen in a semi-domesticated state, frequently visiting our gardens, or resting on our chimney tops. The value of the Laughing-jackass as a deadly enemy of all snakes is somewhat mythical. He certainly snaps up a small snake now and then as a side-line, as it were ; but his chief value is as a destroyer of mice, ground grubs, and other insects. He has certain bad habits. Like the Butcher-bird, he will gobble up small nestlings in his native haunts, and, given the opportunity, will make no bones about selecting a plump chick or duckling when its mother is off guard. I remember an old shepherd on the Murray who had a pet Jackass and a clutch of young ducks, which every day on his return to the hut counted one short. He accused everybody but the true culprit of responsibility for his loss, until one day he caught Master Jackass finishing one of the last of the surviving ducklings, and the mystery was explained.

The jackass makes no true nest, but selecting a hollow spout in the limb of a gum-tree, lays her two or three rounded white eggs on the decayed wood—placed together so carelessly that it is not an uncommon thing for her to accidentally tumble one out on the ground on entering or leaving the opening into the stem. Occasionally one lays her eggs in a hole excavated in the side of a white ant (termite) nest.

SECTION II.

Birds of the Forests and Brushes.

The birds grouped under this section are those met with in the coastal forests (which are chiefly of eucalyptus, acacia, and casuarina, with other more shrubby trees as undergrowth), though we must also include the Hawkesbury sandstone and similar areas on the mountain ranges. The brushes, which are confined to the coastal districts and the Dividing Range, vary considerably—from the fern-tree gullies of Gippsland, the cedar brushes of New South Wales, the tropical jungles or “rain forests” of Queensland, to the tropical forests of Cairns (which are almost equal in luxuriance of growth to those of Brazil). Some of the birds named hereunder sometimes stray into gardens and cultivated areas in search of food; but they do not make their homes there or become semi-domesticated like those of the first section. Others are to be found in the area covered by our third section.

The following are the birds dealt with under Section II :—

Coach-whip Bird (<i>Psophodes crepitans</i>).	Short-billed Tree-tit (<i>Smicornis brevirostris</i>).
Brush-turkey (<i>Talegallus lathamii</i>).	Mountain Thrush (<i>Creocincla lunulata</i>).
Lyre-bird (<i>Menura superba</i>).	Spotted Ground-bird (<i>Cinclosoma punctatum</i>).
Black Cockatoo (<i>Calyptorhynchus funereus</i>).	Spotted Diamond-bird (<i>Pardalotus punctatus</i>).
Dollar-bird (<i>Eurystomus australis</i>).	Mistletoe-bird (<i>Dicceum hirundinaceum</i>).
More-pork (<i>Podargus strigoides</i>).	Black-faced Cuckoo-shrike or
Delicate Owl (<i>Strix delicatula</i>).	Blue Jay (<i>Coracina robusta</i>).
Boobook Owl (<i>Ninox boobook</i>).	White-shouldered Caterpillar-eater (<i>Laiage tricolor</i>).
Australian Bee-eater (<i>Merops ornatus</i>).	Hooded Robin (<i>Petroeca bicolor</i>).
White-throated Nightjar (<i>Eurostopus albigularis</i>).	Yellow-breasted Robin (<i>Eopsaltria australis</i>).
Harmonious Thrush (<i>Collyriocincla harmonica</i>).	Pheasant-coucal (<i>Centropus phasianus</i>).
Yellow-breasted Thickhead (<i>Pachycephala gutturalis</i>).	Orange-backed Wren (<i>Malurus melanocephalus</i>).
Crested Shrike-tit (<i>Falcunculus frontatus</i>).	

The Coach-whip Bird (*Psophodes crepitans* Latham).

Gould's Handbook, vol. I, p. 312, No. 182; Leach's Bird Book, p. 129, No. 272.

This is one of the birds that live in the shelter of the tangled brush of our coastal scrub ranging all along the eastern coast from Victoria, through New South Wales into Queensland. In such localities the Coach-whip Bird is at home; but it seldom comes out in the open or far from protection.

This bird takes its popular name from its remarkable notes. Forcing one's way through tangled grass and brush, and among dead logs and fallen trees, one is arrested by a series of low clear notes, followed by a loud sharp one, exactly like the crack of a whip. It is the call of the male bird to his mate, she answering with a more gentle note the moment he stops. If one wishes to observe the birds, he must remain quietly in any open glade in the forest, and before long he will see one or two medium-sized, blackish, or dark olive-green birds, with a distinct white patch on either side of the neck, feathers on the top of the head raised into a slight crest and a very noticeable long and rather broad tail. They hop about over the scrub, jumping up on to logs or fallen trees, and scratching up the soil in search of insects, snails, and other small game, and will come quite close to the intruder into their domain, watching him alertly with bright bead-like eyes, and ready to fly if he should be dangerous.

The Coach-whip Bird builds a loosely-constructed nest of fresh twigs; a favourite situation in the Sydney scrub is a *Bursaria* bush, while in the Queensland forest she favours a clump of lawyer palm. The eggs, two in number, are oval in shape and glossy: their colour is greenish-white, blotched and marked with dark-brown and light-grey lines in fantastic patterns. In captivity the Coach-whip Bird will eat meat, and I was told by a dealer that he had one that killed a mouse which entered its cage.

The Brush-turkey or Wattled Talegallus [*Talegallus (Catheturus) latham* Gould].

Gould's Handbook, vol. II, p. 150, No. 476.

This species of megapode is not unlike a small turkey, with its bare head, yellow and blue wattles, stiff wing and tail feathers, and stout legs. When, however, the first specimens were sent to Europe, it was described by Latham as the New Holland Vulture, under the impression that it was allied to the Turkey-buzzard or Carrion-vulture of America and the West Indies. It occupies the semi-tropical forests along the eastern coastal mountains, and in the early days of settlement was an inhabitant of the Illawarra brushes; and though still found in our northern scrubs, is more common in Queensland, right up into Cape York and round to the north coast.

In this case the male Scrub-turkey does all the building of the mound nest, which is chiefly composed of earth mould and dead leaves scraped up into a conical mound, about $2\frac{1}{2}$ to 4 feet in height, and 12 feet in diameter at the base. When the male bird has finished the building up of the fresh mound,



INSECTIVOROUS BIRDS OF NEW SOUTH WALES,
"COACH-WHIP BIRD,"
PSOPHODES CREPTANS, *Vig. and Horsf.*



Approximately one-quarter natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE BRUSH TURKEY, OR WATTLED TALEGALLUS.”

Talegallus (Cathartes) lathami.



About one-sixth natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“LYRE BIRD.”

Menura superba.

often constructed on the site of last year's nest, the female comes round to lay, scratching a hole in the summit of the mound about a foot in depth, into which she crawls to lay her egg. As soon as the egg is laid, the male bird appears and drives the female away, afterwards fixing the egg in an upright position, filling up the hole, trampling down the leaves and mould, and smoothing down the surface in a most business-like manner. From twelve to fifteen large, white, fragile, granulated eggs are placed in an irregular pattern at a depth of about a foot, in the top of the mound, and when the chick bursts its shell it soon scratches its way up to the surface (without any outside assistance from the parent birds), an active little creature, quite able to look after itself. Sometimes the one mound may be used by two or three pairs of Scrub-turkeys, when it may contain as many as thirty-five eggs in all stages of incubation.

Like the Mallee-hen, these birds, from their scratching habits, find many ground insects, snails, and slugs, and a bird the size of a small turkey can account for a great number of insects every day.

The Lyre-bird (*Menura superba* Davies).

Gould's Handbook, vol. I, p. 298, No. 179; Leach's Bird Book, p. 112, No. 237.

Three distinct species of Lyre-birds inhabit the coastal forests of eastern Australia—the Victorian Lyre-bird in Gippsland, the above species, peculiar to New South Wales, and the Albert Lyre-bird, which is restricted to the northern river scrubs of New South Wales and southern Queensland, and ranges only as far north as Wide Bay.

It is somewhat remarkable that these birds are not represented in the rich tropical forests in the north. No bird attracted more attention than our Lyre-bird when first brought under the notice of naturalists. On account of its wonderful tail it was first classed among the Birds of Paradise, then because of its size and powerful scratching feet it was considered to be a gallinaceous bird; finally, from the study of its anatomy, it was shown to be a perching bird allied to the thrushes. The three species are now placed in the family *Menuridae*.

The original native name of the Lyre-bird was Buln-buln, on account of its usual call-note. The early settlers called it in different localities the Mountain-pheasant, the Native Wood-pheasant, or simply the Pheasant, because of its coloration; in other places it was known as the Mocking-bird, in reference to its capacity for mimicking all the voices of the bush, but its present and most characteristic popular name is the Lyre-bird, in allusion to its wonderful tail, which is shaped like a Greek lyre. Many curious pictures were drawn, and accounts written about the Lyre-birds by travellers in the early days. One said that the male used to stand with its outspread tail turned to the morning breeze and create sweet music by allowing the wind to blow through the stiff feathers, like an Æolian harp. Margaret Catchpole says: "The most beautiful attitude that I once saw the

male Lyre-bird in beats anything I ever beheld of what men call politeness. I have heard and read of delicate attentions paid to our sex by men of noble and generous dispositions, but I scarcely ever heard of such delicate attention as I one day witnessed in this noble bird towards its mate. I saw her sitting in the heat of the meridian sun upon her nest, and the cock bird sitting near her with his tail expanded like a bower overshadowing her; and as the sun moved, so did he turn his elegant parasol to guard her from its rays. Now and then he turned his bright eye to see if she were comfortable, and she answered his inquiry with a gentle note and rustle of her feathers."

Baron Cuvier, writing in 1859, says: "They are said to sing for a couple of hours in the morning, beginning when they quit the valleys till they attain the summit of a hill, where they scrape together a small hillock as they exhume the grubs on which they feed; on this they afterwards stand, with the tail spread over them, and in this situation imitate the notes of every bird within hearing, till after a while they return to the low ground."

John Gould studied the Lyre-birds and gave us the first reliable account of their habits in his "Birds of Australia," published in 1848, and afterwards in several papers sent to the Zoological Society of London.

Though differing in plumage and coloration, the three species appear to have identical habits, and all destroy large numbers of more or less destructive grubs, snails, and other forest pests. The life-history of *Menura superba*, the most handsome of the three forms, applies equally to the other two. It is the size of a small fowl; the upper surface is of a uniform, dull, brownish-black colour, and the under surface is lighter and silvery under the tail. It is this unique tail that has been the cause of its undoing. In the earliest days of settlement, "the blackfellows prized it for an ornament, as well as the Europeans, who gave a great price for it." (Russell, 1839.) In 1861, Wheelwright, speaking of the Dandenong and Plenty Ranges in Victoria, says: "The blacks make periodical excursions up into the ranges about September when the birds are full feathered, and come back laden with tails." Regarding the destruction of Lyre-birds for their tails, I remember seeing them sold in the streets of Sydney, about 1888, for half-a-crown a pair, but Mr. Aflalo's story ("A Sketch of the Natural History of Australia," 1896), of two brothers in Sydney employing a number of men to shoot these birds, and obtaining 500 dozen tails in a few weeks, seems to be somewhat exaggerated.

The Lyre-bird is a very active creature, and in spite of its size is seldom seen, though often heard by the wanderer who invades its haunts. When suddenly startled it has the curious habit of jumping upward into the branches of a tree and there stopping. The tail hunters learnt this habit, and with trained dogs soon "treed" the bird and shot it before it reached the top. The nest is a large affair constructed at the base of a tree, often hidden among tree ferns, and containing a single dark-brown blotched egg. The nestling is a ball of brown fluff—"all claws and beak," as a



Approximately one-quarter natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

"THE BLACK COCKATOO."

Calyptorhynchus funereus.

surveyor friend of mine described a half-fledged one that he tumbled across. It had rolled out of its nest among the ferns, and fought like a cat when he tried to pick it up.

It is interesting to note that the mocking-birds of North America are thrushes, and that our Lyre-birds are allied to the same family. They are well known for their powers, not only of imitating other birds in the bush, but also of copying such sounds as the sharpening of a saw, the chopping of an axe, or the bark of a dog.

With well-enforced protection against tail-hunters, there is no doubt that the Lyre-birds would soon increase and multiply in their forest surroundings but for the fact that the fox has entered into their domain, and this deadly enemy of all ground-nesting birds finds the nesting Lyre-bird and the baby nestling easy prey. If, however, the Lyre-bird learns from this new experience to build her nest in the fork of a tree well off the ground, as some observers say she is doing, she may still hold her own in the scrub and fern-tree gullies. A movement has been put on foot to capture a number of Lyre-birds and turn them out in the fern-tree gullies on the slopes of Mount Wellington in Tasmania, where there are no foxes, in order to save the species from extinction, and to add to the charm of the Tasmanian bush.

Through the kindness of a naturalist friend who, wandering through the scrub at the back of Narrabeen Lake, had flushed a Lyre-bird off her nest, I was able to make some careful observations of the nest and nestling. The nest was built on the top of a shoulder-high cliff in a patch of bracken fern, and it was quite a solid affair of sticks and fern leaves. The young bird was thickly covered with dark down. The moment one looked into the nest it gave an angry, frightened shriek, and fluffed itself up in the open nest facing the visitors. The mother bird came flying up, but seeing us, she dropped to the ground about ten yards away, and sheltered in the scrub. The young bird every now and then gave his harsh cry, and the mother, after a little while, came round the nest well into view. As long as we remained quiet she did not seem very frightened.

The Black Cockatoo (*Calyptorhynchus funereus* Shaw).

Gould's Handbook, vol. II, p. 20, No. 401; Leach's Bird Book, p. 89, No. 188.

Though there are only five species of Black Cockatoos found in the whole of Australia, three of them are common in this State. The above species (*C. funereus*), often known as the Yellow-eared Cockatoo, is the most common and has the widest range, being found in Tasmania, the islands in Bass' Straits, through the coastal ranges of eastern and South Australia, and sometimes even finding its way in search of honey blossoms and insects into the more inland forests and mallee scrubs. Like all the members of the cockatoo tribe, these birds nest in the holes or rotten branches of tall dead gum-trees, in which the female lays two white eggs. Under ordinary conditions they are true forest-haunting birds. Although their chief food

supplies are the seeds and honey blossoms of our larger forest trees, they play an important part in the economy of nature and the life of our forest trees.

In Europe and America a large family of forest birds, popularly known as woodpeckers, police the forests, and with their sharp-pointed beaks drill out and destroy the thousands of wood-boring insects and their larvæ that would otherwise kill the trees. In Australia we have no representative of the woodpeckers, but the Black Cockatoo with its powerful gnawing bill hunts over the trunk and branches of infested trees and tears out great strips of bark and wood, beneath which the wood-moth and beetle larvæ are burrowing and feeding. Mr. E. Palmer, of Lawson, once showed me the stem of a gum-tree about 6 inches in diameter that had been cut right through by a Black Cockatoo hunting out a wood-grub, and it is not an uncommon thing to come across branches of wattles and gum-trees in the valleys of the Blue Mountains torn and splintered in this manner where the cockatoos have been at work. The black and silver wattles along our coastal country are very much subject to the attacks of large white grubs, the larvæ of the goat-moths (*Euloxyla eucalypti*). The branches and trunks of these scrub trees as they mature are often full of these wood-borers, which used to be sought after by our blackfellows in the old days. It is recorded that the Black Cockatoos used to visit this country every season, and between the two the wattles were more or less cleared of wood-borers before the advent of the white man.

With increasing settlement these shy birds have been shot, or driven out of their old haunts, and this is probably why many of our wattles are now such short-lived trees. As one of our few forest rangers, the Black Cockatoo should be most carefully protected.

The Dollar-bird (*Eurystomus australis* Swain).

Gould's Handbook, vol. I, p. 119, No. 59; Leach's Bird Book, p. 105, No. 219.

This bird is so widely known under the name of the Dollar-bird that I adopt it in preference to that of the Australian Roller, though the latter may be more exact. It belongs to a group of birds that are allied to the Kingfishers, and it is our sole representative of a genus the members of which are scattered over Africa, Madagascar, India, China, and the Malay Archipelago. Many are migratory; our species ranges from the Malay Islands and New Guinea into New South Wales, where most of them nest. A few reach Victoria, but they are comparatively rare in the southern State.

The Dollar-bird is one of our showy, handsome birds, and it also attracts one's attention by its chattering cry. It usually takes up its post of observation on the limb of a dead tree or on a telegraph post and from such a position it watches for insects flying past and darts out with its curious rolling flight, exhibiting at the same time the characteristic rounded white patch in the centre of the wing from which mark it derives its name. The stomach of



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“DOLLAR BIRD.”

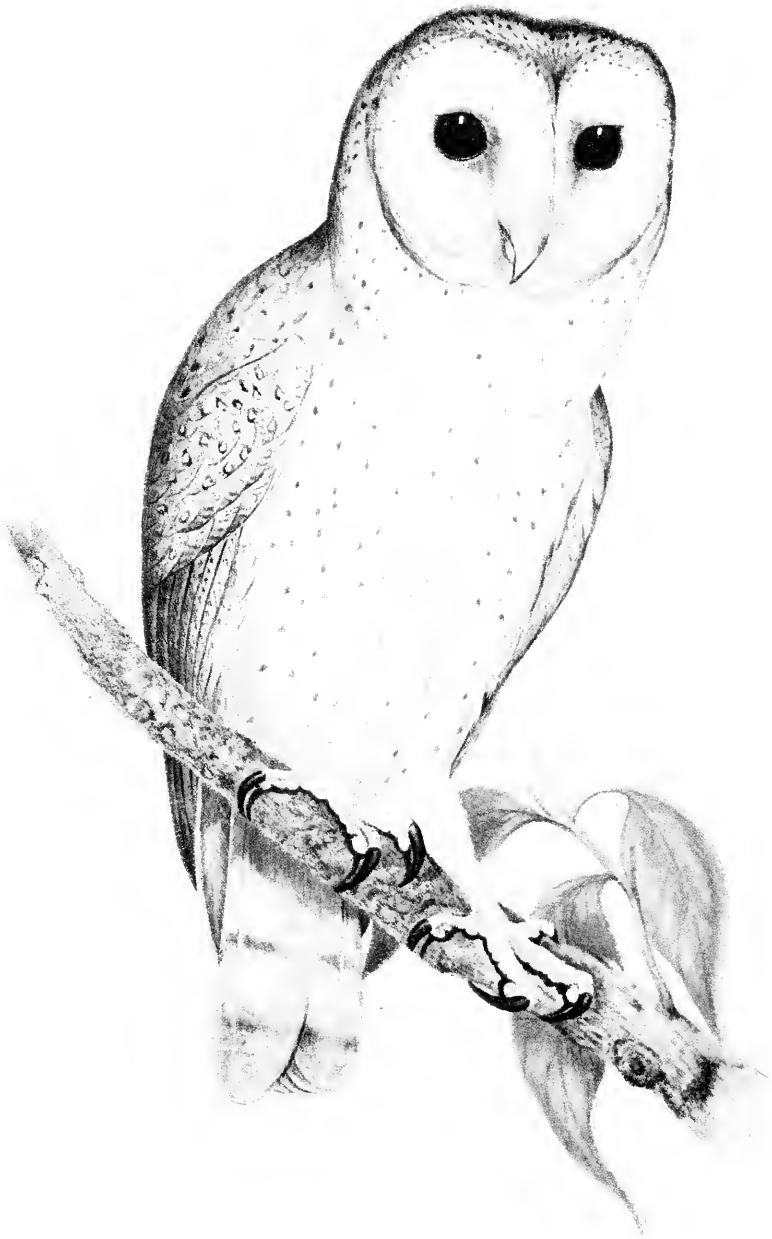
Eurystomus australis, Swainson.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“MORE-PORK.”

Podargus strigoides, Lath.



About one-half natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

"DELICATE OWL."

Strix delicatula.

one of these birds has been found to contain two rose-chaffer beetles, part of a cicada, and other beetle remains; but they also capture moths, though Gould says that he found nothing but the remains of beetles in specimens he dissected.

The Dollar-bird constructs no nest, but, like its cousin the Laughing-jackass, deposits its eggs in a hole in a hollow limb, upon the decayed wood. The eggs, four in number, are very round and pearly white. The birds nest from September to December in New South Wales.

The More-pork (*Podargus strigoides* Latham).

Gould's Handbook, vol. I, p. 84 No. 40; Leach's Bird Book, p. 104, No. 217.

This curious bird takes its popular name from the old idea that the nocturnal call of "more-pork" or "mopoke" was made by it, though the cry is now known to be that of the Boobook-owl. The only sound I ever heard the More-pork make was an angry grunt when disturbed in its mid-day sleep; it is said, however, to repeat when flying, a feeble cry like "oom-oom-oom."

During the day, this bird, like the owl, sleeps in the shelter of a bush, and her remarkable grey, white, and mottled-brown plumage blends into a wonderful protective coloration. This is seen to perfection if you come upon one nesting on the bole of a white gum, upon which she simply places a few sticks, in such a primitive fashion that one wonders why the pair of pure-white eggs do not tumble off whenever she moves. Sitting on her nest she presses her body against the tree-stem, head and tail in line, so that in spite of her size, you might pass close to her without recognising as a bird the excrescence on the limb. Gould described eight species of More-pork (or Frog-mouth, as some writers call them), but modern writers have decided that the Tasmanian form (which Gould called *Podargus curveri*) is the same as our common species. Three other species are found in different parts of Australia. Our More-pork has a wide range over Tasmania and the whole of Australia except the northern part of Western Australia.

The More-pork feeds upon the phasmids, mantis, leaf grasshoppers, and cicadas which are found resting or moving among the foliage at night. In my garden I had several young More-porks which used to rest on a flower-pot with eyes closed. When a mouse was dangled in front of one of them, it would open its great mouth, apparently let the mouse run down its throat, shut its beak with a snap and go to sleep again.

The Delicate Owl (*Strix delicatula* Gould).

Gould's Handbook, vol. I, p. 66, No. 31; Leach's Bird Book, p. 86, No. 179.

Owls are nocturnal birds of prey that usually sleep or hide during the hours of daylight in thick brush, old ruins, rocky caves, or hollows of big gum-trees. At twilight and all through the night they hunt for their food, which consists chiefly of small mammals, birds, and the larger insects that move about under cover of the dark hours. Most of their food is captured

on the wing, and their whole structure is admirably adapted for the life they lead. Their plumage is beautifully soft and loose, so that their flight is almost noiseless; their stout legs are furnished with large feet terminating in powerful claws, so that they can snap up their prey as they fly over the ground or through the trees; their large heads are provided with round projecting eyes, surrounded with a flattened disc of feathers that intensify their vision, and the hawk-like hooked beaks are adapted for tearing their prey to pieces.

There is some doubt as to which particular bird was defined under this name in the Scriptures, and though the translators from the Hebrew coupled the owl with desolation, more modern students consider that such dissimilar birds as the ostrich, pelican, and cormorant have been placed under the name of the owl. Among the Greeks and Romans the owl was considered the emblem of wisdom, and was sacred to Minerva, Goddess of Wisdom, Arts, and War; and, as Pallas Athene, it was the tutelary goddess of Athens.

The Delicate Owl is so closely related to the common European Barn Owl (*Strix flammea*) that it is usually considered only a sub-species peculiar to Australia, New Caledonia, New Hebrides, and New Guinea. It well deserves the name of Delicate Owl on account of its beautiful, soft, white breast feathers and dainty brown markings on the back and shoulders. It ranges over all classes of country. I once caught one in the homestead stable among the granite ranges of north-western Victoria; it was quite blind, and had wasted away to skin and bone from the grass-seeds that had become embedded in its eyes. When on the Flinders River tablelands in northern Queensland I remember them as plentiful, sleeping in the open weather-worn cavities eaten out of the sides of the sandstone gorges. Explorers in central Australia record them as common in the thick-foliaged mulga bushes in the inland scrubs, and others have found them sleeping in hollow spouts in the limbs of big gum-trees along the river banks of the Northern Territory.

It is in this latter situation that they usually lay their eggs, six in number, on the decayed wood on the bottom of the cavity in the limb; the eggs are, as with most owls, pure-white and very round. The European variety has the curious habit of bringing up the nestlings in pairs. As soon as the first pair of eggs are hatched, she deposits a second pair of eggs, which are hatched in due course by the warmth of the bodies of the first clutch, and often a third pair are hatched in this manner. Among the country folk in England the Barn Owl is looked upon as an evil creature that peers through the window of the sick-room, and its sudden hoot at the dead of night warns one of coming death. In some places they also believe that if one discovers a resting owl, he can, by walking slowly round it, cause it to twist its head off, as it keeps turning its head to watch the intruder. From their nocturnal habits, soft soundless flight, and weird call-notes, the Barn Owls in the dark ages were often associated with witches, who were supposed to assume the garb of owls when flying about at night. Though to a certain extent a



About one-third natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“BOOBOOK OWL.”

Ninox boobook.



Slightly less than half-size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE AUSTRALIAN BEE-EATER.”

Merops ornatus.

destroyer of insects, it is as an active enemy of mice, rats, and all kinds of small destructive rodents that this owl does so much valuable service to the farmer.

The Boobook Owl (*Ninox boobook* Latham)

Gould Handbook, vol. I, p. 74, No. 36; Leach's Bird Book, p. 85, No. 175.

This bird is also known as the Brown or Cuckoo-owl, and was described in Gould's Handbook under the name of *Athene Boobook*. He says that the native name of this owl was "Buck-buck," in reference to its call-note, but the hoot of the Boobook Owl is "more-pork," sharp and distinct. It is somewhat remarkable that the popular idea was, and still is in many places, that the Frogmouth (*Podargus curvirostris*), another quaint night bird, was responsible for the weird night-cry of "more-pork."

This owl is peculiar to Australia, with a very wide range over the country, and is also recorded from Lord Howe Island. Though so noisy at night, when driven out of its resting-place into the bright sunshine it utters no sound, but, dazed by the unwelcome light, flutters away to more secure cover, at the mercy of all the small birds in the neighbourhood that gather together and hunt it away, looking upon it as a probable enemy. At twilight and night-time the Boobook Owl is active and alert, floating along silently in search of mice or small roosting birds, which it picks up in its powerful claws as it flies past, and in the same way catches beetles and night-flying or feeding insects. Gould states, and other writers have copied his statements, that this owl feeds chiefly upon orthoptera (tree grasshoppers, phasmids, &c.) and neuroptera (lace-winged insects); but these are only a minor portion of its food. Its chief value is as a hunter of mice, and when a pair of the birds take up their quarters near the farmer's outhouses they should be carefully encouraged to remain. I examined a large series of cast pellets voided by a pair of these owls that had selected the hayshed at Wagga Experiment Farm as their headquarters, and they consisted almost entirely of mouse fur and bones, with here and there a few green feathers that suggested that a green grass parrot had been caught napping.

The nesting habits are similar to those of the Delicate Owl, but the clutch only comprises three eggs, round and white, resting on the decayed wood in the bottom of the hollow limb.

The Bee-eater (*Merops ornatus* Latham).

Gould's Handbook, Vol. I, p. 117, No. 58; Leach's Bird Book, p. 107, No. 224.

This handsome little bird belongs to an interesting family, not related to any other of our birds, but allied to the Oriental Hoopoes, remarkable for their crown of upright feathers. The members of the family *Meropidae* range over southern Europe, Africa, and Asia, and the distinctive group to which our species belongs contains seventeen species, distinguished from the other bee-eaters by having the two central tail feathers elongated.

Our Bee-eater is found all over Australia, frequenting open forest country and the timber along river banks and creeks. It can easily be distinguished from other birds, when at rest or on the wing, by its slender black bill,

delicate green plumage, orange and black markings upon head and throat, and the projecting central tail feathers, which are very conspicuous when flying. Usually perching upon the outstretched dead branch of a gum-tree or a telegraph line (if one is handy) it sits on guard, ready to pounce down and snap up any insect flying past its post of observation. Though some writers have specified particular groups of insects as its food, scarcely anything in the insect line comes amiss, and its food is as varied as the insects of the district. When insect-hunting on the summit of Mount Marmion, in north-west Australia, I once aroused the interest of a pair of Bee-eaters, which followed me round and snapped up every butterfly or moth that I disturbed from the undergrowth but missed with my net.

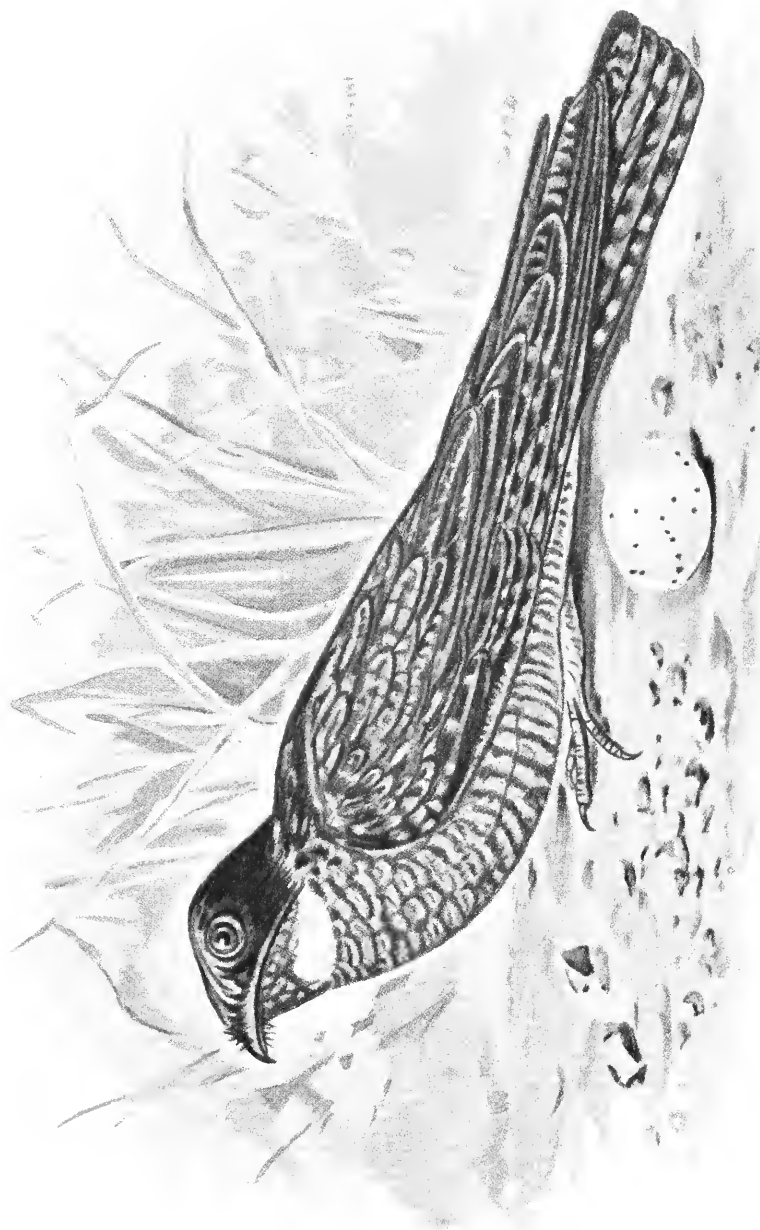
The nesting habit of the birds are peculiar, for they make regular tunnels with openings no bigger than a mouse hole, into steep river banks. These tunnels are about a yard in length, and open out into little pockets, in which are laid four or five pinkish-white eggs. As an active insectivorous bird and often in sufficient numbers to make an effective onslaught upon many of our common insect pests, the Bee-eater may be placed in a prominent place in our list. There is, however, another side to its activities, for, as its name implies, this bird is very fond of honey bees, and in agricultural districts is not regarded with favour. In the Tamworth district bee-keepers look upon the Bee-eater as a nuisance, if not a pest, and claim that it is very destructive to honey bees, catching them as they come home to the hive. It is, however, when the work of breeding queen bees is being carried out that this bird does the most serious damage. The Apiarist at Hawkesbury Agricultural College informed me that the losses there due to Bee-eaters are sometimes very serious. A critical period is that just after the wedding flight, when the young queen circles round as if taking her bearings, before turning for home.

Showing, however, how things tend to right themselves, there was an account in a Victorian newspaper some years ago stating that bee-keepers had welcomed the event of a flock of Bee-eaters into their district, because they had destroyed the large dragon-flies, which had previously been hawking over their bee-hives. Now, both dragon-flies and robber-flies (also bee-killers), under normal conditions are among our most useful friendly insects, destroying noxious insects, such as mosquitos and other pest flies; yet this time they in turn were pests to the bee-keepers.

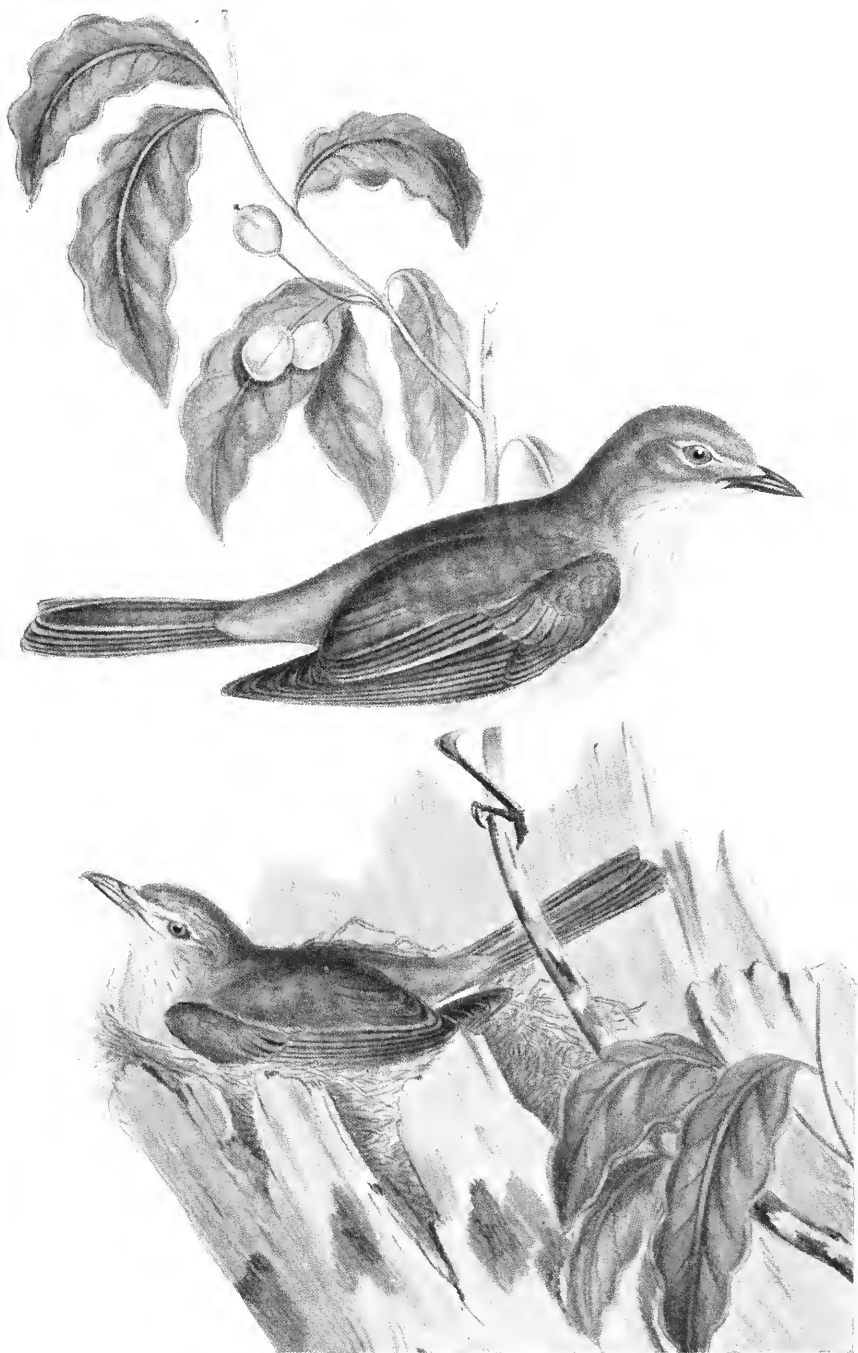
The White-throated Nightjar (*Eurostopus albigularis* Vig. & Horsf.).

Gould's Handbook, vol. I, p. 96, No. 48; Leach's Bird Book, p. 107, No. 225.

There are two distinct species of this genus confined to Australia and New Guinea. The first, which we figure, ranges over the open forest country of South Australia and the whole of eastern Australia from Victoria to Queensland, and across into New Guinea. The second, *Eurostopus argus*, the Spotted Nightjar, was described by Gould under the name of *Eurostopodus guttatus*, and extends from New South Wales all over Western Australia.



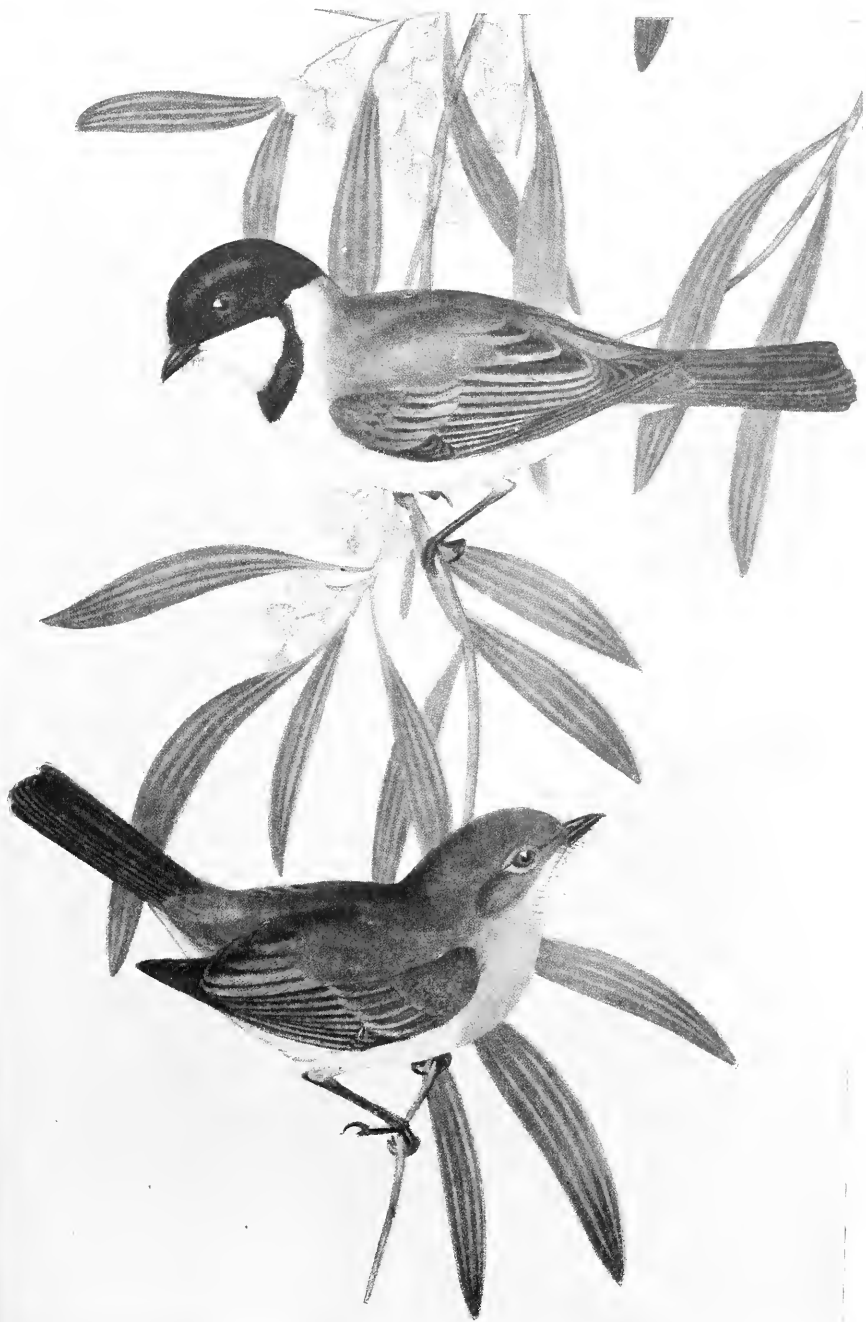
INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"THE WHITE-THROATED NIGHTJAR."
Eurostoopus albigularis, Vig. & Horsf.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“GREY SHRIKE THRUSH.”

Collyriocinclla harmonica, Latham.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ THICKHEAD.”

Pachycephala gutturalis, Latham.

These birds have very similar habits ; they rest on the ground during the daytime and are most active at twilight and at dawn, when they capture all kinds of night-flying insects on the wing. Their large black eyes and long powerful wings are admirably adapted to their nocturnal habits. Though the male and female are very similar in their markings, the plumage of the latter is more brightly coloured, and she is slightly larger than her mate. She constructs no nest, simply depositing her single, finely-spotted egg upon the soil, sheltered by a tussock or log.

Several popular names (such as Moth-owl, Fern-owl, and the remarkable one of Goatsucker) have been given to these birds by the rural population of England. The bird known in North America under the popular name of Whip-poor-Will is a nightjar.

The Harmonious Thrush (*Collyriocinclá harmonica* Latham).

Gould's Handbook, vol. I. p. 220, No. 123 ; Leach's Bird Book, p. 149, No. 215.

The Harmonious Thrush is a very typical representative of the shrike-thrushes, of which Gould lists six species peculiar to Australia and Tasmania, each of which seems to have its own particular range. Our species is sometimes known as the Grey Shrike-thrush, and White, in his " Voyage to New South Wales," figured and described it under the name of the Port Jackson Thrush, but its remarkably clear notes, taken in conjunction with its thrush-like form and habits, entitle the name I have chosen to popularity.

This is a rather thick-set bird of a uniform greyish-brown tint, with the under-surface lighter and face whitish, but its large bright eyes are its most striking character. It has an extended range over the greater part of eastern Australia from Queensland to Victoria and is scattered over South Australia. Though usually met with hunting over the ground in forest country, it is very often noticeable in the tree-planted streets of country towns, where it will fearlessly fly down to the roadside to pick up incautious insects. Most of its food consists of ground-living insects. Its deep, clear call-notes are very distinctive, and by this means its resting-place can be easily located.

The nest is placed in any sheltered position situated on the bank of a creek or watercourse in the brush, on the bole of a tree, or a ledge of rock. It is cup-shaped, constructed from strips of bark, leaves, and fibrous roots and usually contains three rounded pearly-white eggs, blotched and spotted with olive and grey.

The Yellow-breasted Thickhead (*Pachycephala gutturalis* Latham).

Gould's Handbook, vol. I, p. 207, No. 113 ; Leach's Bird Book, p. 151, No. 322.

The group to which this handsome species belongs contains a number of birds known as thickheads. Leach calls the birds in this group, whistlers, and considers the former name ill-choosen, but it seems to me wiser, until a more definite name than whistler is chosen, to adhere to the old and well-known group name first given. Even the popular name is not unanimously used. In Campbell's " Nests and Eggs of Australian Birds " our thick-

head is called the White-throated Thickhead, while Leach lists it as the Golden-breasted Whistler. Among the earlier writers, Lewin named it twice—the Orange-breasted Thrush and the Black-crowned Thrush. Latham dubbed it the Black-breasted Flycatcher and Shaw, in doubt, named it *Motacilla dubia*.

This is a forest-loving bird, living both in the open gum and wattle scrub, and in the more dense coastal thickets and cedar brushes. It hunts for insects among the branches and foliage and also upon the ground. All the thickheads have much the same habits and are rather shy birds. They are best observed by resting in the brush they frequent, and by keeping perfectly quiet. Their call-notes are seven or eight low whistles ending in a sharp crack, not unlike that of the true Coach-whip Bird, but easily distinguished by one who has listened to the louder, shriller note of the latter.

The nest is a shallow, loosely-made, saucer-like structure, composed of dry grass and rootlets, lined inside with feathers, and placed in the fork of a tree a few feet from the ground. It contains three creamy-white to buff-coloured eggs, which are ornamented with a band of brown and lilac spots round the broadest end.

Crested Shrike-tit (*Falcunculus frontatus* Latham).

Gould's Handbook, vol. I, p. 228, No. 129; Leach's Bird Book, p. 150, No. 320.

The genus to which this bird belongs contains two species peculiar to Australia. This species ranges from Queensland through New South Wales and Victoria into South Australia; the second, the White-bellied Shrike-tit (*Falcunculus leucogaster*) is confined to Western Australia. It is rather remarkable that our species is not found in an island like Tasmania where the great gum-tree forests in which it delights are so prevalent.

This bird has gone under quite a number of popular names; Campbell calls it simply Shrike-tit; Leach among others the Yellow-bellied or Yellow-breasted Shrike-tit, Falcon-shrike, and Frontal-shrike. Gould says: "They resemble the European tits and the Indian parras, and are also allied to the Australian thickheads." The Crested Shrike-tit is found in the tangled coastal brushes and the more open gum-tree forests. At a camp below Hay, there were several that lived in the red gums along the river; they used to visit the tents to unravel and carry off the strands of the frayed tent ropes, probably to line their nests with. Clinging head downward while picking away at the rope end, they showed off the rich colours of their plumage, and would let one approach within a few yards. In a big gum-tree they are very active birds, hunting over the stems and branches, tearing off with their powerful beaks the loose dead bark, and feeding upon the exposed insects—chiefly small beetles, larvæ, and ants. When attacked or wounded by other birds they are good fighters, and with their powerful bills can inflict a serious wound upon bird or man. The male and female differ both in size and coloration. The female is the smaller; the black on the throat of the male is in her case replaced by green, and her eyes and feet are darker.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“CRESTED SHRIKE TIT.”

Falcunculus frontatus, Latham.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“SHORT-BILLED TREE TIT.”

Smicrornis brevirostris, Gould.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

"MOUNTAIN THRUSH."

Oreocincla lunulata, Latham.

Gould, when he published his great work, did not know anything about the nest or eggs of the Crested Shrike-tit, but later bird hunters found that the nest was placed in a slender fork in the topmast branch of a gum-tree. It is comprised of strips of fine bark and grass forming a sphere-shaped cup, coated on the outside with bits of lichen and moss matted together with spiders' web, and lined inside with softer material. The oval, white eggs, two or three in number, are freckled all over with fine spots, with a few larger blotches of dark olive-grey and reddish-brown at their apex. Mr. G. E. Shepherd, the Victorian naturalist, quoted by Campbell, says that the nest would be hard to find were it not for the male bird piping forth a low soft flute-like note on an adjacent limb. He sings while she (the female) works hard to build the nest, the male apparently assisting very little, if at all, in the work. He does a certain amount of the preliminary work, however, in clearing a space for the nest before the foundations are laid, adds the observer.

The Short-billed Tree-tit (*Smicornis brevirostris* Gould).

Gould's Handbook, vol. I, p. 272, No. 161; Leach's Bird Book, p. 124, No. 250.

This is one of the smallest and at the same time one of the most industrious birds in Australia; it is allied to the European tits, and has very similar habits. It spends its time among the foliage of the gum-trees hunting for insects among the flowers and leaves. This species has a wide range over eastern Australia from Queensland to Victoria and across South Australia to the West. It makes a very small, perfectly round nest of grass, lined inside with feathers and grass matted together with spiders' web, with a tiny opening on the side. This swings among the foliage or is attached to a twig, and is only three inches in diameter. The eggs, of which there are three or four, are brownish and glossy, with a belt of darker brown round the apex.

These birds live in small communities, traversing the top-most gum branchlets. According to Campbell, their ordinary call is "a rasping little note like a tit's (*Acanthiza*), while now and again they answer one another in a sweet simple call."

The Mountain Thrush (*Creocincla lunulata* Latham).

Gould's Handbook, vol. I, p. 439, No. 275; Leach's Bird Book, p. 133, No. 280.

This bird is a true thrush, belonging to the same family (*Turdidae*) as the well-known British Thrush, Black-bird, and Nightingale; and it has been proposed to place it in the typical genus *Turdus*. Its generic name has been altered several times. Mr. Campbell called it *Geocichla lunulata*.

As its name suggests, the Mountain or Ground Thrush lives chiefly upon the ground; in Tasmania it frequents the bush on the slopes of Mount Wellington, in New South Wales it inhabits the cedar brushes of the Liverpool Plains, and in Victoria it secretes itself in the dense ti-tree scrub along the shores of Hobson's Bay. In South Australia it is found in similar localities.

The food of this bird chiefly consists of land snails, earth-worms, insect larvæ, and ants. It is one of the earliest nesting birds in the bush. Commencing to build in mid-winter it constructs a large open nest of moss, leaves, and grass matted together with earth, and lined inside. Built upon a stout limb of a low tree, it is usually well sheltered by the scrub and, even if only a few feet off the ground, is easily passed unnoticed. The buff-white eggs, two or three in number, are spotted or blotched with reddish-brown and clouded with red.

The Spotted Ground-bird (*Cinclosoma punctatum* Latham).

Gould's Handbook, vol. I, p. 433, No. 271; Leach's Bird Book, p. 128, No. 206.

Five species of this genus are given in Ramsey's list—one a rare species from Derby, north-west Australia, and four (of which two are common in New South Wales) from the interior. The Spotted Ground-bird is found in Tasmania, and ranges through South Australia and Victoria, well up into Queensland. It frequents scrubby country, trusting to its running powers when startled: its habits and actions are somewhat similar to those of the quail.

These birds, says Gould, were often exposed for sale in Hobart under the name of the Ground Dove, together with Wattle-birds and Bronze-wing Pigeons. They are handsome birds with chestnut, black and white plumage, but though widely scattered over the country, are seldom seen by the ordinary traveller on account of their retiring habits. They form a loose round nest of bark and leaves, which is always built on the ground, and contains two, and sometimes three, large, brown, blotched eggs.

The Spotted Diamond-bird (*Pardalotus punctatus* Tem.).

Gould's Handbook, vol. I, p. 157, No. 81; Leach's Bird Book, p. 167, No. 340.

The beautiful little birds belonging to the genus *Pardalotus* are peculiar to Australia and Tasmania. Seven species were listed by Gould. Two or three species may sometimes be found frequenting the same locality, but some have a well-defined range. This representative species has a very wide distribution over Tasmania and the southern and eastern areas of Australia. In the days when every genteel home had a case of stuffed birds in a prominent position in the drawing-room, the motley assembly invariably contained a pair of Spotted Diamond-birds. They are very active, fearless little birds. I remember, as a small boy in Victoria, watching a pair that spent a lot of time on the shingle roof of a verandah, scraping up the soft, weathered wood fibre, which they apparently collected and carried off to line their nest. They spend most of their time among the foliage of the trees, hunting on the leaves and among the loose bark on the trunk and branches for all sorts of small insects.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ SPOTTED GROUND BIRD.”

Cinclosoma punctatum, Latham.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ DIAMOND BIRD.”

Pardalotus punctatus, Shaw.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

"MISTLETOE BIRD."

Dicaeum hirundinaceum, Gould.

It is a remarkable fact that, while all our other species make their nests in hollows or holes in trees, this species should be subterranean in its nesting habits. Selecting a shelving bank, the female drills a small circular tunnel in a horizontal direction for several feet through the soil, and forms at the end of it a regular chamber. There, in pitch darkness, she builds a carefully-woven nest of bits of bark, with a hole on the side, and in this she lays four or five rather round pure-white eggs. How these birds construct such a compact nest in absolute darkness, and why they should take so much trouble over one that is hidden beyond two feet of clay, are questions that are very hard to answer. Though the Spotted Diamond-bird is common in some localities, it is not often seen by the casual observer; and the hole in the bank leading into the nest chamber is so small that, unless you are lucky enough to see the little cave-nester entering or emerging, you may easily miss its doorway.

The Mistletoe-bird (*Dicæum hirundinaceum* Shaw).

Gould's Handbook, vol. I, p. 581, No. 358; Leach's Bird Book, page 166, No. 366.

This curious little bird is the sole representative in Australia of a group common in the Indian region and southward to New Guinea. It has a wide range over the greater part of Australia, but does not extend to Tasmania. Lewin, in his "Birds of New Holland," called it the Crimson-throated Honey-eater; other writers, following its scientific name, call it the Swallow *Dicæum*. Among popular names it has had that of Cherry-picker, but as this little bird confines itself to the bush forest, the name does not seem a particularly appropriate one. It is a common resident in the open forest, where it makes its home in the she-oak trees. It is the bird's fondness for the mistletoe—the milky-berried parasite plant which infests the she-oak in common with others of our trees—which gives it the name we have favoured. Indeed, the fruit of these native mistletoes, with small insects, forms the main part of our friend's diet.

Though often numerous in suitable localities, by reason of its small size and retiring habits (for it usually frequents the topmost branchlets of the she-oak), the Mistletoe-bird is seldom seen by the casual visitor to bushland. Gould says of its music "Its song is a very animated and long continued strain, but is uttered so inwardly that it is almost necessary to stand beneath the tree upon which the bird is perched before its notes can be heard."

The Mistletoe-bird is a tiny bird with the shining black coat of a swallow and the crimson throat of a robin. The female is not so richly coloured as the male, the crimson tint being reduced to brownish buff. The nest is a beautiful structure swung to a slender branchlet of she-oak or gum. It is a pear-shaped bag, composed of seeds, spiders' cocoons, and soft vegetable matter. It has an opening on the side and contains three or four pure-white eggs.

The Black-faced Cuckoo-shrike (*Coracina robusta*).

Gould's Handbook, vol. I, p. 192, No. 103; Leach's Bird Book, p. 127, No. 262.

The Black-faced Cuckoo-shrike has a number of popular names. In my boyhood in Victoria I remember we called it the Big Summer-bird to distinguish it from the smaller wood-swallows—also summer-birds. In New South Wales it is called the Blue-jay, as in the plate illustrating our article. Other popular names are Blue-pigeon, Leatherhead, and Cherry-hawk—three names, given in Leach's list, that are very misleading. Its scientific name has also been changed, for it was described in Gould's work as *Graucalus melanops*, while Latham had previously designated it *Corvus melanops*, Black-faced Crow. This bird has suffered badly from a multiplicity of names and has been likened to a number of birds to which it has no affinity.

The Black-faced Cuckoo-shrike is a handsome slate-blue bird, with the side of the face and neck black. It generally flies alone or in pairs, and either in flight or when resting on the ground resembles a cuckoo. It usually selects as its perch a bare branch of a tall gum; here it feeds on passing insects, but it also gets some of its food from among the grass. It has a very wide range, from the Malay Archipelago, through New Guinea and Australia, to Tasmania.

This bird's nest is a shallow one, situated on the tip of a horizontal branch and composed of small sticks closely woven together; in this it lays two eggs, varying from brown to dull-green in colour, spotted and blotched all over the surface with brown.

The White-shouldered Caterpillar-eater (*Lalage tricolor* Swainson).

Gould's Handbook, vol. I, p. 204, No. 112; Leach's Bird Book, p. 127, No. 256.

This bird was originally described under the name of *Campephaga humeralis*, but later was removed from that group into the genus *Lalage*. Though the older popular name of White-shouldered Campephaga may be rather cumbersome it is much more distinctive than that of Caterpillar-eater, a name which might be applied to many other birds. In the later generic application, White-shouldered Lalage, we would have a suitable and euphonious popular name. The White-shouldered Lalage is migratory in New South Wales, Victoria, and South Australia, appearing in the first State in November. With its bright black and white plumage it somewhat resembles a large robin. It frequents the open forest, has a quick, direct flight, and gets most of its food on the ground.

The nest is a very shallow affair, composed of bits of bark woven together with dried twigs and grass, lined inside and placed in the fork of a dead tree. The eggs, two or three in number, vary in ground colour from pale-green to greyish; those in some clutches are deeply and heavily blotched, but in others may be scarcely spotted. According to Gould, the female is a very shy bird, with a song so sweet that it might almost be mistaken for that of a canary.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

"BLUE JAY."

Coracina robusta, Latham.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“CATERPILLAR EATER.”

Lalage tricolor, Swainson.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“HOODED ROBIN”; “BLACK AND WHITE ROBIN.”

MELANODRYAS BICOLOR. *Vig. and Horsf.*

The Hooded Robin [*Petroeca (Melanodryas) bicolor* Vig. and Horfs.]

Gould's Handbook, vol. I, p. 283, No. 168; Leach's Bird Book, p. 133, No. 249.

Black-and-White, or Pied Robin, are names also given to this handsome little bird. Both are distinctive, as the plumage is all black and white, without any red on the head or breast, while the black plumage of the head and throat forms a regular hood. The old generic name of *Melanodryas* used by Campbell, North, and on our plate, has been discarded for that of *Petroeca*, for in structure and habits this bird should be grouped with these redbreasts. Hall and Leach both use this generic name.

This robin may be found in open forest country over the length and breadth of Australia, and in favoured localities is a common bird. It is very active in hunting for insects, catching them on the wing, among foliage, and on the ground. This bird is somewhat remarkable by reason of its habit of selecting for its nest a lowly site—such as the top of a stump, or the fork of a low sapling. The nest is a typically cup-shaped robin's, composed of bits of bark or twigs and grass, with the outer surface covered with bits of bark attached by spiders' web, the whole compactly built and lined inside with soft materials. The eggs, either three or four in the clutch, vary in colour from dull-apple to olive-green, sometimes with a clouded band at the apex.

The Yellow-breasted Robin (*Eopsaltria australis* Latham.)

Gould's Handbook, vol. I, p. 293, No. 175; Leach's Bird Book, p. 132, No. 326.

The bird pictured in our illustration as the Yellow-breasted Robin is, strictly speaking, a shrike-robin, and belongs to a different group from that containing the robin-redbreasts. It was among the first birds noticed at Sydney Cove, and is figured in White's "Voyage to New South Wales" (1790), under the name of the Southern Motacilla. It may be noticed that many of the older naturalists called the different robins flycatchers. Lewin, in his "Birds of New Holland," figured this one, and called it the Yellow-breasted Thrush. Gould formed the genus *Eopsaltria* (*Eos* dawn, and *Psaltria* a musician), which might be translated as "a singer at dawn," for this bird and allied species.

The range of this robin is chiefly confined to the thick timber and dense brush country along the coastal districts of New South Wales and Victoria, and does not extend far inland. Two species are found in the eastern area and two in Western Australia.

The Yellow-breasted Robin feeds upon all kinds of small insects, often resting quietly on a branch to fly down and snap up a moth or fly on the wing. She makes her nest towards the end of September or early in October—a nest which, even compared with those of the other robins, which are all of dainty craftsmanship—is a masterpiece in bird architecture. It is cup-shaped, and is composed of strips of bark and roots, lined with leaves and matted together with cobwebs, to which are attached lichens and bits of bark over the outer

surface, so that when placed in the fork of a tree its outward surface blends with its surroundings. It contains a pair of bright-green eggs speckled all over with brown. Like other robins, this one does not escape the attention of lazy mother cuckoos, for the Pallid Cuckoo (*Cuculus pallidus*) often places her egg in the nest. The unfortunate robin nestlings are then thrown out of the nest by their sturdy foster-brother and come to an untimely fate.

The Pheasant-coucal or Scrub-pheasant (*Centropus phasianus* Latham).
Gould's Handbook, vol. I, p. 634, No. 388.

The popular name of Scrub-pheasant is a very unfortunate one for this curious bird, which has nothing in common with the true pheasant, except some likeness in coloration of its plumage. By classification and structure it is a cuckoo, but in its habits it differs from its nearest relations; for instead of the hen laying her eggs in the nests of other birds, she constructs a large dome-shaped nest of her own with an opening on either side, so that her head sticks out of the front door, and her long tail stands out through the back entrance. The nest is usually placed in a tuft of long grass carefully concealed from view, and contains from three to five eggs, very round, dull-white, and as Gould says, "somewhat like those of a Cormorant."

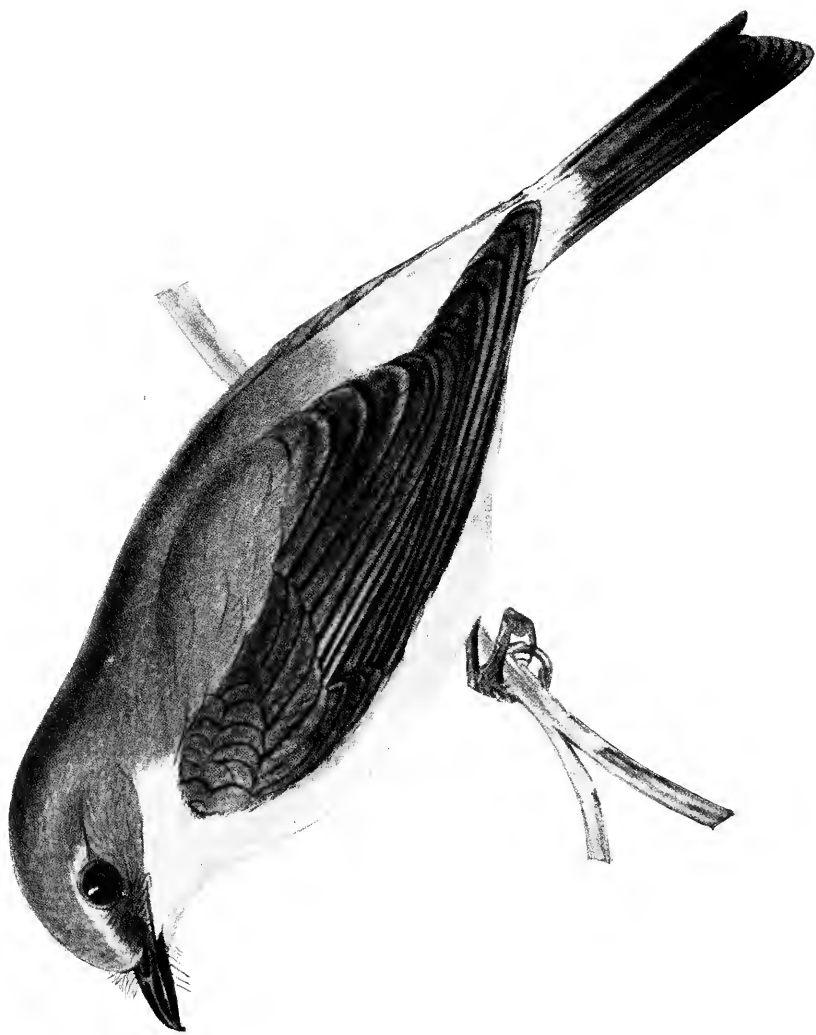
Though the Pheasant-coucal ranges as far south as our Illawarra scrubs, it is a rare bird until one gets much further north, and most of my own experiences with it have been in the north Queensland brushes and the coastal districts of north-west Australia. Its natural home is in marshy or swampy land where there is plenty of cover, but it also frequents the banks of creeks and rivers. Usually found upon the ground when one is travelling through the bush, they fly up into the nearest tree with a frightened squeak, and with a series of flying jumps get up to the topmost branches. Their powerful feet are admirably adapted for the life they lead upon the ground, scratching over the rubbish. They are omnivorous in their diet, and though chiefly insectivorous nothing comes amiss.

The members of the genus *Centropus* (which is a compound Greek word meaning "spine foot," in allusion to the large claw on the hind toe) are a curious group of birds distributed over the greater part of Africa, India, China, and Malaysia to Australia. The typical Indian species is a large bird over 2 feet in length to the tip of its tail. When describing our species Stephens called it *Cuculus phasianus*, but Illiger created the present genus for an African species, so our bird came under the same heading.

The Orange-backed Wren (*Malurus melanocephalus* Vig. and Horsf.).

Gould's Handbook, vol. I, p. 333, No. 196.

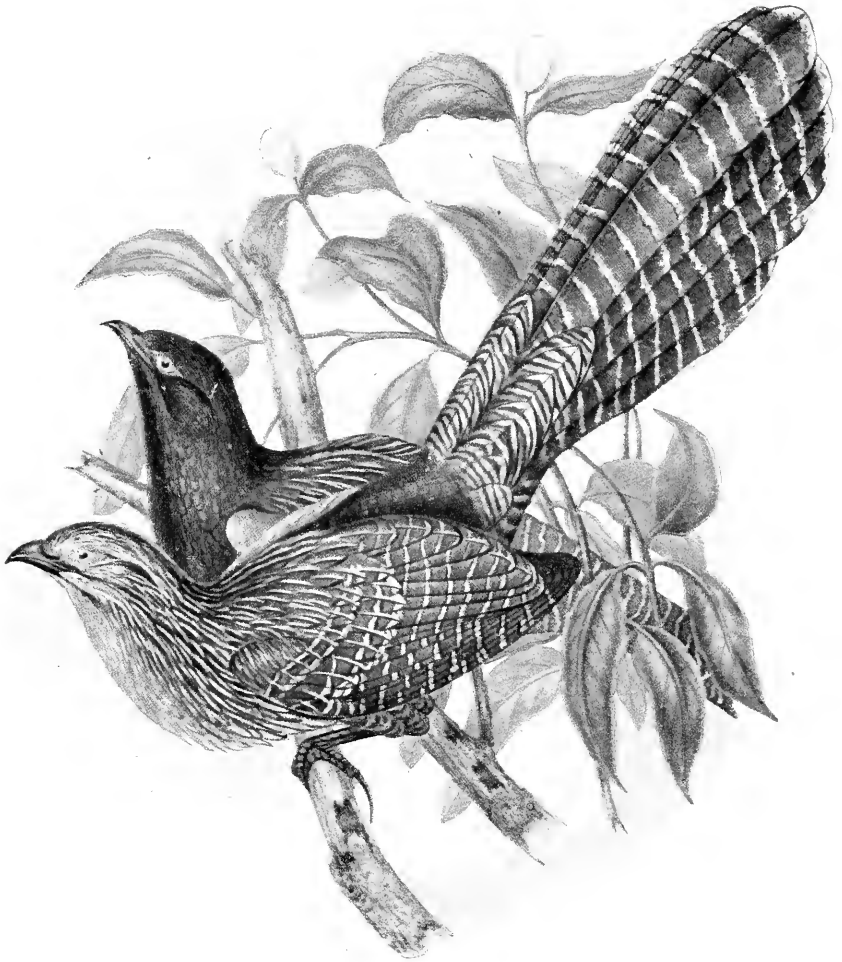
Red-backed Wren is another name for this handsome little bird, and Lewin, in his "Birds of New Holland," called it the Scarlet-backed Warbler. Unlike the Blue Wren, it does not visit our gardens, but frequents the well-grassed valleys along the mountain sides—usually in pairs, not in small



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“YELLOW-BREADED ROBIN.”

EOPSALTRIA AUSTRALIS, *Latham.*



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ THE PHEASANT COUCAL.”

Centropus phasianus.

Dark form, male; lighter-coloured, female.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ORANGE-BACKED WREN.”

MALURUS MELANOCEPHALUS, *Fig. and Horsf.*

family parties like other wrens. Its rich black tints contrast strikingly with its orange back, making the adult male a very handsome little fellow. He has the stupid habit, however, of our Blue Wren, of showing himself off in a prominent position, a habit often responsible for his undoing should a Butcher-bird catch sight of his showy coat.

This bird ranges over the greater part of the southern and eastern portions of Australia. In the northern parts of Australia its place is taken by a closely related species, *Malurus cruentatus*, which Gould called Brown's Wren, after one of the officers of H.M.S. *Beagle*, who collected it at Port Essington, in the Northern Territory. I met with this species in the grass-land of north-western Australia, in the vicinity of King's Sound. It is a smaller wren than the southern one, with the back a deeper rich red.

The Black-headed Superb-warbler is a name also given to this bird, but the one I have favoured is much less cumbersome as a popular name and makes acknowledgment, too, of the characteristic and rich colouring of the back. The nest is of the usual oval domed form with a hole in the side; it is constructed of dry grass, lined inside with finer materials, and contains three or four roundish glossy-white eggs, blotched and spotted with reddish-brown on the apex.

SECTION III.

Birds of Inland Plains, Swamps, Open Forests, and Scrubs.

In making this division one has to place in it some birds that are equally at home in the last section, and which are found along the edges of our coastal forests. All those birds that may be considered typical of the western lands, that enliven the open box forests, that live in the giant red-gum trees that fringe the banks of our inland rivers and swamps, or that police the scrub on the sand ridges and red-soil flats or the great open grass-covered plains have been retained in this section. They are as follows:—

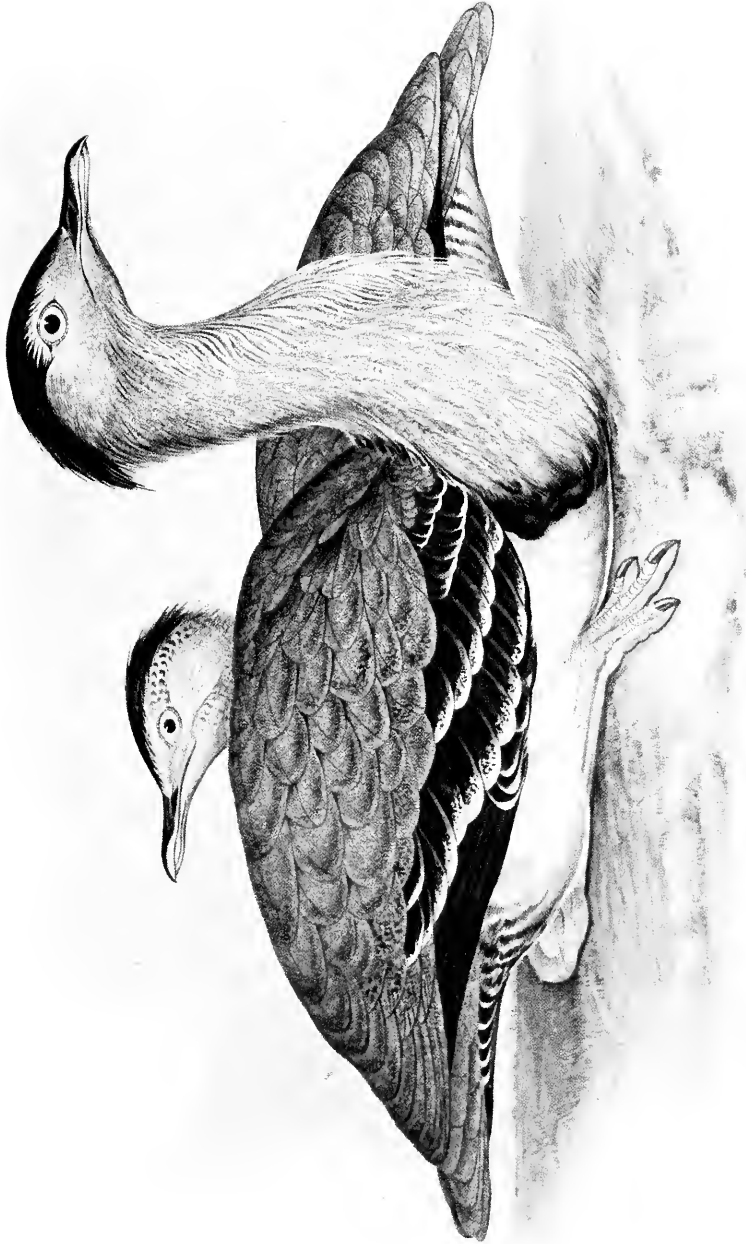
Plain-turkey or Bustard (<i>Eupodotis australis</i>).	White-winged Chough (<i>Corcorax melanorhampus</i>).
Mallee-fowl or Lowan (<i>Leipoa ocellata</i>).	White-browed Babbler (<i>Pomatorhinus superciliosa</i>).
Stone Plover or Land Curlew (<i>Burhinus grallarius</i>).	Grey-crowned Babbler (<i>Pomatorhinus temporalis</i>).
Black-breasted Plover (<i>Zonifer tricolor</i>).	Apostle-bird (<i>Struthidea cine ea</i>).
Spur-winged Plover (<i>Lobivanellus lobatus</i>).	Sacred Kingfisher (<i>Halcyon sanctus</i>).
Straw-necked Ibis (<i>Carphibis spinicollis</i>).	Nankeen Kestrel (<i>Cerchmeis cencroides</i>).
Blue-crane or White-fronted Heron. (<i>Notophox nova-hollandia</i>).	Wedge-tailed Eagle (<i>Uroætus audax</i>).
Nankeen Night Heron (<i>Nycticorax caledonicus</i>).	Brown Tree-creeper (<i>Climacteris scandens</i>).
Pacific Gull (<i>Gabianus pacificus</i>).	Orange-winged Nuthatch (<i>Neositta chrysoptera</i>).
White-eyed Crow or Raven (<i>Corone australis</i>).	Crested Bell-bird (<i>Oreoica cristata</i>).
	White-fronted Chat (<i>Ephthianura albifrons</i>).

The Australian Bustard or Plain-turkey (*Eupodotis australis* Gray).

Gould's Handbook, vol. II, p. 208, No. 495; Leach's Bird Book, p. 51, No. 110.

An old cock Bustard in full spring plumage, strutting about over the open plains looking after three or four of the smaller hens, is the most handsome and stately of all our birds. The harmonious blend of the pepper-and-salt plumage, the upright carriage, the sweeping neck plumes and bright yellow eye keeping keen watch all round, make up a sight to be remembered.

The Bustard is found all over Australia, but migrates from one part of the country to the other, following its food supplies. In the old days, on the plains of north-west Victoria, as soon as the grasshoppers made their appearance we were sure to have wild turkeys in the paddocks within a few weeks.



Approximately one-sixth natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"THE AUSTRALIAN BUSTARD OR PLAIN TURKEY."
Eupodotis australis.

It is the sole representative of a group of birds (*Otivilæ*) that is widely scattered over the world. A few hundred years ago one species was common in the south of England, and used to be hunted with greyhounds. Others are found on the plains of Africa and Asia.

In the breeding season the female makes no nest, but deposits her egg (some writers say there are sometimes two) in a depression in the ground or crab-hole country, or near lignum bushes. The baby turkey, as soon as he hatches out of the egg, is as cunning as most ground birds, and can look after himself. Never moving when discovered, he will allow himself to be picked up and handled, but will run off when placed on the ground.

Concerning the food of the Bustard, I have seen some very curious statements published. Mr. Aflalo, in his "Natural History of Australia," speaking of the Bustard says: "Lives entirely on the open plains, feeding upon lizards and roots. As a game bird, the Bustard ought to be protected, but a great deal of nonsense has been written about the great importance of the Bustard or wild turkey from an insectivorous standpoint. In northern Victoria, though the wild turkeys used to follow the grasshoppers, they were always rare birds, and a flock of a dozen or twenty was a large one; usually they were found in a family party of four or five, and on a 600-acre paddock full of grasshoppers would not make as much impression on the pest as the crows or magpies." In Lucas and Le Souef's "Birds of Australia," the authors say: "At times when crammed with grasshoppers, which they are doing their best to destroy, they fall victims to the stick of the ungrateful but hungry settler." If the authors mean that the wild turkeys, gorged to repletion, can be approached and killed with a stick by a hungry selector, the birds must have deteriorated or be very different birds to those we used to hunt on the plains of northern Victoria. I have examined the crops of many Bustards, and in the spring the main part of their food consists of dandelion heads and other vegetable matter, together with a few centipedes, ground weevils, beetles, and other insects found on the plains. In the summer, the crops contained chiefly grasshoppers, but their food was very varied. In Victoria, in particular, the great insectivorous value of the Bustard has been very much over-rated—for example, see Mr. Hall's "Useful Birds of Southern Australia" when dealing with this bird.

The Bustard, like all other large game birds which nest upon the ground, is bound to disappear with the advance of civilisation, wire fences, cultivation paddocks, and forest destruction, to say nothing of the introduction of the fox and other ground enemies. It is our finest game bird, and should be protected as a game bird, when it would probably increase in time in uncultivated areas, and be a valuable asset. I have weighed many Bustards ranging from 12 lb. to 16 lb. in weight, and it is not uncommon to get one over 20 lb. in weight. From a sportsman's point of view, this bird always took good hunting, and, if one's luck was out, one might spend all day and never get one. Many a day have I spent driving turkeys, which

is as great an art as their shooting. The success of the day's bag depended not only on the aim of the sportsman, but the skill and judgment of the driver, who, driving gradually, not towards the feeding birds, but in ever lessening circles, gradually brought the vehicle with the shooter sitting behind within range of the watching bird. The moment the trap stopped, the turkeys were up, and if the horse had been badly trained, and was restless, it took a good shot to bag his bird at anything near 100 yards. On very hot days, however, the wild turkeys were not so active, and had a very curious habit (particularly if feeding in crab-hole or rough ground) of "squatting," evidently under the impression they were concealed from the approaching enemy. They would squat close to the ground, draw the head and neck down on the body, and if the watcher happened to take his eye off just before this vanishing trick was effected, it was often very difficult to locate the exact spot where the game was hidden. Sometimes the trick would be done on an absolutely bare patch of soil, and the bird would allow one to get within easy range under the mistaken idea that it was quite safe.

In north-west Australia, in from King's Sound, I have seen Bustards in comparatively thick scrub land, but in New South Wales and Victoria they are seldom seen off the plains.

On 17th January, 1919, while at the Government Sheep-fly Experiment Station near Moree, where wild turkeys were not uncommon in the long grass, I obtained a bird only about a fortnight old, which one of the boundary riders caught when it was coming into a dam with its mother to drink in the evening. This active little creature was for several weeks kept in a small yard, where it became very tame, but frequently uttered a very plaintive frightened cry if one went near or touched it. It would eat almost any kind of food, but preferred raw or cooked meat cut into small pieces. At the time of writing (nearly twelve months later) this bird is well grown and in our Zoological Gardens.

The Mallee-fowl or Lowan (*Leipou ocellata*).

Gould's Handbook, vol. II, page 155, No. 477; Leach's Bird Book, p. 13, No. 2.

This curious bird differs in form and coloration from all the other members of the mound-nesting birds known as *Megapodes*, and is found further south than any other form of the group, ranging through the north-western districts of Victoria, central South Australia, and across Western Australia almost to the coast. The popular name of Mallee-hen or Mallee-fowl defines it well, as it inhabits all that class of low scrub, dwarfed eucalypts, and other scrubs known as the Mallee. Under the protection of this it constructs the remarkable mound nest that attracted the attention of all the early travellers and naturalists. Gould gave a long and interesting account of these birds and their mounds in his "Birds of Australia," and was so



Approximately one-quarter natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"THE MALLEE FOWL, OR LOWAN."
Lipoa ocellata.

interested in their curious habits that he first published his records in the *Tasmanian Journal*. Wood, in his "Homes without Hands," gives a somewhat imaginary picture of a party of blackfellows digging out the eggs. Several writers have remarked upon the survival of these birds in our fauna, when their nests were so easily found by the natives, and it has been suggested that the different tribes had some form of protection among themselves to keep the birds from extinction. Up to the time of the agricultural settlement of the mallee lands of Victoria, these birds were fairly common; and though natives are plentiful, and food supplies not too abundant, the Mallee-hens hold their own in Western Australia. Giles, in his "Australia Twice Traversed," says, speaking of the Mount Margaret district, that the eggs of the Lowan were a great adjunct to their camp fare, and records collecting seventy of these eggs in two days, in spite of the fact that wild natives were numerous, and were also digging out the eggs.

The Mallee-hen is about the size of a domestic barnyard fowl, of a uniform brownish-yellow colour, with the feathers mottled in the centre with light brown, so that the general colour harmonises with the dull-red and browns of the soil of the mallee scrub. Standing erect, she is a handsome bird, with well-developed wings, broad tail, stout legs, and large feet, admirably adapted for scratching out food and scraping up earth, leaves, and mould, in the formation of her large, rounded, dome-shaped nest.

The mound nest is constructed in the shelter of the scrub, and when the whole of the surrounding surface has been swept up, the nest measures about 4 feet in height and 12 feet in diameter at the base. The male and female share in the work of scraping up the damp leaf-mould and sand, and upon completion of their task open out the centre. The female deposits the eggs in three circles of four or five eggs each, or a total of fifteen eggs, so that there are three layers, one above the other, in this wonderful forcing bed.

During the season, the female lays one egg, in the early mornings, every third day, and covers it with sand and leaf-mould. The eggs are very large in proportion to the size of the birds, and have very thin shells, of a pink biscuit-brown tint. As there is such a long interval between the date of laying of the first and last egg of the clutch, the young chicks come out at irregular periods; but the Mallee-hen understands her work, and before the young birds are expected, opens out her nest, to allow the escape of the newly-hatched chicks. The baby Mallee-hens are feathered on emergence, can run and fly, and are able to hunt for their own food; but the parent birds feed close by in the scrub, and gather together the nestlings as they leave the mound into a family party.

The Mallee-hens are insectivorous, and find their food on the ground, so that they must do a great deal in keeping down all kinds of ground insects inhabiting the open forest country.

The Stone Plover or Land Curlew (*Burhinus grallarius* Latham).

Gould's Handbook, vol. II, p. 210, No. 496; Leach's Bird Book, p. 51, No. 109.

This shy, retiring bird is much better known to most people by reason of its weird melancholy cry or long drawn out, whistle-like note, rather than by personal observation of the bird itself. The calling of a pair of curlews in the long winter evening round an isolated homestead or a lonely camp fire is mournful enough to give the newcomer from the city a fit of the blues; but to the true imaginative bushman it is one of the "voices of the night" that rather appeals to his sense of fitness with the surroundings—"often striking a chill into the heart of the benighted traveller, for the imitation of the call of this bird is often a signal whistle from the bushranger to his mates at night," says the author of "Bush Wanderings."

The birds frequent open boxforests and lightly timbered flats, seldom coming out on the open plains; and they may often be quite numerous without being seen by the traveller. At the least alarm they stand perfectly still with the head and neck pointing out, and their grey and brown plumage blends so closely with the country they frequent that is usually an accident if one is seen unless it moves. They are, however, always alert, with their large bright yellow eyes watching the intruder, and are ready to run or fly as soon as they think they are noticed; otherwise, they will allow a person to come quite close, and pass them on the track without moving.

No regular nest is made, but, like the true Plover, the female lays her two blotched, brown eggs in a slight depression on the ground, where their ground-tint matches the soil, and does not display them to their enemies.

The curlews are usually found in pairs, except after the nesting season, when they are found in small family parties; and in the days when hawks were plentiful they suffered much from their attacks. Poisoning has killed out the hawks; but it has also, when used for rabbits, caused the death of many curlews who picked the pollard baits when feeding over the ground at night. Now, with the introduction of the fox, the enemy of all ground-nesting birds, there is another change in the balance of nature.

With reasonable protection curlews will hold their own in all open forest country where settlement is not too dense, and, feeding chiefly at night, they capture and destroy many insects that are not out in the daytime. On account of their nocturnal habits they have been introduced into suburban gardens to keep down the slugs and snails, and in this capacity they are one of the best friends of the gardener.

Our curlew has many popular names, such as the Land Curlew, Stone Plover, and Norfolk Plover; but it will always be known to the bushman as the curlew. It must not, however, be confounded with the Curlew or Whimbrel of Europe, which, though having a somewhat similar call-note, is classed in an allied group, and is quite a different looking bird. It is much larger, more mottled, and furnished with a long slender bill adapted for picking up water-insects and small crustaceans along the marshy sea coast.



Approximately one-third natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"THE STONE PLOVER OR LAND CURLEW."
Burhinus grallarius, Hall.



Approximately one-third natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"THE BLACK-BREASTED PLOVER."
Zonifer tricolor.



Approximately one-third natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE SPUR-WINGED PLOVER.”

Lobivanellus lobatus.

The Black-breasted Plover (*Zonifer tricolor* Vieill).

Gould's Handbook, vol. II, p. 222, No. 502; Leach's Bird Book, p. 43, No. 81.

This handsome ground bird has a very wide range over Australia, and is common on the open grassed plains and about the edges of swamps or river flats. It is usually found in small parties of four or five, tripping over the ground hunting for the insects and small crustaceans found in such localities, rising with a sharp cry when startled, but seldom flying very far before again alighting. In the nesting season it is very wary, and if sitting on the four dark-brown, blotched, top-shaped eggs (simply deposited in a depression among the grass) the female will creep away at the first alarm, and flying in front of the intruder, will flutter over the grass pretending to have a broken wing, or some more serious malady, chattering all the time as she edges the unwelcome stranger away from her precious eggs.

The coloration of these eggs so closely resembles the surrounding soil that they are very hard to detect unless the bird is disturbed while sitting upon them. The nestlings can run as soon as they emerge from the shell, and their brown and drab suits of down are even more adapted to their surroundings than the coloration of the eggs. At the first warning cry of the mother the baby plovers at once scatter among the surrounding grass and instinctively squat flat down, hardly moving an eyelid, and even on a bare plain will often successfully fool the inquisitive hunter.

After the nesting season the family parties gather together in small flocks of a dozen or more, and hunt over the open plains, their rich black, white, and reddish-brown plumage giving them a very attractive appearance.

Looked upon as game birds by the sportsman out to kill, they were often shot and added to his bag, but the country resident, however keen a sportsman among wild duck and larger game, is seldom guilty of shooting at our useful Black-breasted Plover.

The Spur-winged Plover (*Lobivanellus lobatus* Latham).

Gould's Handbook, vol. II, p. 220, No. 501; Leach's Bird Book, p. 43, No. 80.

The Spur-winged Plover is met with in many parts of Australia; though often found in small flocks upon the plains, it is common along the edges of creeks and swamps, where it obtains much of its food. Here it is often a serious annoyance to the sportsman, suddenly flying up in front of him, and with its harsh call-notes warning ducks and teal of his approach. Many a wild duck has escaped from the game-bag by heeding the warning cry of the startled Spur-winged Plover.

The habits and methods of nesting of this bird are similar to those of the smaller Black-breasted Plover, but in appearance they are very easily distinguished by their lighter colour, longer legs, and the curious wattles or naked growths below the eyes. The remarkable appendage from which they take their popular name of "spur-winged," consists of a sharp thorn-like

projection on the point of the elbow of the wing ; but though the spur should be a weapon of offence or defence, the writer has never seen the birds use it in any way.

All the plovers are looked upon as game birds in Great Britain, and plovers' eggs are imported from the Continent. In this country sportsmen were once accustomed to add them to their bag when other game was scarce, but under our latest regulations they are protected all the year round in consideration of their insectivorous habits.

The Straw-necked Ibis [*Carphibis (Geronticus) spinicollis* Jamieson].

Gould's Handbook, vol. II, p. 282, No. 538 ; Leach's Bird Book, p. 53, No. 113.

In the ibis family we have a very interesting group of large insectivorous birds, the members of which are found in most parts of the world. In Australia the family is represented by three species, which are to be found in all the different States. The Glossy Ibis (*Plegadis falcinellus*) is the smallest of the three, and, unlike the others, has the whole of the head and neck feathered. The whole of the plumage is of a uniform chestnut-brown tint with glossy metallic reflections. Though it is our rarest species, it has a very wide distribution, being found in England, southern Europe, northern Africa, across Asia to Australia, and it is also found in marsh lands of Florida, in the south-east of the United States.

The second is the White Ibis (*Ibis molucca*) which, though confined to Australia, New Guinea, and some of the southern islands of the Malay Archipelago, is closely related to the White Ibis or Sacred Ibis of Africa, which was worshipped in ancient Egypt, where it appeared every year from the interior with the inundation of the Nile delta lands. Many mummies of these birds have been found in the excavations among the tombs, and in the time of the Pharaohs it was a capital offence to kill an ibis. It is said that when Cambyses, King of Persia, laid siege to the town of Damietta, he placed a number of Sacred Ibis in front of his soldiers who led the attack, and that the Egyptian defenders capitulated rather than allow the destruction of these birds, to such an extent was this veneration carried out in ancient Egypt.

The common White Ibis has the head bare, beak and legs black, and a few black plumes in the wings. It is often noticed in pairs about the swamps, but will congregate in flocks and do a great deal of useful work in destroying all kinds of insect pests. Though not so numerous in New South Wales as the Straw-necked Ibis, it ranks well up in the list of useful insectivorous birds.

The third species, illustrated in this series, is typical of the family and well known all over the State as the Black-and-White Ibis, on account of its general coloration, or the Straw-necked Ibis, because of its remarkable neck ornamentation, formed of aborted feathers. The shafts of the neck feathers are produced into slender, yellow-pointed tubes, not unlike the quills of a porcupine, and, on the old birds, hang down in quite a large bunch. In Vic.



Slightly less than quarter natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE STRAW-NECKED IBIS.”

Carpodacus (Geronticus) spinicollis.

toria the sportsmen used to call them Pick-axe Geese, on account of their curiously shaped beak, and also from their somewhat harsh croak or honk, which is like the call of the wild geese when crossing the plains, flying high up in the sky and strung out in a wide V-shaped formation. Latham, who was the first naturalist to describe the bird, called it the New Holland Ibis; later on Jamieson gave it the name of *Ibis spinicollis*, but Grey placed it in the genus *Geronticus*; this Gould adopted in his large folio work, but he changed it to the genus *Carphibis* in his "Birds of Australia." Though some modern writers retained the generic name *Geronticus*, later naturalists dealing with our birds followed Gould, and it is now fixed in the genus *Carphibis*.

The Straw-necked Ibis is one of the best known and most popular of Australian birds, and if the farmers and squatters do not look upon it as sacred, in a similar way to the ancient Egyptians, they value it as one of their most important insectivorous birds. No one in a country district would think of shooting an ibis. It is not, generally speaking, a coastal visitant, but is found all over the inland country, being a frequenter in the winter months of the shores of inland lakes, marshes, and swampy country, where it finds large food supplies in the freshwater crustaceans, insects, and frogs. In the early summer months these birds congregate in enormous flocks for the purpose of nesting in the reed beds and swamps of the Lachlan River and other parts of the Riverina country. Le Souef estimated that in a swamp of about 400 acres in extent, which his party visited in the nesting season in southern Riverina, there were fully 100,000 ibis in possession. There is hardly any attempt at nest-making; the nest is simply a handful of rushes, flags, or grass, scratched together on the top of the trampled-down vegetation. In the centre of this is placed usually three, but sometimes four, pale greenish-white eggs. In these swamps the nests are almost touching, and the whole surface of the reed-beds is one sheet of eggs like a seagulls' rookery. As the young birds grow up, but are unable to fly, they are shepherded together by some of the old birds on the trampled-down lignum and reeds so that they cannot get into the surrounding water, where, if unwatched, many of them would be drowned.

With the advent of the cutworm plagues in the grass paddocks, and the hatching-out of the swarms of baby grasshoppers later on in the season, the ibis flocks, freed from their domestic duties, scatter all over the plains, forest, and scrub. Broken up into small flocks of from fifty to several hundred, they may be seen strutting or walking about in a very leisurely manner feeding upon these pests, or, later in the day, when fully fed, resting upon dead trees or sleeping on fallen logs, where they are so little disturbed by man that they take very little notice of anyone passing along the road.

By reason of its large size, its fondness for some of our very worst insect pests (grasshoppers and cutworms), and its numbers, the ibis is one of the most valuable insectivorous birds in Australia, and not only should the birds be protected, but their nesting grounds should be proclaimed sanctuaries, and no shooting allowed in these areas.

The White-fronted Heron or Blue-crane (*Notophyx novæ-hollandiæ* Latham).

Gould's Handbook, vol. II, p. 399, No. 548; Leach's Bird Book, p. 60, No. 119.

Though correctly-informed persons and naturalists call this bird the White-fronted Heron, the bushman knows it as the Blue-crane. It cannot, however, be properly placed among the true cranes, which are all large birds of quite a different build, typically represented in Australia by our Native Companion.

This bird has an even wider range outside Australia and Tasmania than the Nankeen Heron, for beyond New Zealand it ranges through the Loyalty Islands, New Caledonia, New Guinea, and the Moluccas. It is common on the low sandy beaches of our coast lands as well as around shallow swamps, lakes, and marshes inland. Always busy, running quickly over the grass and rushes or wading up to its knees in the muddy water, it captures unwary crayfish, frogs, small crustaceans, and among them the small freshwater snail that is the host of the larval fluke before it infests the liver of the sheep.* On the sand it gets many ground insects, and in the time of locust plagues lends a hand to the ibis and wood-swallows in destroying these grass-eating pests.

Its nest is a flat structure made of sticks and a little grass, placed upon the horizontal branch of a tree usually overhanging the water, and contains four delicate bluish-green eggs, which in my young days were looked upon as a prize by any collector of birds' eggs.

Like the Nankeen Heron, this graceful bird adds a charm to the landscape, but is much more noticeable on account of its active daylight habits. Everyone who watches a Blue-crane will see what a busy useful bird it is as it engages on its accustomed duties.

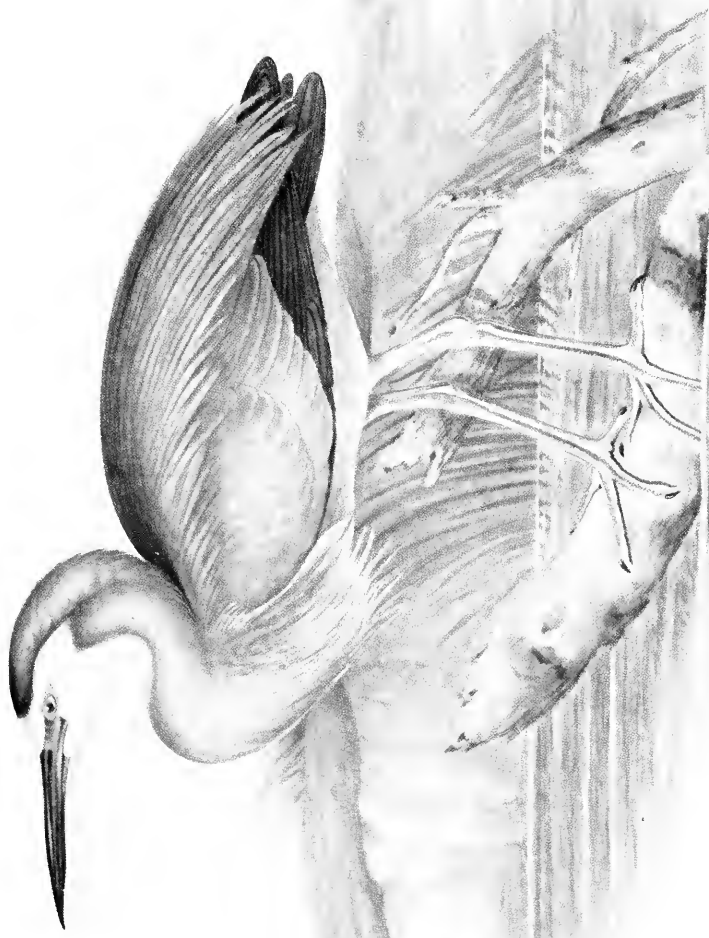
The Nankeen Night-heron (*Nycticorax caledonicus* Latham).

Gould's Handbook, vol. II, p. 311, No. 557; Leach's Bird Book, p. 61, No. 123.

This is a common heron found not only all over Australia and Tasmania but also in New Zealand, and ranging north as far as the Celebes in the Malay Archipelago.

In the early summer months, on the banks of the Murray River near Gunbower, I have often roused out a dozen or more from the shelter of the foliage of the giant red-gums, where, resting with the head and neck bunched down on their shoulders, they were very easily overlooked in spite of their size, as long as they remained stationary. When flapping out into the bright sunlight they appeared to be quite dazed, and soon sought the nearest shelter.

* Dr. Cobb asserts that the White-fronted Heron devours enormous quantities of *Bulimus*, the mollusc which serves as the host of the sheep-fluke. A single snail of this species will often harbour several hundred of the intermediate forms of the fluke. See "The Sheep Fluke," by Dr. N. A. Cobb, *Agricultural Gazette*, July, 1897.



Approximately one-quarter natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE WHITE-FRONTED HERON OR BLUE CRANE.”

Notophox nove-hollandiae, Lath.



Approximately one-third natural size

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE NANKEEN NIGHT HERON.”

Nycticorax caledonicus.

Two mature birds and a young one of the first year.



About one-quarter natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“PACIFIC GULL.”

Gabianus pacificus.

Adult and Young Bird.

They are usually found along the banks of rivers or in the vicinity of swamps and lagoons. Just at dusk they fly out of their resting-place, and their harsh croak can be heard all through the night as they hunt along the banks or wade out into the mud hunting for crayfish, small frogs, crustaceans, and insects, their lance-shaped beaks being admirably adapted for pouncing upon all kinds of small fry. There has been, and still is, I believe, a small colony of Nankeen Herons in the brush in the old garden at Macleay House, Elizabeth Bay, from which they fly out in the evening and hunt over the foreshores of the bay through the night. When nesting inland they build a stout nest of sticks in the larger trees among the swamps and lagoons, but on the coastal waters much less care is taken in the construction of their nests, and they are much smaller and more flimsy. The eggs, four in number, are a light bluish-green, and the young nestlings for some time after they are hatched out are covered with dark down, which is spotted and striped with white. As they lose their baby clothes, however, they don the rich nankeen brown of the adults.

With the rich contrasting tints of back and breast, and the beautiful white occipital head plumes and bright yellow eyes, the Nankeen Heron is a handsome as well as a useful night hunter, and on account of both its value and its beauty should be protected from the pot-hunter and the thoughtless boy.

The Pacific Gull (*Gabianus pacificus* Latham).

Gould's Handbook, vol. II, p. 385, No. 596 ; Leach's Bird Book, p. 41, No. 73.

The Pacific Gull is common along the coasts of Australia and Tasmania ; this bird and the smaller Silver Gull (*Larius novæ-hollandiæ*), are the scavengers of our sands along the sea shore, devouring all kinds of dead animal matter cast up by the waves.

These useful and handsome birds should be most carefully protected, not only on account of their useful work on sea and land, but also because of the added beauty and interest their presence give to the sea-side resorts. Anyone shooting seagulls from the deck of a steamer or on our beaches should be promptly dealt with, and bird-lovers will agree that such a person should be treated without the option of a fine.

The Pacific Gull is the larger bird, having a total length of about 25 inches, while the Silver Gull barely measures 17 inches. They usually construct substantial open grass nests on the reefs and small islands along the coast, and place them upon the ground sheltered among the grass tussocks and low shrubs. The eggs, averaging two or three in number, are olive-green, and marked with dark-brown blotches. The young birds are not fully plumaged until the third year, according to Campbell, being clothed in a dull brown or mottled grey coat, which is afterwards replaced with the beautiful white feathers of the adults. The Silver Gulls live and breed more in small colonies, sometimes collecting, in stormy weather, in large numbers in the sheltered

inlets and harbours. Their nests are often so plentiful as to form regular rookeries on the islands; they are constructed of dry grass and sea-weed, and contain from two to three greenish olive-tinted eggs covered with black or yellowish-brown markings, but both the ground colour and markings are very variable. The Silver Gull has a wide range along the coasts of Australia, Tasmania, and New Caledonia, and also has the uncommon habit, for a sea bird, of going far inland to lakes and swamps, where it seems perfectly at home with the wild fowl. I remember first seeing these birds at Lake Charm, in the Swan Hill district, Victoria, about 170 miles from the nearest ocean beach. Kept as garden pets Silver Gulls become very tame, and hunt over the ground for noxious insects, snails, and slugs.

The Crow (*Corone australis* Gould).

Gould's Handbook, vol. I, p. 475, No. 290; Leach's Bird Book, p. 188, No. 389.

The family *Corvidæ* comprises a number of large birds, popularly known as Ravens, Crows, and Choughs, which at one time were all included in the typical genus *Corvus*. They are distinguished by a stout compressed beak, straight at the base, arched towards the point, and straight at the edges. The wings and tail are long and graduated, the feet powerful, with the metatarsus exceeding in length the middle toe of the foot. The sexes are similar in colour, usually black and more or less glossed with green or purple tints, except in the Jackdaw and Hooded Crow. Representatives of the genus are found in Europe, Asia, Africa, North America as far south as Mexico, and Australia. Thus widely distributed over the world, they can stand all conditions of climate from the snow-clad mountains of Northern Scotland to the sun-dried plains of central Australia.

Though the Australian bushman looks upon our birds as the one species under the popular and comprehensive name of Crow or Carrion Crow, among ornithologists there has always been a considerable amount of uncertainty and difference of opinion regarding their classification. In describing our species, Gould, in his "Birds of Australia," called it *Corvus coronoides*, but in his Handbook issued later on he changed it to *Corvus australis*, White-eyed Crow, and, though noting the Hazel-eyed Crow, considered it only a variety of the typical form. He says: "It is intermediate in size, in the development of the feathers of the throat, in its voice, in many parts of its economy, between the Carrion Crow and the Raven in our island (England), and it is difficult to say to which of these species it is most nearly allied."

Since Gould's time, modern ornithologists have decided that though the specific differences are vague, we have not only two species—the Crow and Raven—but they belong to different genera. Campbell, in his "Nests and Eggs of Australian Birds," says there still exists some uncertainty about identifying or separating our two species of crow, or the Crow from the Raven. But if the chief points as first mentioned by Dr. Ramsay as far back



About one-third natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.
"WHITE-EYED CROW OR RAVEN."
Corone australis.

as 1865, and afterwards defined by Dr. Sharpe, are noted, the difficulties of identification vanish: "The Raven (*Corone australis*) is the larger bird, has eyes white in the adult, wears conspicuous long feathers on the throat, and has the base of the feathers in the hind part of the neck and back of a dusty-brown or sooty colour. The true Crow (*Corvus coronoides*) has white eyes likewise, but the base of the feathers is snow-white." Later on, however, Campbell says: "As both have white eyes, the only sure method is by handling the birds and deciding by the coloration of the feathers of the neck and back. If they are brown or sooty it is a Raven, if white it is a Crow."

In the latest handbook on our birds, (Messrs. Le Souef and Lucas), the authors define them as follows:—"The Crow (*Corvus coronoides*) is the Hazel-eyed Crow; the Raven (*Corone australis*) is the White-eyed Crow"; but they at the same time say, in describing the latter, "the iris white or dark brown." One could understand ornithologists making two species (though this is doubtful when they breed together), but to place them in different genera seems to point to the fact that some genera exist in name only. There is also a third species described under the name of Small-billed Crow (*Corvus bennetti*), peculiar to South Australia and New South Wales, allied to the Carrion Crow, but smaller. In these notes I propose to follow the bushman and treat them all just as crows; whether they have white or brown eyes, or the down on the feathers of the back and neck is dark-coloured or white, it makes no difference to their habits.

The value or otherwise of crows in Australia is one of those debatable subjects that is a perennial source of correspondence from their admirers and enemies in the stock and pastoral newspapers. At the monthly meetings of the members of the Pastures Protection Boards, the business of paying a standard bonus for crows' heads, and the price to be fixed per head, is frequently a topic for heated discussion, while the following statement is extracted from the Presidential address at an annual meeting of the Sheep Breeders' Association in Sydney: "The crow is also again becoming very troublesome, and how to deal with him is a question which divides many minds, some being for wholesale destruction, others for preservation because of his preying on vermin."

Though there are large numbers of stockowners who consider that crows are not as black as they look and are more useful than harmful, and take no active measures against them, others go to the length of protecting them on account of their value in clearing up carrion and assisting to keep in check the caterpillar and grasshopper plagues. On the other hand, the majority of the coastal, as well as some of the inland sheep-owners, wage unceasing warfare against the crow, and in the annual returns issued by the Stock Branch of the New South Wales Department of Agriculture for the year ending June, 1915, the sum of £2,862 2s. 3d. was given as the amount paid by the officers of the Pastoral Boards of New South Wales for the heads of 109,344 crows.

Many years ago I had opportunities of studying the habits of crows on the plains between Echuca and Kerang, when looking after ewes and lambs in times of drought in Victoria. I held no brief for the crow, and hated that black, cruel, devilish bird, when I found the fallen ewe with her eyes picked out and the helpless lamb standing beside her, with holes pecked in its tail. One would often see a pair of particularly cunning crows separating a young lamb from its bewildered mother, the first crow flying beside the scared, running lamb, every now and then flapping its wings against the poor little beast, while the second crow would deliberately fly up behind and peck it on the rump to hurry it away from the mob. At other times one would come upon a lost lamb on the plains with a crow flapping round, and every now and then giving a tug to its tail to try and pull it to the ground. The sheep-owners will tell you that a sheep or lamb pecked by crows, once down, seldom lives, and attribute it to the fact that crows are carrion feeders and cause blood-poisoning. Of course, in bad times with starving stock, many of the old ewes and lambs that get down would never recover, even in the absence of the crows, but such facts do not have much weight with the sheep man in the circumstances described.

The farmer dislikes crows quite as much as the squatter, and seldom has a good word to say for them. If he runs sheep, he generally has more culls and old sheep in proportion to the size of his flock, and they are the ones that suffer from the crows. The crow is also an expert at stealing eggs, and his depredations in the fowl-yard are only too well known by the housewife. I used to visit a homestead on the plains in Victoria, where three crows formed a syndicate to raid the fowl nests in the stable, where they had the advantage of open gable-ends, giving a ready means of ingress and retreat. Their method was as follows: The first crow flew into a she-oak tree overlooking the house and stable, and finding all quiet, evidently sent back word, for the second crow flew up and took observations while resting on the roof of the stable; a fresh signal was sent back, when the third crow flew up, hopped down into the manger, snapped up the egg before the hen had finished cackling, and flew away down the paddock, followed by the two scouts. Many traps and ambushes were laid for the egg-stealers, but as far as I know my friend never managed to get the best of them.

The crow is accused, probably not without reason, of destroying the eggs and nestlings of smaller birds, and it is quite evident that other birds do not trust him, for at nesting time if a crow comes into the tree, all the small birds join together to hustle and drive him away.

Having given some account of the bad habits of the crow, I will now describe some of his good traits. It is worthy of note that the majority of the squatters who wage war upon the crow belong to the coastal and eastern portion of the State, while it is the men of the west who consider that the work of scavenging and killing blow-fly maggots and other insect pests outweighs any damage this bird does to their flocks. While there is no

question as to the damage the crows, when numerous, do at lambing time, particularly in a bad season when ewes and lambs are weak and starved, during the other portion of the year in the same districts the crow acts as an effective scavenger in cleaning up offal, and destroys many noxious insects, hunting over the paddocks like the magpie, and working very busily when a cutworm army or a locust swarm appears in the district.

In the west the crow does yeoman service in the destruction of dead carcasses. I have seen many dead sheep so devoured that only the skin and bones remained, half of the skin being almost intact; dead rabbits are torn to bits, and the maggots destroyed that would otherwise have entered the ground and escaped. When a dead horse or bullock is skinned it is the crows that set to work to strip the bones. In confirmation of this, I would append the following remarks, made by well-known pastoralists, in reply to a circular sent out for information regarding the crow and the blow-fly pest:—

Bourke.—“I myself do not think that the crow is really harmful. I have always regarded the crow as a good friend, in spite of the fact that he sometimes kills a weakling lamb, and perhaps hastens the death of a weak sheep. I believe the first obvious step to take in mitigating the blow-fly pest is to stop the destruction of the crow. He kills many rabbits, is the most effective enemy of grasshoppers in certain stages, and is the best of scavengers. I have no doubt he is the best natural enemy of the blow-fly.”

Condobolin.—“Consider the crow far and away the best scavenger and destroyer of maggots. The magpie comes next.”

Coonamble.—“The crow is the only bird that I know of that would do any good. He would destroy the carcase by eating and pulling it about. If we had the millions of crows that have been killed, we would not be troubled with the blow-fly.”

Canonbar.—“I am inclined to protect the crow, except during lambing time. They do much good.”

“Crowfoot,” writing in the *Pastoral Review* upon “Bird Friends,” says:—“I must not close without putting in a good word for the crow. He is a friend in disguise, notwithstanding his cruelty to lambs and weak sheep. If they would only leave the ‘woollies’ alone, they would be as sacred as the ibis and kingfisher in the flock-owner’s mind, but as it is ‘no license’ is bracketed against the name of crow. If all the locusts’ eggs, grubs, caterpillars, and food that maggots love to dwell in were balanced against the lambs and grown sheep crows destroy, the balance would be strongly in their favour.”

In conclusion, I would quote Mr. W. E. Abbott, of Wingen, who has always been a firm friend of the crow. After telling how he has found the remains of dead sheep picked clean by the crows, he says: “It seems to me that one crow with its unequalled sense of sight and smell and power of locomotion, would be worth more than 100 men, whose work could not be

supervised (in destroying dead carcasses). The 100 men would cost at least £200 a week, and a crow would keep himself to a small extent on eggs or chickens, and a few weak lambs or old sheep in times of drought."

The bushman, while he is interested in the knowing ways of the cosmopolitan crow, does not particularly love that bird, but in his wanderings comes across him in all parts of the continent. It wakens him with its mocking mournful cry when sick and weary in his lonely camp. If he happens to get lost in the scrub, hunting for his horses, away from water, the crows appear, and the inflections in their call seem to distinctly change. No longer is the sound a sharp clear caw-caw—the notes are long and drawn out, seeming to the bewildered traveller to say in evil tone, "When are you going to die—DIE?"

Many are the stories told round the camp, regarding the wisdom of the crow—how when an inquisitive crow arrives at a camp where the traveller is resting under the trees apparently asleep, it will pick up a bit of dry bark in its beak, and flying up into the gum-tree, drop it on the face of the sleeper to see if he is really asleep or only shamming, before it ventures to come around and pick up the scraps.

The outback bushman will tell you he has seen a crow when it has discovered the unprotected eggs in an emu's nest among the saltbush, hunt round for a stone, pick it up in its claws, and hovering over the nest, drop the stone among the eggs, and thus secure an ampie dinner. This story may be quite correct—there is very little a wary old western crow does not know—but it lacks confirmation.

In conclusion, it will be seen that, like other of our insectivorous birds, the crow has a dual character. While he is one of our most useful insectivorous birds, and by far the best cleaner-up of offal and carrion in Australia, and taking his work all over the State, does far more good than harm, yet he may become a very serious local pest. This usually comes about through an undue increase in their numbers in a certain district, and the consequent failure of their food supplies. Under a properly adjusted bird protection act, the crow, while enjoying the protection he merits in his own district, could easily be proclaimed a pest when he begins his attack upon lambs and lambing ewes in the district where he is doing the damage.

The White-winged Chough or Black Magpie (*Corcorax melanorhamphus* Vieill).

Gould's Handbook, vol. I, p. 47, No. 288; Leach's Bird Book, p. 189, No. 391.

This bird is known under several different names. In the open forests of northern Victoria it used to be called the Black Magpie, or the Chattering Jay, both of which give one some idea of the bird.

It is not a coastal bird, but is found in open forest land and ranges in to the interior, where, family parties of from five to a dozen or more scatter over the ground, turning over bits of bark, sticks, and leaves as



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

" THE WHITE-WINGED CHOUGH "

(The Black Magpie or Chattering Jay).

Corcorax melanorhamphus.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“BABBLER.”

Pomatostomus superciliosus, Vig. and Hors.

they move along. Its curious, harsh chattering cry, with a mournful wailing note, is quite unlike that of any other bird of the forest. When disturbed it flies up into the trees, its jet black plumage showing up the large white patch in the centre of the wing, which is hidden when at rest. Its somewhat large tail seems to overbalance it as it settles on a branch, and its bright red eyes give it a very alert look as it peers down at you from the branches above.

I was first acquainted with the Black Magpie in the forest covering the low granite Terrick and Mount Hope Ranges in northern Victoria, and have met the birds in many parts of western and northern New South Wales lately, all along the Barwon River. They are well known in South Australia and Queensland.

Their nesting habits are remarkable, for they are among the few large birds that use clay for making their nests. These are constructed like a rounded basin, nearly 9 inches in diameter and slightly over 6 inches in depth. The clay used in their construction is usually matted together with grass stalks, and well lined with feathers. The number of eggs laid is variable, ranging from five to eight, and they are dull-white, thickly blotched with dull-slate colour and olive-brown. The nesting time is from August to December. In its native state the Black Magpie seldom leaves the open forest or river banks to which its hunting is confined, and where a flock must destroy an enormous number of insects every year.

The White-browed Babbler (*Pomatorhinus superciliosa* Vig. and Horsf.)

Gould's Handbook, vol. I, p. 482, No. 294; Leach's Bird Book, p. 131, No. 274.

The White-browed Babbler is found all over the inland portion of the southern half of Australia and ranges into northern Queensland and the Northern Territory. Whenever a traveller pitches his camp where there is timber and water about, he is sure to be inspected in the early morning by a family party of these fussy, chattering, restless birds. Their call-note can be translated into "Follow me, follow me"; and as they frequently fly one after the other, the bushman commonly knows them as "Follow me." They are handsome birds, with slender heads, bright eyes, a white line above the eyes, and large tails. They never seem to be at rest or to stop hunting over the ground for insects. If one gives a call, off they go one after the other, to fly into a tree, run up and down the branches and chatter, and then suddenly to cluster together, fluff out their feathers and scatter again. When on one occasion camped on a creek near Moree, we had a party that used to fly up to our tent regularly every morning just after daylight; they would often chase each other between the tent and the fly above, to give us their morning greeting, and to pick up the stray moths that were sheltering there.

The nests of these birds are placed in exposed positions in gum trees, and are large domed structures formed with dried sticks. The basal portion is a rounded basin with a stouter portion built up behind and projecting on the sides and above, thus forming a rounded roof over the entrance into the nest on the side. They often build several nests in the same clump of trees, and the community take an interest in each other's work, even if they do not actually assist each other in the building. The interior of the nest is deeply lined with feathers and other soft material, and contains four light-brown eggs clouded with darker brown and purple, streaked with fine hair-like lines running round the egg, but sometimes more marbled.

The Grey-crowned Babbler (*Pomatorhinus temporalis* Vig. and Horsf.).

Gould's Handbook, vol. I, p. 479, No. 292; Leach's Bird Book, p. 130, No. 273.

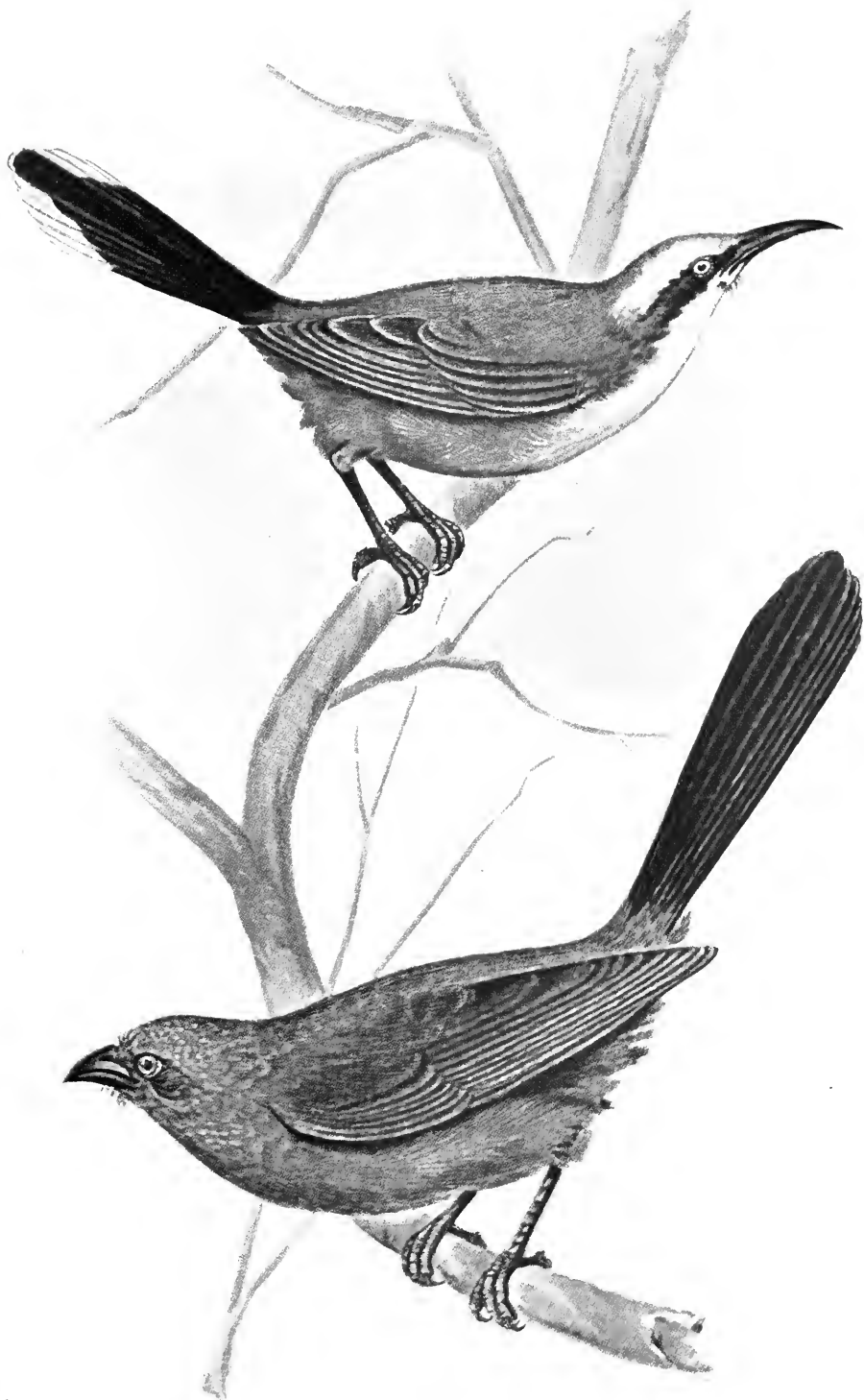
Like the species just described, the Grey-crowned Babbler have a wide range over the south and eastern portion of Australia, from Queensland through New South Wales and Victoria, into South Australia. They are gregarious, travelling about in small flocks of about a dozen or more, following each other and having a similar chattering call to that of the previous species. They have been overloaded with popular names—most of them (such as Chatterer and Cackler) suggestive of their call-notes, some (the Hopper and Jumper) on account of their curious movements, and some (like Yahoo, Happy Jack, and Apostle-bird) on account of their gregarious habits. Some enthusiastic Victorian bird-man wanted to have the name Codlin-moth Eater attached to this bird, because an orchardist near Summer-ville found them in an apple orchard, presumably looking for codlin-moth grubs. Anyone who knows the forest-loving habits of these birds, and the peculiarities of the codlin-moth, would not expect to obtain much relief from the pest by their casual presence in the orchard. They are insectivorous birds; but they feed upon small beetles or larvæ found under the dead bark on tree trunks, or under the cow-dung or bits of bark and wood they turn over on the ground.

The Grey-crowned Babbler makes a large nest, similar to that of the White-browed Babbler, with overhanging sticks above the opening. It is placed in the fork of a tree, and often two or three nests are near each other. The number of curious, dark-brown, hair-streaked eggs in the clutch varies so much that some collectors state that ten or more eggs may be found in one nest, and that two or three birds lay their eggs together.

The Apostle-bird (*Struthidea cinerea* Gould).

Gould's Handbook, vol. I, p. 472, No. 289; Leach's Bird Book, p. 188, No. 390.

Those quaint gregarious noisy birds are to be found all over the open forest and scrub lands of the inland portion of New South Wales, ranging south and north through Queensland into the Northern Territory. The first district I noted them in was near Wagga, but I have never seen them in similar country in Victoria.



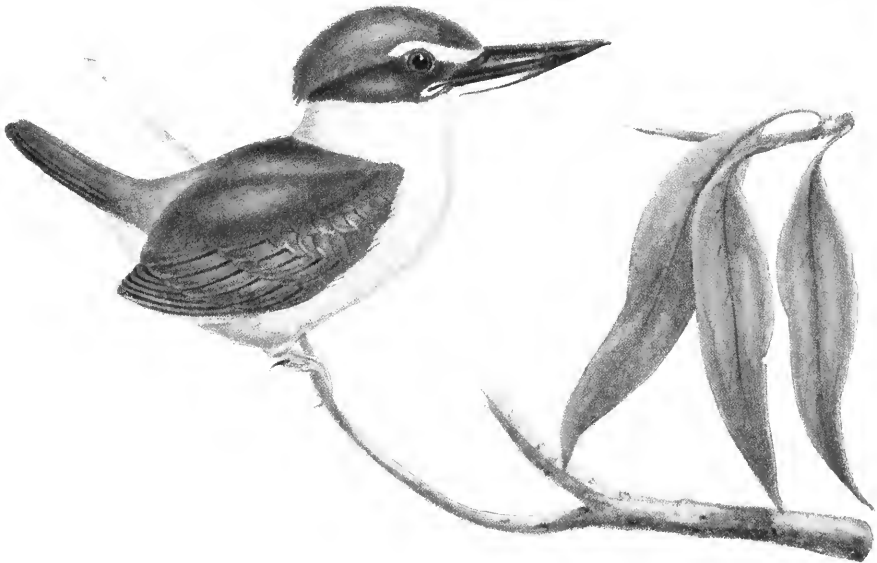
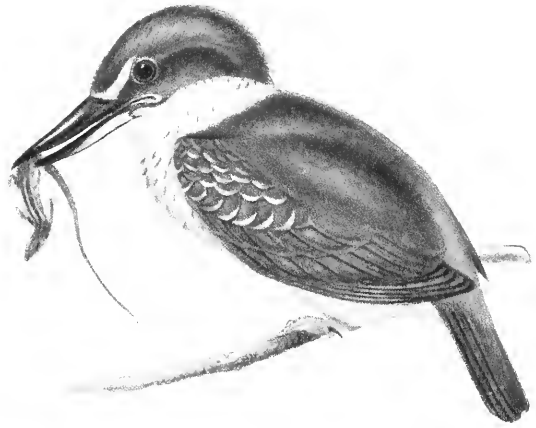
INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“THE GREY-CROWNED BABBLER.”

Pomatorhinus temporalis, Vig. & Horsf.

“THE APOSTLE BIRD.”

Struthidea cinerea, Gould.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ SACRED KINGFISHER.”

Halcyon sanctus, Vig. & Hors.

Struthidea cinerea is the sole representative of this genus peculiar to Australia, and a species, says Gould, that is one of the most anomalous in our avifauna. He remarks upon the curious short, blunt, formation of the bill, and suggests that it is well adapted for extracting seeds out of the cones of the desert cypress pine. Though in southern Riverina this bird was at one time known under the popular name of Pine-pigeon, it was not on account of its food habits, but because of its general occurrence in the sand ridges clothed with cypress pine. Though these birds are seed-eating as well as insectivorous, I have never seen them eating pine seeds, and doubt if any bird would eat them unless starving.

One of the most unsuitable popular names ever given to a bird is that of the Grey Log-jumper, given by several popular writers to this bird and perpetuated in Lucas and Le Souef's "Birds of Australia." Quite a number of birds are known under the names of Apostle-bird, Twelve Apostles, and Happy Family in different parts of the country; but our friend goes by the first-mentioned all through its western range. I think that the name fits it, for these birds are very often in flocks of ten or twelve, conferring together in what might possibly be the apostolic manner. At all camps, particularly where horses are fed, a flock of Apostle-birds will come round sometime during the day, chattering and scolding away at each other, and even trying to peck holes in the bags of chaff and grain. A party of twelve once attached themselves to our camp at Yarrawin, Brewarrina; they hopped about in front of our dining tent at meal times, and picked up scraps thrown to them, even coming under the seats for crumbs. One, the head of the party probably, frequently stood up against a post a short distance off, and several of the others took bits of bread and meat and put them into his mouth. We cyanided a large mount-ant's nest close to the tent, and broke the surface with a pick; our Apostle-birds spent many busy hours scratching up the remains of the nest and eating the dead pupal ants. Very often, when we were camping out in the scrub for our midday lunch, a flock of these birds would come flying up and perch on a branch just above our heads, sitting side by side, chattering and fluttering their feathers as they peered down at us. As soon as we moved away they would come down and clear up all crumbs and scraps. This bird has the curious habit, shared by the Magpie-lark, and the Chattering Jay, of constructing a solid, stout, circular clay nest upon a stout limb of a gum-tree. In this she deposits four white eggs, blotched with reddish-brown and purplish-grey.

The Sacred Kingfisher (*Haleyon sanctus* Vig. and Horsf.).

Gould's Handbook, vol. I, p. 123, No. 63; Leach's Bird Book, p. 106, No. 223.

This is one of the kingfishers that, though sometimes found in the vicinity of creeks, is hardly a fisherman, for he is more often miles away from water in open forest or scrub, where his chief food supply is ground game such as small lizards, moths, beetles, and ants. Gould says that in the vicinity of salt marshes this bird feeds upon small crabs and other crustaceans.

This species has a wide range over the whole of Australia and Tasmania, but in the winter migrates into the northern districts of New South Wales and Queensland. Outside Australia it is found in New Guinea, the Solomons, New Hebrides, New Caledonia, and the Malay Archipelago.

Though not so brilliantly tinted as the little Azure Kingfisher on the river bank the Sacred Kingfisher is a striking little bird, with greenish-blue cap and coat, white collar, and buff waistcoat. Its nest is made in various situations adapted to the locality in which its owners have taken up their quarters, such as a hollow spout in a branch of a gum-tree, or a hole drilled into a decayed bole where there is a "negro head" white-ants' nest on the tree stem. A cavity is excavated in the side of the nest and the eggs are laid on the floor of decayed wood. The eggs, four or five in number, are very round, like those of most kingfishers, and pure-white. When nesting the birds are very pugnacious, and often have to fight the big monitor lizards, which eat their eggs and nestlings. At such times the birds' angry call-note is easily recognised.

In earlier works this bird was known as *Toderhamplus sanctus*; but later authorities placed it in the typical genus *Halcyon*, which is the old classical name of the kingfisher. The Greeks looked upon the kingfisher as a bird of good omen, who built her nest on the crest of the ocean wave, which had to keep smooth while she was nesting—hence "halcyon days." The feathers of the kingfisher were also treasured by them as a charm or amulet.

The Nankeen Kestrel (*Cerchneis cencroides* Vig. and Horsf.).

Gould's Handbook, vol. I, p. 35, No. 13; Leach's Bird Book, p. 83, No. 173.

This is one of the smallest of our hawks, and before settlement destroyed the hunting grounds of our birds of prey it was a very common sight to see several hovering over the plain, their wings moving so rapidly that they appeared to be almost stationary.

The farmer is very prone to regard all hawks as enemies of the fowl-yard, and under this impression has shot many of this species, but the I have never known this hawk to meddle with chickens, though the Sparrow-hawk, which is about the same size, often makes a raid on the poultry-yard and carries off a young chicken. The food of the Nankeen Kestrel is chiefly small grass lizards, young snakes, and grasshoppers when swarming on the plains. Many years ago, when riding across the Terrick Plains in Northern Victoria, I saw a pair of Nankeen Kestrels hovering in the air in their characteristic attitude with a long streamer hanging from the claws of one of the birds; while watching them the object dropped from the hawk, and riding up I found lying on the grass a young brown snake, over eighteen inches in length, battered and dead.

This hawk, though it often occupies the deserted nests of crows and magpies, frequently lays its four or five rather rounded, reddish-brown eggs, blotched with darker brown, in the hollow spout of the overhanging branch



About one-third natural size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“NANKEEN KESTREL.”

Cerchneis (Tinnunculus) cenroides.

of a gum-tree. I once had such a nest under observation on the Murray swamps from the time the eggs were laid until I carried off the almost-fledged nestlings. The tree was low, and the projecting branch broad where the end had broken off, so that the end was like a stove-pipe with plenty of decayed wood on the floor, and among this the eggs were laid. It was possible to lie along this limb and to look into the hollow, and even to handle the bright-eyed savage little Kestrels, who would strike out with their talons when very small. As the nesting place was on the daily route, many visits were paid during the upbringing of the family, and nearly always the floor of the nest contained portions of grass snakes, slow-worms, or lizards; once or twice the feathers of a nestling Magpie-lark suggested that the food supplies had not run short. In captivity the nestlings ate meat quite naturally, and when placed in an aviary, where in the adjoining compartment were some doves, one of them tried to seize the doves' wings when they came too close to the partition.

At the present time the Nankeen Kestrel is appearing again on the open timbered plains, and in the New England district during a day's ride one may often notice half a dozen or more of these graceful birds flying round or resting upon a dead branch, the white, grey, brown, black, and cinnamon tints being harmoniously blended into the nankeen tints that give this little hawk its popular and appropriate name. As this bird, unlike many of our birds of prey, always kills its own food, and does not touch carrion, it has not suffered from the deadly poison cart and dingo baits.

As evidence of its value as an insectivorous bird it may be mentioned that Lucas and Le Soeuf, in "Birds of Australia," state that the food consists of lizards and insects, while Campbell states that "the Nankeen Kestrel is almost insectivorous in diet, and has another prominent virtue in that it kills small snakes."

The Wedge-tailed Eagle (*Uroæetus audax* Latham).

Gould's Handbook, vol. I, p. 8, No. 1; Leach's Bird Book, p. 81, No. 158.

This is one of the largest eagles in the world, measuring from 7 to 8 feet from tip to tip of the outspread wings. It is therefore much to be regretted that the popular name of Eagle-hawk should have been given to it by our early settlers. The Wedge-tailed Eagle has a wide range over Tasmania and Australia, is a keen hunter, and, under natural conditions, captures and kills wallabies and other marsupials, flying often at a great height and then swooping down upon its prey. These birds have regular beats, as can be seen from the size of their nests, which are usually built in the fork of a tall gum-tree, and are added to every year—they often contain a dray-load of stout sticks. The hollowed-out centre contains a pair of dark mottled eggs, or a pair of bright-eyed, fierce-taloned babies.

The Wedge-tailed Eagle is frequently charged with killing lambs, and not without cause at times; but only certain starved eagles driven from their hunting ground are such culprits. The natural food of this eagle is ground

game and freshly-skinned or killed animals. In a nest examined near Uralla I found the remains of three hares, one opossum, two rabbits, and the skins of two fox cubs about a foot long, and in this case there were plenty of lambing ewes in the paddock where the birds were nesting. When once seen, this great bird, with its blackish-brown plumage, edged along the feathers with pale brown, cannot be mistaken for any other species, and, under ordinary conditions on the western stations, they become comparatively tame, and take very little notice of man. There is no reason why, where birds like our great eagle and the allied hawks are doing no harm, they should not have the benefit of protection laws on account of their value as scavengers. It is a very simple matter to place them on the black list in every district where they are found killing lambs or poultry, and destroy all those that have acquired these bad habits.

The Brown Tree-creeper (*Climacteris scandens* Tem.).

Gould's Handbook, vol. I, p. 598, No. 366 ; Leach's Bird Book, p. 155, No. 331.

All through the open forest country of Queensland and the southern half of Australia, particularly along the river gums and open box forests, you will find this curious little reddish-brown bird flitting from tree to tree, generally alighting on the base of the stem and running up it to the branches. When flying, the light reddish markings on the wings are very conspicuous. On the ground its mode of progression is by a series of hops. It is a friendly little bird about one's camp. We had numbers of them round our Experiment Station near Hay, which was between the river gums and an open box forest running out into the plain beyond ; such country is the kind they love.

It is a busy, insectivorous bird, catching insects both on the ground and on tree trunks, and utters a sharp, shrill cry as if frightened when startled as it is running up a tree trunk.

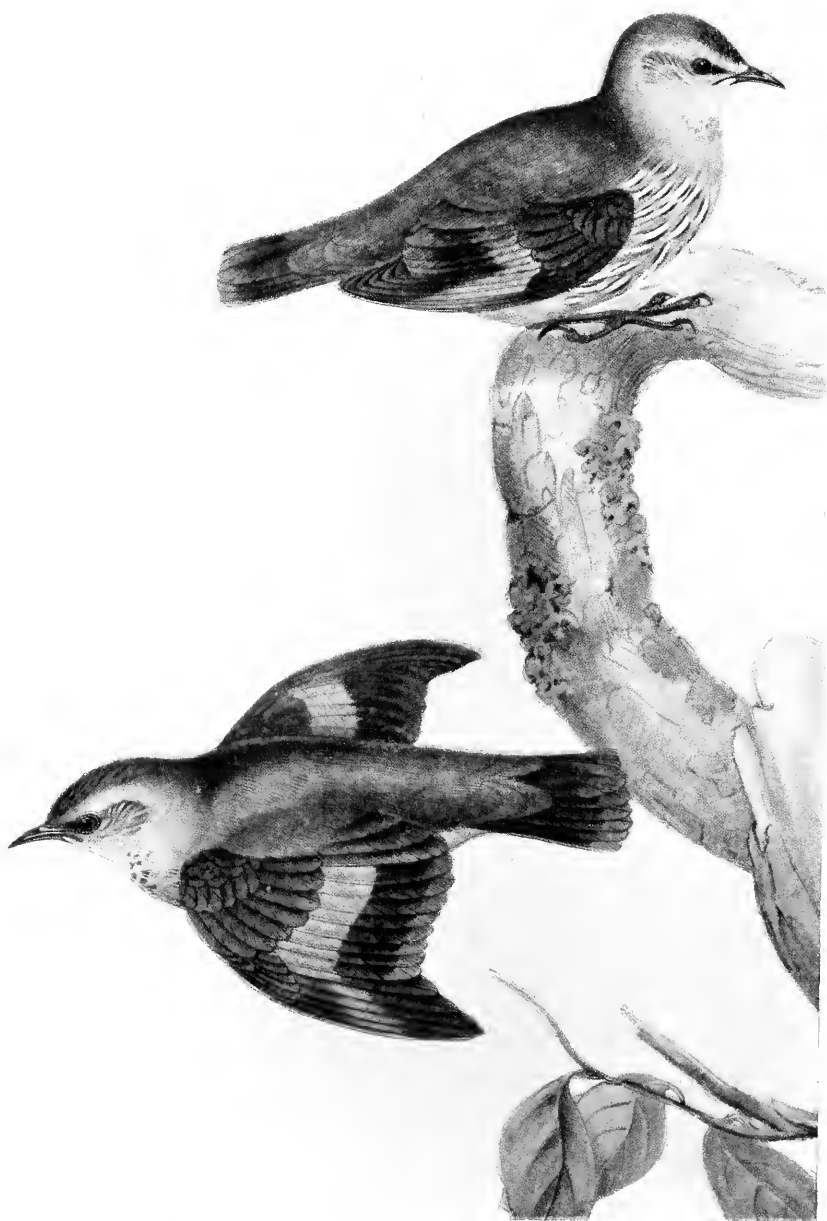
The nest of these birds is of soft hair, feathers, or wool. In the Murray frontages, when opossums were plentiful, the little builders used to pick fur from the sleeping opossum and carry it down into the hollow stem or branch in which they had formed their nesting places ; here they would deposit two reddish eggs, thickly blotched with reddish-brown.

The Orange-winged Nut-hatch (*Neositta chrysoptera* Swains.).

Gould's Handbook, vol. I, p. 609, No. 373 ; Leach's Bird Book, p. 153, No. 328.

The Orange-winged Nut-hatch was originally described in the old genus *Sittella*, which contains the European nut-hatches. Campbell lists seven species described from Australia. This one, typical of the group, has a wide range from Queensland, through New South Wales and Victoria into South Australia, and it inhabits the open forest country.

These birds are gregarious, forming small family parties up to about eight in number, running about over the limbs of the trees and twisting about among the foliage hunting for insects, spiders, homoptera, small beetles, and



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ BROWN TREE-CREEPER.”

Climacteris scandens, Temm.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“ORANGE-WINGED TREE-RUNNER.”

Neositta chrysoptera, Latham.



INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

" BELL-BIRD."

Orcoica cristata, Lewin.

larvæ, most of which are probably found under the loose scaly bark on the tree trunks. They have a quick short flight from tree to tree, and do not travel long distances; when flying, the orange markings on the wings stand out from the otherwise dull reddish-brown plumage. Dr. George Bennett, who wrote a great deal upon his personal observations on Australian birds in his "Gatherings of a Naturalist," describes (and gives a wood-cut of) the nest and eggs of the Orange-winged Nut-hatch. The nest is a very dainty structure, cup-shaped, with a slender base blending into the foundation on the tree, and built up so that it fits into the fork and against the branch. It is comprised of spiders' webs and cocoons, with the outer surface coated with bits of bark placed on the sides to fit in with the formation of the bark of the branch. The nest is deep and lined with soft material. The eggs consist of three in a clutch, and are greyish-white, blotched and spotted with slate-grey and sepia.

It seems a great pity that when a bird can be named from its family group like the Orange-winged Nut-hatch that our bird-men should have adopted such an indecisive name as Orange-winged Tree-runner.

The Crested Bell-bird (*Oreoica cristata* Lewin).

Gould's Handbook, vol. I, p. 231, No. 131; Leach's Bird Book, p. 151, No. 321.

This bird has an extended range right across Australia from east to west, but is not found in Tasmania. It is non-migratory, and is found in pairs all over the open forest and scrub country inland, but nowhere in numbers. It is a rather large, active, scrub bird, feeding and living chiefly upon the ground, where it finds most of its food—such as seeds, beetles, and grubs. When disturbed it flies upward into the adjacent trees.

Gilbert sent Gould the following description of the notes of this remarkable bird, which he said was a perfect ventriloquist: "At first its note commences in so low a note that it seems as if at a considerable distance, and then gradually increases in volume until it appears over the head of the wondering hearer, the bird that utters it being all the while on the dead part of a tree, perhaps not more than a few yards distant. Its motionless attitude renders its discovery very difficult. It has two kinds of song, the most usual of which is a running succession of notes, or two notes repeated together rather slowly, followed by a repetition three times rather quickly, the last note resembling the sound of a bell from its ringing tone; the other song is pretty nearly the same, only that it concludes with a sudden and peculiar fall of two notes."

The Crested Bell-bird's nest is cup-shaped, deep, and composed of strips of bark and leaves, lined inside with softer material. It contains three, four, and sometimes five bluish-white eggs, blotched with dark olive-green, and in some specimens almost with black. Campbell records Barnard's observations that in north Queensland the birds have the habit of placing hairy caterpillars in and around the nest. From his description the writer thinks that

these hairy caterpillars are the larvæ of bag-shelter moths, often very common in the scrub country, where they defoliate the wattle trees. It is probable that these are the cast skins, and not the caterpillars themselves.

The little Bell-bird (*Manorhina melanophrys*), with its musical sharp "clink, clink," is quite a different bird; it is confined to forest belts near the coast, and is very local in its range. It is a little olive-green and golden-yellow honey-eater, and lives in small communities in the tops of the gum-trees.

The White-fronted Chat (*Ephthianura albifrons* Jardin and Selb.).

Gould's Handbook, vol. I, p. 374, No. 229; Leach's Bird Book, p. 133, No. 281.

A denizen of our open plains and often numerous along the edges of water-courses and lignum swamps, this semi-gregarious little bird has a wide range over Australia and Tasmania, and though in the south, migratory, it is to be found all the year round in some parts of the State. Providing water is obtainable, it inhabits the saltbush plains of the west and north-west in the early summer, and, in common with its two more brilliantly tinted relations, is known as the "saltbush-bird."

The White-fronted Chat builds a small cup-shaped nest composed of grass and rootlets, lined with hair and feathers, and usually placed in a low bush not far from the ground, often in the settled districts in dead thistles; in this well concealed nest she lays from three to four eggs.

The male, with his white throat and black-banded chest (replaced by greyish-brown and yellow in the less noticeable females), might at first sight be taken for a Sandpiper as it runs along, uttering its plaintive call-note, but it can be easily distinguished on closer observation by its different build. It is generally very active towards evening, and if surprised near its nest is very cunning in pretending to be sick or wounded while leading one away in the opposite direction.

The beautiful Orange-fronted Chat (*E. aurifrons*), with its rich, golden, orange-yellow head and breast, and the Red Chat (*E. tricolor*) are both rarer birds than the White-fronted Chat, but in the early summer I have often seen all three species in a day's drive across the saltbush plains near Brewarrina.



Slightly under half-size.

INSECTIVOROUS BIRDS OF NEW SOUTH WALES.

“WHITE-FRONTED CHAT.”

Epthianura albifrons.

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