

South Australian Ornithologist.

Vol. XII.]

1st OCTOBER, 1934.

[Part 8.

The Hawks of South Australia.

By J. Neil McGilp.

(Part 2.)

Milvus migrans, Black (or Fork-tailed) Kite.

When, in 1926, a new and up-to-date list of Australian birds was compiled, the well-known Fork-tailed Kite was given another name, for, after research, it was proved that it was migratory, and travelled through India to Europe, where it was called the Black Kite; and for the sake of uniformity and with a desire to call a bird by the same name all the world over, the Committee, which was responsible for the new list, decided to adopt the name used in Europe; this is rather inappropriate, for the bird, as we see it in Australia, certainly cannot be called black; it may don a darker plumage when it leaves our shores, for when the writer saw it at Aden and on the Suez Canal he thought it much darker than he had noticed it here.

A short general description of the species can be given as having the feathers of the head and upper-surface reddish brown, with a blackish line down the centre of each feather; tail brown with indistinct barrings of black, each feather being tipped with white; under-surface rich brown, each feather being very distinctly lined down the shaft with black; gape, cere, and legs, yellow; irides, brown, and the bill black. The central tail-feathers are shorter than the lateral ones, which accounts for the forked-tail when the bird is in flight. The sexes are alike in colour, and there is little difference in size.

Recently-hatched nestlings are covered in darkish cream-coloured down; the legs and bill are greenish, and the irides are brown.

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The tail, with an inverted v-shaped or forked end, provides a very reliable clue by which we can identify the Black Kite, for such a fashioned tail does not occur on any other Australian Hawk; as the tail is twisted and fluttered very frequently when the bird is flying, there are times when it is square at the tip. At such times one is inclined to jump to a conclusion that it is a Square-tailed Kite, but if the tail is watched for a few minutes it will be seen to take the usual forked shape. There is little likelihood of confusion with the Square-tailed Kite, which is a very different bird, having extremely long tapering wings, a light patch on the face and forehead, and a square tail, which is never forked.

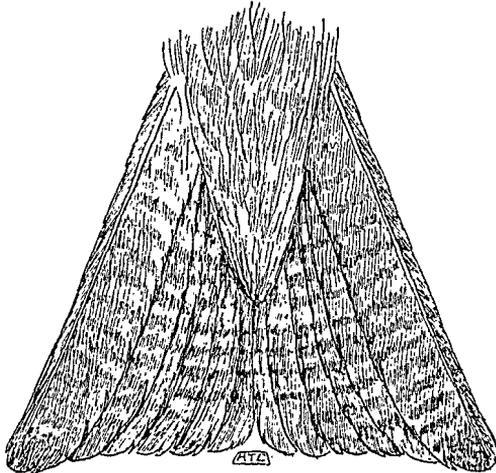


Figure 9. Black (Fork-tailed) Kite.

One-half natural size.

Tail, light greyish brown with darkish barrings; Coverts, rufous brown with narrow darker shafts.

The Black Kite has rather a slow, moth-like flight; it twists and turns without any apparent reason; its direction is most indefinite, rising, falling, twisting, first to one side, and then the other, as if not quite knowing where to go; its tail is constantly on the move, as if fluttering in the wind; it floats, rather than soars, around at a fair elevation, but it is unable to sustain the same height for long, and has to use its wings to climb every now and then; in short, it gives one the impression that it is some ethereal object floating and drifting at the mercy of cross-

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currents of wind, and it is only when the bird dives that any definite purpose is evident.

If a bird is overhead just throw up a bone, or any object for that matter, and watch how quickly and gracefully the bird swoops or dives down; secures the missile before it drops to the ground, and shoots upward in a beautiful glide with the object in its talons; or watch another bird as it tries to wrest the spoil from the captor, when both are in mid-air, at one time flying upside down in order to grab the object from claw to claw, at other times colliding, when both birds, in their efforts to regain equilibrium, drop the article, which is again secured before it can reach the ground, and so the game goes on; or see it swoop down and, without pausing an appreciable instant, rise with a small object from the ground. It is only when one watches such actions as this that one realizes how buoyant the bird is, and why it is called a Kite. It is very noticeable that it is not so adept in turning from side to side, as it is in an up-and-down direction, and in this failing we possibly have the reason why a Kite seldom succeeds in capturing its prey in the air, and why it seldom enters into a determined chase. The writer can recall an instance when a Black Kite was seen chasing an enormous flock of Shell Parrots, so large, in fact, that it seemed that the Kite must be successful; when the Parrots manoeuvred in a circle it was able to catch up to them, but they opened out and the attacker passed through without harming one of them. After repeating this for some times the Kite gave the job up in disgust.

The food of the Black Kite is mostly comprised of carrion, small rodents, and insects. It is not uncommon to see birds perched on every available post in the vicinity of a slaughter-yard waiting patiently for the slaughterman to complete his work, when they fly down and clean up any offal; or to see numbers of them feasting upon a carcase of an animal that has died from drought or disease. The bird is really in its element when the countryside teems with myriads of grasshoppers or grubs; dozens of them congregate on the ground and do many acrobatic feats in catching the insects, and for this work alone the Black Kite is a very valuable bird to the man on the land.

One of our early explorers, in writing of the flocks of Black Kites, mentioned that they flew in a very threatening manner at his party as it crossed a wide grassy plain. This action was caused by the birds following the party in order to catch any

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insects that might be disturbed, and if when flying after one there was any danger of colliding with one of the party, the bird had suddenly thrown out its wings, spread its tail, and thrust forward its talons in an effort to "back pedal," so to speak. There is no likelihood of an attack from this bird, for it is the most inoffensive creature imaginable, the writer having often seen it feeding with domestic fowls on scraps thrown from station kitchens.

The Black Kite is said to breed in colonies in the most northern parts of Australia, and to construct their own nests. So far as the writer's experience has gone, any suitable, untenanted nest is taken; it is repaired, and the centre is scratched out and lined with wool, rags, fur, and sometimes bark.

No instance of nesting colonies has been observed, although nests are frequently seen fairly close together. A nest in a fork of a horizontal limb of a gumtree is preferred to one in the central branches of a tree.

The clutch may be of two or three eggs; they are oval to rounded-oval in form; the texture of the shell is close-grained, smooth, and lustreless; in some eggs small nodules of lime adhere to the shell, and the pittings or pores in the shell are rather shallow. In size the eggs vary greatly, but a typical one measures 2.10 inches long by 1.68 inches wide; smaller specimens are more often found than larger ones. The inside of the shell is a very dark green colour when viewed through the drill-hole. In colour and marking the eggs vary considerably, for the ground-colour is any shade between pure white and quite a bluish white. This is sparingly spotted or blotched with shades of red to reddish brown. Rare instances of zoning or belting of colour have been recorded, but usually the eggs appear as if they had been haphazardly or accidentally marked.

The writer hopes that readers will agree that the Black Kite is a most valuable bird, and worthy of all the work we can do to show the public that it is detrimental to their interests to destroy it.

Lophoictinia isura, Square-tailed Kite.

This fine, long-winged bird is rarely seen in South Australia, and probably only one skin has been secured for identification purposes. The bird was shot by Mr. Edwin Ashby as it flew over his home at Blackwood in the Mt. Lofty Ranges.

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When flying the Black Kite often reveals a square tail as it twists and turns about; this has sometimes left a doubt in the minds of observers, who probably had never seen the Square-tailed Kite, and who had rather expected both species to be almost identical, except with respect to the tail. This doubt can at once be dispelled, for the birds are not at all alike.

Briefly, the adult male can be described as follows:—All the upper-surface reddish-brown to brown, each feather being tipped with lighter brown; the primaries brown, washed with grey and more or less crossed by broken bars of buff; the upper scapularies rufous and striped down the centre with black; the tail brown above, light ashy brown beneath, each feather being indistinctly barred with brown and tipped with white; the crown, neck, and upper breast rufous the feathers being striped and tipped with black; the head feathers are long; forehead and face light buff, each feather striped and tipped with black, and the rest of the under-surface bright rufous to reddish orange, with fine barrings of buff on each feather. The bill is bluish shading to black at the tip; the irides yellow; the cere fleshy white, and the legs are flesh-like in appearance. The wings, when closed, extend fully two inches beyond the tail. The sexes are alike in dress, but the female is the larger bird.

The writer has only had the pleasure of meeting with the Square-tailed Kite on the one occasion when travelling by motor-car along the old overland track, between Fowler's Bay and Eucla, on the Western Australian-South Australian border. The road runs between the Nullarbor Plain and the Great Australian Bight, and the first Kite was seen near Wigunda Tank, which is some twenty-five miles west of Nullarbor Station. The following notes taken at the time may be interesting:—"I had often wondered during my observations of large flocks of Black Kites in the interior whether I had seen a square-tailed bird amongst them, but now, having just seen one, I can unhesitatingly say I did not. There can be no doubt about the bird when once seen, and it is not at all like the fork-tailed bird. I saw no sign of a forked tail on the bird to-day (28/10/1931). The wings are long in proportion to the body and tail, and it takes a pronounced, deep, forward thrust with the wings every now and again, thus causing a somewhat undulating flight. As it flew slowly over the car, I could see that the head was much lighter and more square in shape than that of the 'Fork-tail'; it was following us in order to swoop down upon the small birds that were being disturbed from the tall spear-grass. After

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striking down a fairly large Quail, probably the Stubble, at the end of a terrific stoop or dive, we lost sight of it. It had made several unsuccessful attempts to catch small birds, which avoided capture by instantly dropping into the tall grass. The Kite had a floating rather than a soaring action, and without any apparent movement in the wings it progressed in this style for hundreds of yards, either well in the air or close to the ground. Three miles further on we saw a bird of this species—possibly the one which had struck down the Quail—; it followed us only a short distance before it was successful in catching what looked like a Brown Songlark, which was carried away in its claws. When about twenty-seven miles from Eucla two more birds were seen; they were skimming just above the tall spear-grass, and sufficiently close to be identified, but they did not follow us far, as we soon entered scrubby country. It was noticed that the bird is a rapid mover, has great speed in the dive, and that its tail was very square at the tip all the time it could be observed. Its lightly-coloured face and the markings under the wing and tail, together with the long Tern-like wing, assist in separating it from the Black Kite."

All the records of the occurrence of the Square-tailed Kite have been made in localities near the coast, so it would seem to be confined to that area, and to be nowhere plentiful.

There are no records of a nest having been found in this State. Many years ago some eggs, reputed to be of this species, were taken in Callabonna Creek, in the Far North-East, but, after comparing them with authentic eggs taken in Queensland, they were deemed to be the eggs of the Black Kite, which, at that time, was nesting freely in the locality.

Not having seen a nest of the Square-tailed Kite, the writer will quote Mr. H. G. Barnard, a well-known and reliable collector in Queensland. Mr. Barnard says that the nest is built of sticks and lined with green gumleaves, and it is placed at any height upwards of fifty feet in the fork of a tall tree. In the course of recent correspondence the writer suggested that Mr. Barnard should write up all he knew about this species, and he has done this, see "The Emu," Vol. 34, 1934, p. 25.

Three eggs are laid in a clutch; they are oval in form, odd specimens being more pointed at the small end; the shell is coarse-grained and lustreless. Typical eggs are extremely handsome; they are white in ground colour, which is much spotted and blotched with a reddish to purplish-brown colour well

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distributed over the shell and occasionally forming a decided zonal patch on the larger end. An average-sized egg measures 2.19 inches through the longer, and 1.53 through the shorter axis, but smaller and larger eggs may be found in localities where the Square-tailed Kite is reported to be in fair numbers, chiefly in Queensland and Northern New South Wales.

[There is no specimen available to depict the tail and coverts of this species.]

Hamirostra melanosterna, Black-breasted Buzzard.

This handsome bird is very rare in South Australia, and is practically confined to the far northern areas. It can be easily identified for, when in flight, a large white patch can be seen in each wing; this formation is often referred to as a "window" in the wing.

The following description of the Black-breasted Buzzard was taken with the aid of field-glasses from a male as it sat in a tree not fifty yards away:—The general colour throughout was dark brown to black; the lower part of the back and rump, rufous; the flanks, thighs, and under tail-coverts, rufous, each feather being edged with lighter colour; bill, light colour; feet, legs, and cere, decidedly pinkish, and the irides very dark. When the bird flew it was noticed that there was a large white patch in the centre of the hinder part of the wing. The male was about half the size of the female, which appeared similar in colour.

Being anxious to obtain the eggs of the Buzzard, the writer paid particular attention to two pairs that, for a period, frequented Moolawatana Station in the Lake Frome district. All the birds under observation were darker than one would expect after reading its published description, but one male bird was much more rufous than the others. The birds spent most of their time in a large gum creek, but were often seen well out over the open plains that extend for miles on either side.

It has been written that the Buzzard prefers resting on the ground rather than in a tree; this is not always so, for those under observation, even when not nesting, were more frequently seen perched, usually in an exposed position, in a tree. It was noticed that it is not a quick flier; has rather a laboured action, and soars around in wide circles at a great height, when the points of the primaries are spread well out. Though a remarkably silent bird, it has a short, sharp cry resembling "Ge Ge wick,"

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rapidly repeated; this is more frequently used when nesting operations are in full swing. It also has a harsh screech when attacking. The birds practically live upon rabbits, though they were once seen to kill a young kangaroo. They were very cute, waiting until their intended victim got well clear of timber before they attacked. This they did in rapid, swooping dives, striking the quarry with their talons many times before grappling with it on the ground, much after the manner of the Little Eagle. If the victim is large it is eaten on the ground; otherwise it is carried in the claws to a nearby tree. They are not carrion feeders, and do not molest sheep; a mob of breeding ewes in the vicinity was not worried by them.

The writer did not succeed in obtaining the much-prized eggs, for during his absence from the locality a pair of Buzzards took possession of an old Wedge-tailed Eagle's nest, which had been relined with green gumleaves, and when found contained two young nestlings, which were clothed in bluish-white down with a few rufous feathers on the head and back; the bill was horn-colour, the legs and cere a pinkish-grey, and the irides brown. The parents made no attempt to defend their young.

Some years ago, when on a visit to Broken Hill, the writer saw some very beautiful eggs of the Black-breasted Buzzard in the late Dr. MacGillivray's collection, and during a conversation the latter mentioned that he had seen eggs that were not so heavily marked as those we were examining; he also stated that the male bird of a pair he had seen was quite a light rufous colour with a dark breast, which proves that the plumage varies considerably. Two eggs are usually laid in a setting; they measure about $2\frac{1}{2}$ inches long by 2 inches wide. The ground-colour is a buffy white, which is boldly spotted and blotched with many shades of red, and in some instances zonal patches are seen on the larger end. The eggs are rather too pointed to be called oval; the shell is coarse-grained, inclined to be chalky and free of lustre.

[There is no specimen available to depict the tail and coverts of this species.]

Elanus axillaris, Black-shouldered Kite.

Until recently this beautiful bird was rarely seen in South Australia, but it has lately appeared in fair numbers, and a good many specimens, some taken close to Adelaide, have been sent to the Museum for identification, mostly accompanied by a note that the bird was unknown in the district.

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It is regrettable that so many have been destroyed, for they do no harm, but assist in keeping a check upon such pests as mice, rats, etc. Through the medium of the "Rufus" column in "The Advertiser" the public was apprised of the value of the birds, and it is gratifying to learn that very few dead birds have since been received at the Museum.

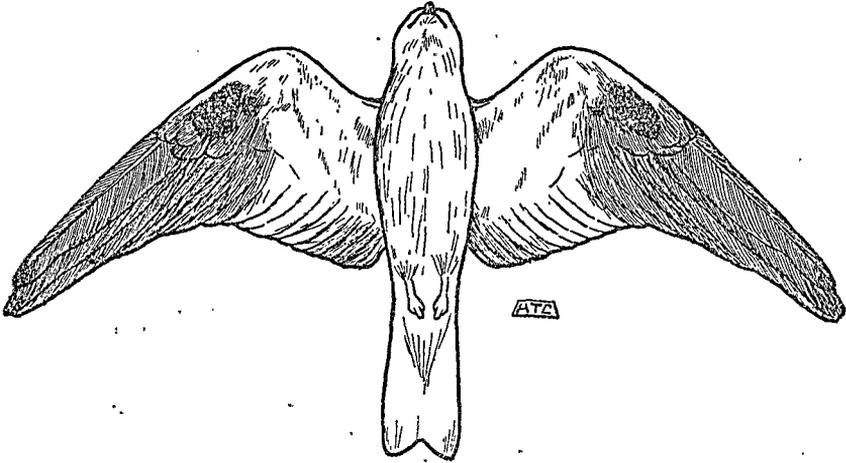


Figure 10. Black-shouldered Kite.

One-third natural size.

Tail and Coverts, white.

The Black-shouldered Kite can be described as having the general plumage white; a ring of black feathers above the eye; the nape, back, and rump, silver grey; a large patch of black on the shoulder and extending well over the wing; wing, dark grey; all the under-surface white, except for a black oval patch over the line of the outer bone of the wing; tail feathers, silvery-grey; bill, black; legs and cere, lemon-coloured, and the irides reddish-orange. The sexes are similar in plumage, and are about the same size. Young birds are much like the adults, but the white parts are washed with rufous colouring.

We have two species of small black-and-white Kites, and they can be easily distinguished when they are flying by the shape of the black markings on the under-surface of the wing. The Black-shouldered Kite has an almost straight black line, whereas it resembles Λ on the Letter-winged Kite. The latter

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mark is often referred to as an inverted v, and when the bird is flying towards one the marks on the two wings form the letter W. It is impossible to separate the two birds with satisfaction when they are perched.

The Black-shouldered Kite is very erratic in its movements; it is nomadic, changing its quarters as it follows plagues of rats, mice, or insects all over the country; it is rarely if ever seen in the interior of the State, where its place is taken by the Letter-winged Kite. During a mouse plague it is to be seen skimming or hovering over wheatfields into which it drops when a mouse is observed, afterwards flying with its victim dangling from its claws to a fence-post, or telegraph-pole. Practically all its food is collected from the ground.

There are few records of nests having been found in this State. The most recent observation was made by Dr. A. M. Morgan and Mr. J. Sutton when at Wood's Point on the River Murray. The late Mr. J. W. Mellor noticed the Black-shouldered Kite nesting at Lockleys, and in describing the building of the nest before the South Australian Ornithological Association, mentioned that the birds collected the small sticks from the top of trees and shrubs in the vicinity of the nest; these were carried in the claws until the bird was preparing to alight, when they were transferred to its beak. The nest grew until it was about the size of a Magpie's home, and it was then lined with wool, pieces of bark, and fur.

Three or four eggs are usually laid in a clutch; they are rounded-oval in shape, but occasionally more pointed eggs will be found; the ground colour is a dull white, and this is boldly spotted or blotched with many shades of reddish-brown, these markings often predominating on the larger end. Some eggs have a washed-out appearance with smeary, yellowish-brown markings. The colour can be removed by rubbing the surface with a damp cloth. A typical egg measures $1\frac{5}{8}$ inches long by $1\frac{1}{4}$ inches wide; it is smooth, chalky, and closely granulated in texture, and is devoid of gloss. The inside lining of the shell is a beautiful light green in colour when examined through the drill-hole.

The Black-shouldered Kite, which, at a distance may be mistaken for a Silver Gull, is very trusting of humans, and can be closely approached, and for this reason, and on account of its being a "Hawk," many are destroyed without the slayer being aware of the bird's capabilities as a mouser and rat-catcher, so the writer asks that more consideration should be

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given to such a very valuable bird, and that its value should be "noised abroad."

Elanus scriptus, Letter-winged Kite.

The Letter-winged Kite is clothed in very similar plumage to the Black-shouldered Kite, differing only in a shade of colour here and there, and having both the under wing-coverts and the axillaries black.

As previously stated, when dealing with the other black-and-white Kite, they cannot be separated when they are perching, and when flying only by the shape of the black markings under the wing. Instead of one comparatively straight black line well away from the body, one now has to look for this line continued along the line of the humerus to the body, thus forming the letter W in black on the two wings when the bird is flying towards one.

The Letter-winged Kite rarely, if ever, comes south of a line drawn latitudinally through Farina in this State, but should it encroach upon the territory of its generic cousin a glimpse of the under-surface will be sufficient to determine the species of any small black-and-white Kite that one may see. The food and

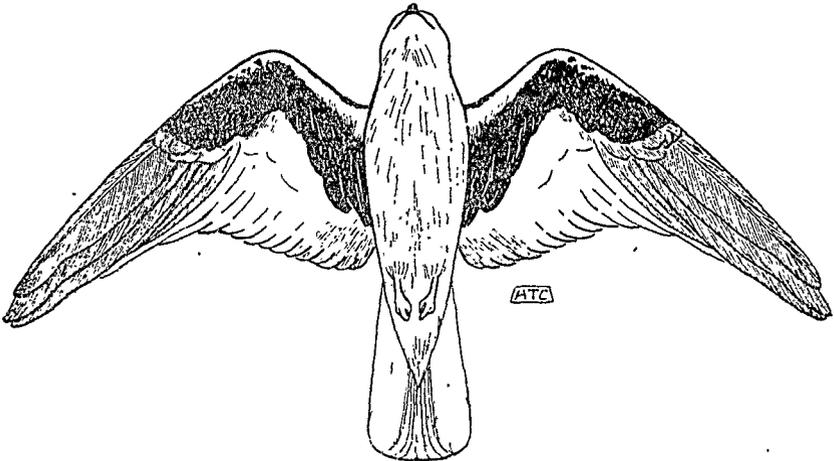


Figure 11. Letter-winged Kite.

One-third natural size.

Tail and Coverts, white.

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habits in flight, and when securing food, are almost the same in both species, so there is no need to repeat what has been written about the Black-shouldered Kite; mention, however, might be made of a likeness between both these birds and the Nankeen Kestrel as regards food, habits, and flight.

The late Dr. MacGillivray, of Broken Hill, told the writer that he had seen a pair of Letter-winged Kites carrying material to a nest in a fork of a coolibah tree in Tilcha Creek in this State, but, though he asked a man to secure the eggs later on, he did not get them. The writer saw another nest in Boolkarie Creek, which is east of Lake Frome, and about fifty miles southwest of Tilcha Creek. These appear to be the only nests that have been found in the State. The nest was probably built by the birds themselves, for it was in a position which would very likely prove insecure against heavy winds. It appeared to be fairly new; was built of fine twigs and brittle stems of buck-bush; about the size of a small Magpie's nest, and lined with a few leaves of coolibah (or box) trees, and a good deal of rabbits' fur. It was about twenty-five feet up in a leafy branch of a box-tree, and it contained two beautifully marked eggs.

In Queensland, and probably elsewhere in the far northern portion of Australia, large flocks of the Letter-winged Kites congregate where there is a rat or mouse plague. Mr. Sydney Jackson, when collecting for the late Mr. H. L. White and Mr. Bettington, of New South Wales, found a large colony nesting along a coolibah-lined river in Queensland, and, in "The Emu," Vol. XVIII. he has written a graphic account of what he saw there.

Three or four eggs are usually found in a setting; they are similar to eggs of the Black-shouldered Kite in size, shape, colour, and texture of the shell, only differing in the colour of the inner lining of the shell, which, instead of being a delicate light green, is rather a yellowish or washed-out green.

All that has been written with regard to the economic value of the Black-shouldered Kite applies with equal force to the Letter-winged Kite, and both deserve some reward for the work they accomplish for us. Cannot we, at least, allow them to work in peace, and, when possible, prevent others from interfering with them?

*McGILP—The Hawks of South Australia.**Falco longipennis*, Little Falcon.

Though by no means common, the Little Falcon is fairly well distributed throughout the State. It is the smallest of our Falcons, and is probably the fleetest and most courageous of them all. It is usually more often seen in open timbered country or in belts of timber left standing in cleared land.

Its dress is very beautiful, and may be described as follows:—All the upper-surface a dark grey, each feather being marked down the centre with darker grey; it has a rufous-coloured collar at the sides and back of the neck; tail feathers grey, slightly

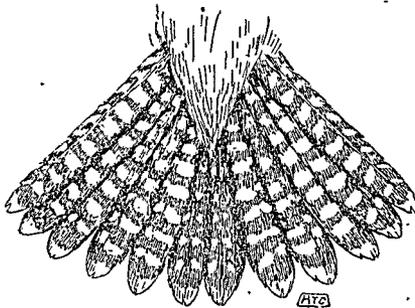


Figure 12. Little Falcon.

One-half natural size.

Tail, light chestnut with dark barrings; Coverts, light brown.

tipped with a lighter colour and barred with brown; primaries dark brown, marked with oval spots of buff; face and forehead whitish; breast buff, each feather being lined with a black stripe and the under-surface rufous to reddish-rufous with black lines. The bill is blue shading to black at the tip; legs, feet, and cere yellow, and the irides brown. The male bird is about twelve inches in length, and his mate fully three inches longer. Both are dressed alike.

It is somewhat difficult to identify the species unless one has a fair knowledge of the contour of its body in flight; it is more compact than the Kestrel and Sparrowhawk, which are about the same size. The dark plumage of the upper-surface and the rufous of the under-parts, the mottled wing, the white markings about the face and the short square-tail, are clues worth remembering when a small Falcon is seen.

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It has rather a laboured flight, somewhat undulating, and the long, thin wings are often used in a "braking" manner when it wishes to arrest its flight. It climbs high by means of floats, rising and falling at the commencement and finish of each float. It has a peculiar hover-like action when its wings beat very rapidly, but the body is slightly in motion, and often turns several times during the action, which cannot be compared with the beautiful hovering of the Kestrel.

Its food consists almost entirely of bird- and insect-life, and when in search of a meal it will not hesitate to attack birds much larger than itself. The writer has seen it after such birds as Cockatoos, Galahs, Ducks, and Pigeons, and there is little that flies that is immune from attack. Grasshoppers and flying insects provide a tasty meal; they are caught in the bird's claws and transferred to the mouth as the bird continues its flight.

When attacking large birds or a flock of birds, the Little Falcon mostly dashes upward towards its intended prey, apparently realizing that when alarmed most birds, especially when in a flock, will swoop earthwards. Its terrific speed is a great asset, often enabling the bird to strike before its presence is properly known. It will not attempt to grasp a large bird, but with its talons will strike savagely until the quarry is knocked to the earth. When chasing, its meteor-like flight is a joy to behold, for when it is within striking distance it half closes its wings, and like a bolt from the blue, hurls itself upon its prey, secures it in its talons, and with widespread wings, shoots upwards, leaving a trail of feathers, which flutter earthwards as the Falcon begins its meal. During the attack the Falcon utters a shrill chattering cry, but when flying in an ordinary manner the call is more like a shrill twitter.

The Little Falcon courageously defends its nest when tenanted by eggs or young. It is rather nerve-racking to climb a tree to its nest, as it will dash continuously, coming very close to hitting as one gets closer to the nest. Both birds share in the defence of the home, but the little male is the more savage in his onslaughts, and he hardly stops making quite a din with his angry chattering. It is not a pleasant job to undertake the inspection of a nest, for there is more than a remote possibility of having a claw driven into one before it is over. More sagacity than usual with our Hawk-like birds is shown in selecting a site for its nest, for usually it is placed in a thin fork of an overhanging branch near the top of the tallest tree in the vicinity. When so situated it may be wiser to enter in your

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note book, "A Little Falcon's nest seen in an inaccessible position," than take on a risky climb with two small, but ferocious, birds attacking.

A new nest is probably more frequently built in preference to taking possession of any old nest; the reason for this may be found in the rather insecure position of the nest and the possibility of its being blown down between the nesting seasons. The writer has seen a pair of birds constructing a nest, one of those inaccessible ones; both birds shared in carrying material, which was secured by the birds landing on and breaking off small dry twigs high up in a tree; the twigs were carried in the talons, and, as far as could be seen, were not touched by the beak until the bird was placing them in position. The nest was about the size of a small Crow's nest. Usually it is lined with either leaves or bark, and there is a deeper cavity for the eggs than is found in most nests of the Accipitres group.

Three egg-clutches are more often found than two eggs; they might easily be miniature eggs of the Brown Hawk were it not that the two ends are more even; they cannot be mistaken for Kestrel's eggs. The shell is close-grained, hard, and shows a little lustre; the ground-colour is buffy or pinkish-white, and this is spotted, freckled, or blotched with all shades of red, but more frequently of the pinkish shades. The markings are fairly evenly distributed over the shell, but at times coalesce slightly towards the larger end and centre of the egg. As with all Hawks that lay well-marked eggs, sets of a washed-out, smeary yellowish-brown colour are occasionally noted. The inside lining of the shell is buff, and the egg measures about $1\frac{3}{4}$ inches long by $1\frac{1}{2}$ inches wide.

Falco hypoleucus, Grey Falcon.

The Grey Falcon, probably the rarest and most beautiful of the Accipitres to be found in South Australia, is very like the Gyrfalcon, which was so greatly admired when falconry was practised in Europe. Its general colour is bluish-grey, each feather being marked with a black stripe along the line of the shaft; a narrow ring of black feathers surrounds the eyes; the tail-feathers are grey, barred with darker grey; the primaries of the wing are blackish, shading to mottled grey on the inner web of the feathers; the bill is blue, shading back to yellow at the gape, the irides brown, and the cere, legs, and feet are all a beautiful yellowish or orange colour. The tail is very short in comparison with the body, and measures about six and a half

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inches in length. The sexes are alike in plumage, but the female is much larger, being quite two to three inches longer than the male, which is about $14\frac{1}{2}$ inches in length.

The Grey Falcon cannot well be mistaken for any other bird, for it is all grey, and the wings, except at the tip, appear white when seen from beneath. Its home is in the interior of the State, but in drouthy periods there it is sometimes driven further south in search of food. It is very trusting by nature, and when perched can be closely approached, when it will be noticed that the live bird, with its delicate grey-coloured coat and orange-coloured legs, cere, and bill, is much more beautiful than can be imagined from a study of a dried skin.

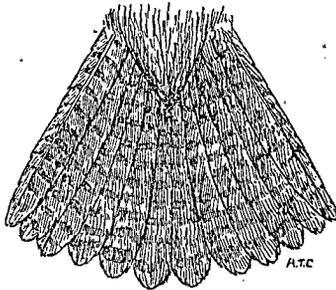


Figure 13. Grey Falcon.

One-half natural size.

Tail, grey with darker barrings; Coverts, grey.

The Grey Falcon has rather a slow flapping motion when flying over plain or forest land, and it soars finely well up in the heavens; its tail is frequently flicking first to one side then the other, and is short in comparison with the body and wings, and one wonders if this flicking motion is necessary to attain correct poise and stability in the air. It has quite a fair turn of speed, but this is not often brought into use, for, although a true Falcon in structure, it seldom indulges in the death-dealing dive or the devastating chase so much used by the other Falcons.

The Grey Falcon feeds mainly upon rabbits, mice, reptiles, birds, and insects, mostly collected from the ground. It may often be seen skimming or flapping slowly above small bushes in open country, pouncing now and again upon some animal or bird, which has squatted at the approach of danger, and at other times perching in a tree, Micawber-like, waiting for hours for

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something to turn up; then it dives or shoots down over the quarry, which squats, and is secured in the talons of the hunter and the struggle begins. It is in its element when grasshoppers or swarms of flying insects are prevalent, and it so unconcernedly sets about the business of catching them that one can often get almost up with it before it takes to flight. The insects are captured with the talons, and transferred to the bill either in the air or when it descends to the ground.

A lot of damage would probably be done in fowl-runs or pigeon-lofts if this Falcon were allowed to remain in the vicinity, but in the interior it has little opportunity to do much harm in this way, and it rarely comes into country where fowl and pigeon breeders reside. It does not molest stock, and as it does so much good in destroying many pests it should be given every opportunity to continue the good work. As it feeds upon the ground a great deal it is often robbed of its prey by the Wedge-tailed Eagle. Smaller carcasses are carried to a tree, and the bird stands upon them rending them with its powerful beak. The writer once witnessed a female feeding her mate as he sat beside her on the branch, making no effort to help himself; strips of meat were torn off a young rabbit and transferred from beak to beak. The male was not a young bird, for both were busy scratching at an old nest, when the female flew down and secured the meal. About three weeks later a handsome set of three eggs was taken from their nest.

The Grey Falcon is usually seen in pairs, unless for a short period, when they have the young with them. Here it may be mentioned that this order of birds does not attend to the wants of its young or allow them to remain in the vicinity of the nest for very long.

When the season is good all Hawks congregate in favoured spots, where an ample food-supply is available; it is then possible to find nearly every species more or less numerous, and this would give a wrong impression to a visitor to the locality, for being nomadic to a certain extent the birds shift from place to place as the food in an area becomes depleted.

An old untenanted nest is nearly always borrowed for the rearing of the family; the centre is scratched out and then lined with bark, wool, or fur, and sometimes a mixture of any of these materials. During the nesting-period the birds become very tame, and being a very close sitter the female is often still "at home" when one has climbed almost up to the nest. When she is roused she is joined by her mate, and both circle round

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and round just above the tree, uttering plaintive little whistles, but making no attempt to defend their home. • A bird has been known to lay its second clutch in a nest from which its first clutch had been removed, but this is very unusual, for the birds generally move into fresh quarters in the vicinity. The Accipitres often nest very freely in the gumtrees fringing many of our inland creeks, and in ordinary seasons there is not any necessity to construct new nests. Early breeders, such as the Wedge-tailed Eagle, the Little Eagle, and the Whistling Eagle, sometimes rear a brood from a nest which is used later on as the home of altogether different species. Similarly a Crow raises a brood from a nest which later is used by the Sparrowhawk, Kestrel, Falcons, etc.

Two, three, or four eggs form a complete setting, but three-egg sets are more plentiful. The eggs are very handsome, and are generally more minutely spotted or freckled than other Falcon's eggs, but they vary a good deal, so cannot always be separated from eggs of the Black Falcon and the Brown Hawk, unless the birds are identified at the nest. Typical eggs measure two inches long by one and a half inches wide; they are smooth, close-grained, and usually dull, but occasionally show a little gloss on the surface; they are oval in shape with perhaps the larger end somewhat dumpy. The ground-colour is pinkish-buff, which is so finely freckled or spotted with reddish-brown that little of it is visible. Another type of egg has the same ground-colour, but the freckles coalesce to form a beautiful zone on the larger end. Still another type was the same ground-colour, but it is blotched and streaked all over the surface, sometimes forming large patches of blood-like stains. The Grey Falcon follows family tradition, for it lays a set or eggs in a set, which have a smeary washed-out appearance, with smudges of yellowish-brown colour.

A series of eggs of the Grey Falcon shows a wide range of colour, markings, size, and shape, and provides much interesting study.

Young birds almost ready to leave the nest were found on Moolawatana on 18th November, 1921; they were slightly darker in colour than the adults, the bill bluish, irides reddish-brown, skin around the eye a faded bluish-yellow, and the legs light orange.

The female is noisy at the nest when feeding young, and utters a cluck-cluck, something like the call of a domestic hen.

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The Grey Falcon is a lovable character; it does little harm, and accomplishes much splendid work in destroying many pests, and nothing we can do to preserve it should be left undone. Still, it is a "Hawk," and with many people that is a warrant for its death.

Falco peregrinus, Peregrine Falcon.

The Peregrine or Black-cheeked Falcon is a very handsome and courageous bird. It is very sparsely distributed throughout the forest range country in the better rainfall areas of South Australia, but is seldom seen in the interior regions, and then only where there are rough ranges, in which it will be found where cliffs or deep ravines abound: it is very local, and can usually be found in the same spot year after year. It can be identified by the following points:—A very distinctive black hood over the head and nape; the upper-surface bluish-grey; the under-surface rich creamy buff, each feather being crossed with fine black lines; the throat light buff and free of barring; the tail and wing-feathers brown barred with black, and the tail about six inches long and short in comparison with the wing. The male bird is approximately $15\frac{1}{2}$ inches long; it is much smaller than the female, which is dressed in much the same style. They have hazel-coloured irides, black bills, and yellow cere and legs. In flight it looks like an extra large edition of the Little Falcon; it soars finely at a great height for long periods, but in ordinary flying it has a peculiar shooting or glide-like action; a few rapid, powerful wing-beats propel the bird in a rising

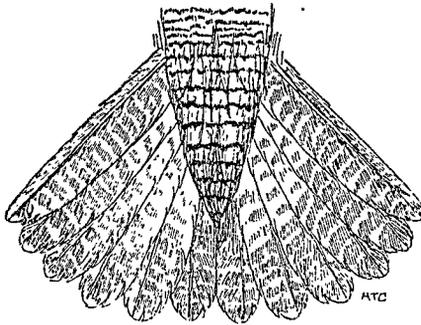


Figure 14. Peregrine Falcon, ♀.

One-half natural size.

Tail, dark greyish brown barred grey; Coverts, washed with light brown and crossed with narrow transverse black lines.

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direction; it gradually sinks to a lower level until further energy is expended, when it forces itself upward again; as this is repeated every few seconds an undulating, wavy flight much like that of the Black-faced Cuckoo-Shrike is produced. When it wishes to settle in a tree or on anything above the ground level it swoops down close to the ground in a beautiful gliding, volplaning action, and silently rises to its perch. It has an Owl-like habit of nodding the head as it carefully watches any approaching object, ever ready to dart down upon it. It will attack almost anything, large or small; nothing in the bird-line comes amiss to it; even if its appetite has been satisfied it will attack purely for the love of it. Those who have not seen this fierce hunter pursuing its quarry through scrub or forest, twisting this way and that way, relentlessly following every turn of the, more than probably, doomed bird as it endeavours to escape, have missed one of the deadliest and most awe-inspiring actions in the bird-world. Nothing could surpass the rapidity of its powerful strike as the talons are driven into the quarry. Every now and again comes that harsh, terrifying screech, which has been likened to the noise made when badly-fitting brakes on a motor-car are applied in an emergency. This screech, shriller, if anything, but not in an angry tone, is frequently repeated when the bird is visiting its eyrie in some inhospitable precipitous cliff or in a large hollow in a tree. Rabbits provide little chance of a satisfactory contest, easily falling a victim to the terrific stoop; even the young of birds are dragged from their nests to provide a meal. Ducks will remain within reach of the sportsman's gun rather than rise when a Peregrine Falcon soars overhead, ready to pounce suddenly upon them if they rise from the water. They prefer to risk being shot rather than face the almost certain death-blow of the remorseless talons of an enemy, which in its fierce attack can strike it down with one slashing stroke. Its character of "Bush Killer" is well deserved. There is no nest, other than a scrape in the earth of the cave or shelving rock of a cliff, or in a crevice of some almost perpendicular hillside, or in the decaying wood dust of a large hollow spout of a gigantic old tree. The birds courageously attack anyone who dares to approach the nesting-place, mostly inaccessible from below, and perhaps only reached from the top after a perilous descent on a rope, and has quite enough to worry about without having to ward off incessant attacks from the parent birds.

Three eggs, and very beautiful ones, too, are laid in the usual setting; two-egg sets are occasionally noted. The eggs are

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oval to rounded-oval in form, smooth on the surface, and mostly, without lustre. The ground-colour is darker than the eggs of the other Falcons, it being a reddish or pinkish-red; this is almost obscured by spots, streaks, and blotches—very frequently forming a cap on the larger end—of many shades of red to dark, crimson, so dark that it is almost black. On most eggs small spots are visible through a patch of colour, giving one the impression that the outer colour had been laid on after the freckles or spots. A typical egg measures 2.16 inches long by 1.66 inches wide, but the eggs generally have a very wide range of colour, markings, and size.

The immature birds have practically the same plumage as the adults, except that they are browner, and the breast and abdomen is striped with sagittate markings in black, instead of being crossed with black lines.

Falco subniger, Black Falcon.

It should not be difficult to identify this Falcon, for, excepting a whitish forehead and face, which is fairly prominent against the sombre body, it is comparatively black all over. There are a few light-coloured spots on the flanks, thighs, and under tail-coverts, but they are not visible when the bird is in flight. The bill is bluish at the gape and black at the tip; the irides are black; the cere bluish, and the legs ash-grey in colour. As is usual with the Falconidae the tail is less than half the length of the total length of the bird, it being $8\frac{1}{2}$ inches in length. The male bird measures about 20 inches long, and is smaller than the female.

The Black Falcon is nomadic in habit, its presence depending largely upon the season and the available supply of food, which consists mainly of bird life. It is, in suitable seasons, fairly numerous in the interior of the State, but it is not often seen in the more southern parts. It has the reputation of being one of the fiercest birds in Australia, for its ferocious and persistent attack invariably ends in sudden death from its remorseless talons for any bird that fails to reach a shelter.

When not actually attacking, the Black Falcon is rather a lazy bird on the wing and when it is soaring carelessly above an open plain or gliding above the tree-tops in open forest country, it has a flapping, thrashing wing-motion, and a skimming undulating glide, which at a distance reminds one of the flight of the Crow; indeed, we can reasonably mistake it for a Crow. When seen in this "don't care," lazy action, one

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cannot imagine that the same bird is capable of prodigious speed and powerful attack, but one has only to watch it a little while to see it suddenly ascend, in beautiful glides and powerful wing-actions, until it reaches very high. After soaring around for a few minutes it can be seen to press its wings tightly to its body, and with a rushing, zipping sound, accompanied by an awesome chattering and screaming noise hurtles itself downward with terrific force until within a few yards of the ground; then, spreading the tail and wings, it "flattens" out and dashes at

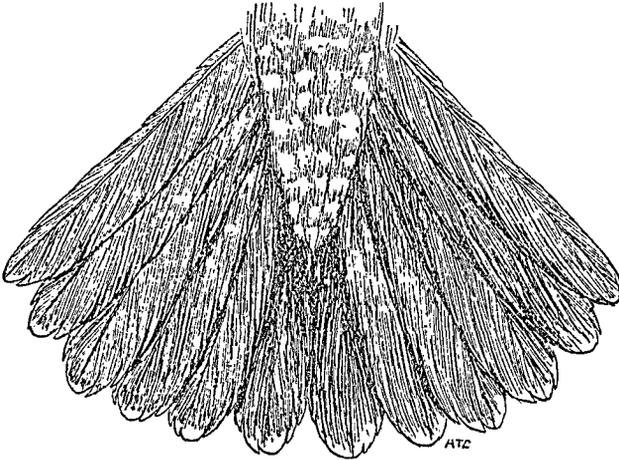


Figure 15. Black Falcon, ♀.

One-half natural size.

Tail, dark brown tipped buffy white; Coverts with broken bars in the form of oblong spots of faint buffy white.

lightning speed after a bird which has become scared at the screaming dive and has taken to flight. It is a wonderful sight, and most interesting to see the swerving and the dodging of the quarry as it makes frenzied efforts to escape from the screaming black object rushing towards it; or to see the determined hunter adroitly following every move of its intended victim on an ever twisting course. The chase is of short duration, for its speed soon allows the hunter to catch up to its quarry, and, when close enough, its talons flash out and grab the bird as the Falcon shoots upward, leaving behind a few floating feathers as evidence that the chase is over and a feast has begun. Here it should be stated that the Black Falcon seldom takes its prey in the

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"squat" at the end of a dive, but prefers giving it a gruelling chase before taking it in the air. The writer is satisfied that it hunts for the pleasure of doing so, for he has time after time seen birds chased and struck down without any attempt to feast upon them. On rare occasions it will hunt out a bird, which, during a chase has managed to gain the shelter of a small bush; it will descend with wide-spread, flapping wings and much screaming, and so bewilder the hunted bird that the latter attempts to seek a more secure hiding-place, but, being confused and almost exhausted, it soon gets caught in the hunter's relentless talons. Generally, however, the Black Falcon is rather "sporty," and, once a bird has evaded it by reaching cover, it will shoot upward for some distance and fly off in that "don't care" style. Large birds, such as Cockatoos, Pigeons, Galahs, and Ducks, are often attacked; the procedure is similar to that already mentioned, only that the hunter does not attempt to grab and hold its prey, for it is struck time and time again, until it falls in a dead or dying condition. The writer has been most interested in watching a contest with the Murray Magpie (Magpie-Lark), but, owing to its ability to twist and turn, the latter bird has always won. It was very amusing to see the Falcon flash right past the smaller bird, which had swerved sharply at the last instant, and to hear the familiar cry of "Peewit, Peewit," given, as if in derision; after many futile charges the Falcon flapped leisurely away, as much as to say that it had realized it had had no chance from the beginning, and had only attacked for practice.

Though most of the feed is supplied by birds, a good many rabbits and young animals are taken, but usually when they are in motion. The birds rarely attack in pairs, unless they are slaughtering large birds in a flock. The Black Falcon is rarely, if ever, a carrion-feeder, nor does it eat much of its own kill on the ground, this being generally carried to a tree or, if suitable, eaten while on the wing.

The Black Falcon takes possession of any old nest, preferably one well up in a leafy tree, for the home of its future family. Any bird that comes near the nest is chased, and perhaps killed before any work is done on the nest. Little has to be done, except scrape out the centre, as no lining is used, though on one occasion the writer found a nest lined with green leaves—both birds were in attendance, but as no eggs had been laid the lining had possibly been put in by some other species before it had lost its home.

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The Black Falcon sneaks away from its nest at the least indication of danger, and clears right away while an intruder is present.

Three or four eggs form the usual setting, though sets of two eggs are sometimes noted. They are very much like the eggs of the Grey Falcon, so that careful identification of the birds is necessary at the nest. The shell is hard, close-grained, smooth, and with little, if any, gloss. The ground-colour is buff to pinkish-buff, but this is more or less submerged by small spots, streaks, or blotches of any shade of red to brown. The eggs vary much in colour, shape, and size; several types of eggs were described in my remarks under the Grey Falcon, and these also apply to the Black Falcon. A typical egg measures 2.15 inches by 1.55 inches; it is rounded-oval, slightly dumpy at the larger end.

Young birds, about a week old, are covered in a smoky or bluish down, with some long hair-like feathers on the head and neck; they have the irides hazel and the legs and bill bluish.

Falco berigora, Brown Hawk.

For many years it was thought there were two species of Brown Hawks in Australia, but after much study of specimens and work in the field it has been decided, though many differ, that they are phases of the one species. When the Checklist Committee, appointed to compile an up-to-date list of Australian birds, decided to adopt the generic name of "Falco" instead of "Hieracidea," it was a move in the right direction, for the Brown Hawk has most of the characteristics of the Falcon family. The plumage varies so greatly that there is every reason for indecision in one's mind when examining two birds of extreme range. It was supposed that Eastern Australia supplied the dark form, Western Australia the lighter form, and South and Central Australia a mixture of both forms. So far as South Australia is concerned, we are fulfilling our responsibilities, for extreme shades of both phases are to be noted in the State. The writer has been very worried with this problem, and is not yet satisfied; he is inclined to think that the dark phase is the insular form; only dark forms appear in Tasmania; the darkest forms in this State are confined to higher rainfall areas, i.e. usually near the coastline; the dark specimens in central parts are immature birds, for young birds when leaving the nest are very dark, even the progeny of light-coloured birds. We will let it go at that, with the one remark, "If the Brown Hawk were a Thornbill more species would be made of it."

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It is very difficult to describe the plumage of the Brown Hawk without going into details, but in the dark form it is generally brown on the upper-surface, all feathers being more or less edged, tipped, or margined in lighter brown to fulvous white; the head and hind neck brown with black stripes down the feathers; forehead fulvous white; black ring of feathers around the eye; ear-coverts brown with white bases; throat and sides of neck with an indistinct collar of creamy white; black moustache; all under-surface brown mottled with creamy-white in the centre of the body; thighs dark brown; tail dark brown, shaded, mottled or tipped with fulvous to white; irides brown;

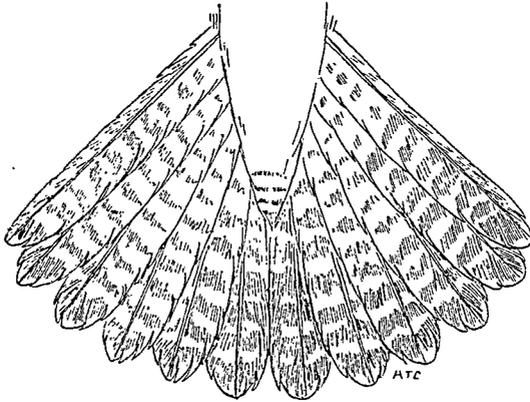


Figure 16. Brown Hawk, ♀.

One-half natural size.

Tail, light chestnut with grey barrings; Coverts, buffy white.

legs greyish; bill bluish, black at tip. In the lighter phase the bird appears to be a faded or washed-out specimen, in which the marginal markings have disappeared, and many dark shaft lines, probably existent, but invisible, in the darker form, have become revealed, resulting in a more striped plumage.

The male is $16\frac{1}{2}$ inches long, and the female, though similar in plumage, is very much larger.

The Brown Hawk is probably the commonest of the Accipitres in South Australia. It is found on open plain, scrubby brush or in forest lands alike. Its rather peculiar call, something like "Karra, Karra, Karrakatchy," quickly repeated, may be heard at any time by day, and often by night, in most localities, but

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probably more frequently in the inland regions. Once heard this call cannot be mistaken; it has several other cackling notes, which cannot be set down in phonetics. It is difficult to set down any clues by which the Brown Hawk can be identified; probably the most reliable ones would be its peculiar side-slipping, dropping flight, its querulous cry, and the black markings of the face.

Although capable of fairly rapid movements, the bird makes little use of them, for it usually sits on a post, low bush or any vantage point and waits patiently for the advent of a small bird or animal upon which it pounces and flies off with to its perch to feast upon. It rarely attempts to chase a bird in the air; indeed, it is very doubtful if success would attend such an effort; most of its prey is captured by stealth rather than by a speedy chase, so much loved by other Falcons; it may be seen hovering at a fair height, but only on the watch for some unsuspecting bird or animal; when it is seen the Hawk quickly falls and glides to a bush or any position, there to wait a favourable moment to swoop down on it.

The flight is very erratic; first one wing then the other appears to falter, and the bird slips sideways for some distance, continues on that plane for a few seconds, and then it may shoot upward, or may be downward, only again to repeat the side-slipping movement. This action gives one the impression that the bird has met with some misfortune, and is falling to the ground. When two or more birds are in the air together, they go through all manner of aerial stunts in chasing each other.

During the hot summer days they resort to the cool shade provided by dense trees, in which they are often attacked by small birds, but generally the birds are resting on posts or prominent positions in preference to trees. As a rule its food consists of small birds or animals, but when grasshoppers, grubs, or other insects are about the birds forsake all other diet; it is amusing to watch them chasing grasshoppers, sometimes running over the ground and leaping to capture one in its bill or claw—it is worthy of note that the bill is often used—or to see it make short flights after a more active insect. Many lizards, snakes, rats, and mice are taken by this bird; in fact, anything from young birds torn from their nest to a fairly large rabbit comes in as food, anything that can be taken by the bird pouncing down upon it. It is not uncommon to see a struggling young rabbit in the talons of this Hawk, for the latter does not kill with quick dispatch like the other Falcons.

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In habit, food, and nesting operations the two phases of the Brown Hawk are alike.

Any old nest, for it does not often construct one for itself, is used; it is scraped out and usually lined with bark, but occasionally a few leaves are put in the bottom of the egg-cavity.

When nesting the male does most of the hunting; as it returns with some eatable in its claws, it utters its cackling call, and the female leaves the nest, flies out to meet him, takes the meal from his talons while both are in the air, and returns with the food, dangling from one talon, to the nest, where it is torn to pieces to feed the young. This procedure follows even when the female is sitting on eggs; her mate now and again comes right on to the edge of the nest and leaves his supply of food.

Young birds are clothed in light rusty-coloured down; the feet are grey, irides brown, and bill blue.

The female is usually a close sitter, but when disturbed it will fly right away from its nest.

Three eggs are more frequently found in a clutch, though sets of two, four or even five are not uncommon; they are rounded-oval to oval, with a dumpy, large end; the texture of the shell is close-grained, hard, and fairly deeply pitted, sometimes showing a slight lustre; the ground-colour is buff to pinkish-buff; the surface is marked with minute spots, freckles, streaks, or blotches—or a mixture of any of them—of pinkish-red, and all shades to reddish-brown; zones and belts of colour are not uncommon. The eggs vary considerably in colour and markings; some are very handsome, but some have a yellowish washed-out smeary appearance. The eggs of the Brown Hawk, Black Falcon, and Grey Falcon cannot be separated with certainty, so it is always necessary to identify the owners of a nest. Typical eggs measure two inches long by one and a half inches wide, but vary greatly in size.

Falco cenchroides, Nankeen Kestrel.

Though some people erroneously persist in calling it the "Sparrowhawk," the Kestrel is probably one of the best-known of Australian birds; it cannot well be otherwise, for its upper or overcoat of reddish cinnamon, its under-surface of a dark creamy colour, its wings blackish-brown, and its tail, from beneath, a delicate grey with a black subterminal band finished off with white tips, easily distinguishes it from all other birds.

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A feature not generally known is that the female, besides being larger, has a reddish cinnamon upper-tail surface, whereas in the male bird it is grey.

Everyone must, at one time or other, have seen the Kestrel floating high in the air, hawking or skimming gracefully over a crop of wheat or grassland; or flying around, if not perched upon, a haystack or grain-shed; or, with head pointed downward after the style of a hawking Tern, scouring over acre after acre of fallowed land, every now and again hovering, when it has espied some likely-looking object, as it carefully scans the ground in order to pounce upon some unwary mouse, reptile, or insect, or to drop suddenly, with its wings held high above the back, to grapple with it.

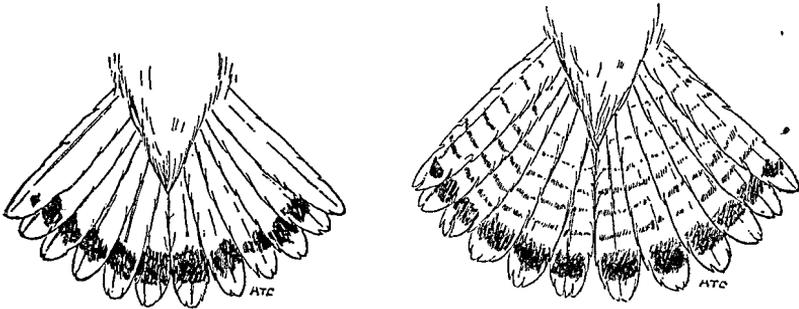


Figure 17. Nankeen Kestrel. (a) ♂, (b) ♀.

One-half natural size.

♂, Tail, grey with broad subterminal black band; Coverts, white.

♀, similar, but has in addition narrow transverse darkish barring across the tail.

The wonderful hovering action has to be seen to appreciate the graceful poise in the air, its wings beating at a rapid pace and its head bowed as it watches the ground below; yet with all the motion its body, probably more upright than when in ordinary flight, remains perfectly still in the one position, at least so far as the human eye is able to detect.

The food consists of any small animal, principally of the rodent type, reptiles, or insects; few birds are taken, for the Kestrel rarely kills on the wing; here again we have a Hawk with a swivel-type of tail, which is probably not suitable for the sharp darting in a lateral direction, which is necessary in the

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chase. Food is always carried in the talons, and is usually taken to a post or a suitable elevated position before being eaten. Unless it be flying insect-life, most of its food is taken by suddenly pouncing upon it, but when grasshoppers, etc., are present they are taken mostly in the talons, sometimes in the bill, and eaten while in the air.

The Kestrel is a most valuable bird to the man on the land, for it helps greatly in keeping down vermin, which take a heavy toll of the grain crops; no one who has watched it around a barn or a haystack could imagine that anyone would want to destroy it; throughout our cultivated land it is one of the birds that has greatly increased, not because our law has protected it, but because it has proved itself a great assistant to the tiller of the soil.

A new stick nest is rarely constructed by the birds themselves, they prefer any old, deserted tenement or a hollow spout of a tree or a crevice or cave in a cliff, or in various positions in an untenanted house. No nest, other than a scrape in the soil or in decaying wood-dust, is usually constructed, nor is any lining or bed made ready for the eggs. If an exception proves the rule, the writer found it, in a long, slanting hollow spout of a gumtree; the hollow was fully twenty feet deep from the opening and not quite level, so that had the birds decided to nest in it they would be a long way down; this was not a likeable position for them, as the sitting bird loves to be able either to see out of the hollow or at least to be but a foot or so down; so, as there was an enlarged spot about three feet from the entrance, the birds decided to use this; but, before doing so, something had to be done to prevent the eggs from rolling to the bottom of the hollow, so they built a retaining-wall of small pieces of charcoal and a quantity of horse manure; this proved satisfactory, for when found the "nest" contained four just-hatched young, which were clothed in pure white down with all the soft parts bluish-white.

Both birds share in the duty of raising a family, but the male bird does much less than his half of the sitting; still he makes up for it by hunting up food for his mate; he brings it in his claws, and as if in answer to his twittering call to announce his approach the female returns his greeting, slips off the nest or out of the hollow, meets him, and with her talons takes the meal from his feet while both are in the air and returns to the nest to devour it. For a short period the male bird rests in a nearby tree; then flying close by the nest, giving the faintest of

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calls not acknowledged by his partner, he goes on the hunt once more. When the male takes upon himself the duty of incubating, the writer regrets to say that his mate does not reciprocate the kindly attentions offered to her.

The size of the clutch varies from three to seven eggs, but the usual setting is four or five eggs; they are almost globular in form or ovals with a compressed larger end; they resemble the Owl-type of egg in shape. The ground-colour is buff or buffy-white; this is freckled all over, streaked or blotched with reddish-brown. Some eggs are more thickly blotched at the larger end, others on the smaller, while belts of colour often encircle the centre of the shell. The eggs cannot be mistaken for those of any other Australian bird, but they vary considerably in colour from an almost white ground-colour with heavy dark crimson-brown to a deep chocolate buff ground-colour with minute freckles of reddish-chestnut all over the surface. As is usual with the eggs of the Falconidae a set with a smeary yellowish-brown colour having a washed-out appearance is often met with.

A typical egg measures $1\frac{1}{2}$ inches long by 1.5-32 inches wide; it is finely granulated, hard, and has very little gloss, though sets that have been incubated for a lengthy period often contain one or more eggs that are slightly lustrous.

When able to leave the nest the young closely resemble the adults, but most of the markings on the feathers are pear-shaped instead of lined.

Pandion haliaetus, Osprey.

The Osprey, or Fish-Hawk as it is frequently called, is a lover of the seashore, and the small islands near the coast; it can be found year-in and year-out in almost every secluded bay or inlet, but nearly always in pairs; it never goes more than a few miles inland from the sea unless to follow up a river stream, and then it does not go any great distance. It has the same "brown-above-white-below" dress as the White-bellied Sea-Eagle, but is about eight inches smaller; its tail—which is very dark brown slightly marked with white—is not one-third white, nor is it wedge-shaped, and the breast and sides of the neck are shaded with buff, instead of pure white.

The Osprey can be described as follows:—All the upper-surface brown, most of the feathers being marked at the tip with white; wing-feathers black; head, and all the under-surface white; some feathers of the breast and sides of the neck

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shaded with buff giving a dingy appearance; tail blackish-brown marked with small white marks at the tip of the feathers. The bill is black, irides orange, and the cere and legs a bluish-grey.

It has rather long wings and a heavy flapping action when flying, but it is very graceful when it is soaring at a great height, circling round and round in large spirals as it rises or descends in altitude and always keeping a watch on the ocean below. If a fish is seen the bird closes its wings and dives at terrific speed upon it, the impetus of the flight often taking the bird completely under the water. Usually when it rises it has the fish in its talons. At other times when flapping heavily over the sea it

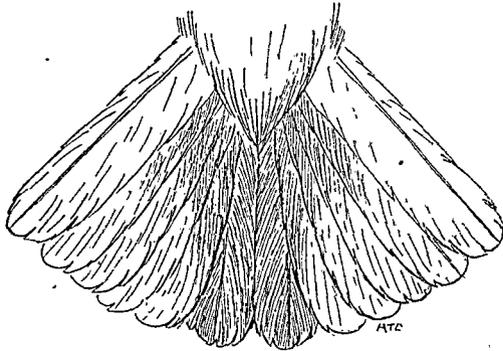


Figure 18. Osprey.

One-half natural size.

Tail, brownish grey; Coverts, white.

swoops down and without entering the water secures its prey, which has been swimming close to the surface. The talons only, and not the beak, as is sometimes suggested, are used in securing its victim. Here we might digress for a moment to say that none of our *Accipitres* strike with the bill or beak. This has surely been proved beyond doubt. Those of my readers who are ever attacked by an Eagle—it will have to be trapped or cornered to do so—need not worry much about its beak, but beware of its talons.

To return to our subject, the Osprey, like others in the group, frequently misses its quarry, but when one considers the speed with which the dive is made it is marvellous that the bird is so often successful.

McGILP—The Hawks of South Australia.

The food consists mainly of fish taken from the water, but includes sea-life of any description that is washed up on the shore along which the birds act as scavengers.

The same nest is used year after year, the birds even laying a second or a third set in a season if anything happens to the previous ones. There is a fine old historic nest on a rock at Cape Mantelle in Western Australia which had been used continuously since 1889—goodness knows how often before that—until a year or so ago, when the occupant had to construct a new nest. Coming nearer home to Kangaroo Island, there is a very fine old nest on a rocky crag jutting off the mainland into the sea which has been in use for many years, despite the fact that the eggs have often been taken. It is pleasing to hear from a gentleman, who lives near the nest, that the taking of eggs had no ill-effects, for the bird almost at once laid again and brought up the brood. Possibly every nest along the South Australian coast and on many islands is known to ornithologists, and it is peculiar that few records of a new nest are reported. The nest, being used annually, continues to grow in size, for each year repairs are necessary. Sticks from nearby trees, pieces of flotsam from the sea, and a quantity of a heavy seaweed are used to construct the nest; it is then lined with seaweed or leaves.

Two or three eggs usually form a clutch; they vary greatly in shape, ranging from a rather pointed-oval to very rounded-oval; the ground-colour differs considerably, some eggs being almost white, others of practically every shade of colour to pinkish-buff; they are probably the most beautiful eggs found in Australia. The eggs are spotted or blotched with deep reddish-brown, dark crimson, and purplish-brown. A typical egg measures $2\frac{1}{2}$ inches long by $1\frac{3}{4}$ inches wide; the shell is close-grained, smooth, chalky, and only rarely shows lustre. There is a peculiar fishy smell about the eggs. Mention should be made of the fact that very frequently the spots or blotches coalesce to form zones or large patches on any portion of the shell, while some spots appear to be below the surface of the shell.

In dealing with the measurements of typical eggs, it might be well to state that when an egg is more pointed than typical, it is longer in the longer axis and narrower in the shorter axis; it is the reverse if the eggs are more rounded than typical; this is fairly consistent with all eggs, so that if my readers find any eggs of the order *Accipitres* that are shorter than the measurement given, they will probably show a greater girth.