NESTS AND EGGS OF BIRDS IN CENTRAL SIAM. By E. G. Herbert, F. Z. S., M. B. O. U.

WITH PLATES 8 AND 9. INTRODUCTION.

This contribution deals with a collection of birds' eggs obtained by me in Central Siam, and to a very great extent the eggs were taken within a radius of 50 miles from Bangkok. A few eggs from outside the zoogeographical division of Central Siam have been included, but in such cases the division has been recorded.

The collecting was divided into two periods, the first extending from the beginning of 1913 to April 1916, when there was a lapse of three years whilst I was away from Siam; then followed the second period of one year from April 1919 to April 1920. During the whole time, I kept field notes on the birds, nests and eggs, and the following account has been written from the original notes. It is only when writing a full description that one realizes how much more might have been done, particularly in the case of many of the commoner birds.

The illustrations have been made from photographs taken for me at the Talat Noi Photographic Studio. The photographs were all taken just before I left Bangkok, and the nests were the best selection that I had at the time, but they are not in all cases quite as typical as I should have chosen if I had given the matter earlier attention.

DIRECTIONS FOR EGG COLLECTING.

When writing the account of my collection of birds' eggs I have been asked to give as much information as possible to enable others to follow on with the work, and I know from my own experience how difficult it is to collect information for a start. I will therefore commence with a full account of the work of egg-collecting, before proceeding with a description of my collection.

It will be necessary to employ a collector, and unless there is a suitable man at hand, it will probably be best to select from one of the villages a local man who has taken some interest in bird life. The collector should get in touch with the boys who tend the buffaloes and the men who work in the fields, and should arrange

with them to mark the position of any nests they find, but not to touch them, so that they can take him to the nest later. Boys living in the fruit-gardens can be employed in the same way. This plan will enable you to go out with your collector at the week-end, and to see quite a number of nests in a short space of time.

You should train your collector by giving him all the information that you are able to, such as the names of the birds which are nesting at that particular time, the district and kind of surroundings where they are likely to be found, the favourite nesting sites, a description of the general appearance of the nest, eggs and the bird itself. Most of this can be found in the following description of my collection, and details of the birds can be obtained from the Fauna of British India.

The importance of the following points should be thoroughly impressed on your collector. and he in turn should pass them on to his assistants in the villages:—Eggs not fully identified are useless and of no scientific value – therefore if the bird is not known with certainty, one of the parent birds must be secured. This can be done by trapping, snaring, or the use of a blow-pipe for small birds, but sometimes it will be necessary to shoot the bird. Full clutches of eggs are required, so incomplete clutches should be left until the bird has finished laying. These points may be brought home to the individuals by giving good money for definite results, and little or nothing for casual work without data.

Trapping, as a means of securing one of the parent birds for closer inspection, is a very important feature of the work, and it is one that can easily be taken up by the collector if he is not already an expert at it, for there are plenty of adepts from whom he can learn. One of the best of them lives at a small Wat near Wat Saket, and eatches most of his birds on the spot.

I have had both male and female of all the different kinds of quail, taken at the nest in cage-traps, so that I had genuine pairs in the aviary. Trapping is used not only for catching ground birds, as it is most effective with many of the small birds such as Sunbirds and Flower-peckers, in which case the cage-trap is suspended on a

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bamboo near to the nest. If the bird is only required for verification, it can be released afterwards, for if the eggs were previously in doubt, the clutch will now be authentic.

Snaring, which is resorted to when trapping is not a suitable means of capturing the parent bird, is done sometimes by means of a set of horsehair nooses, and at other times by means of a noose on the end of a fishing rod. The latter is a very useful method in the case of Woodpeckers and Kingfishers, which often leave the nesting hole before the collector can reach the spot. It is also a most useful means of taking Munias and other birds from a similar form of nest.

There will often be times when you are unable to visit certain places to inspect the nests, and on such occasions the collector should bring the nest with the eggs, so that you can take careful note of the construction and the materials. In the case of the small Owls, Woodpeckers, Kingfishers, and certain other birds which lay white eggs, it will be very necessary for him to bring the parent bird with the eggs, which is not by any means a difficult matter.

With regard to full clutches, it is of the greatest importance to know that the number of eggs has not been tampered with, and it is as well to let your collector know that you have many means of detecting this. One that is most helpful is the extent to which incubation has proceeded, though there is more than one interpretation of this, for whereas a so-called clutch with half the eggs fresh and the other half partially incubated is not genuine, another clutch showing incubation in an evenly varying degree from nil to a week may be perfectly good. For in the case of Owls' eggs, which are brooded during the day and well sheltered when the bird is off them, incubation will have proceeded a considerable way in the first egg by the time the last egg is laid. The state of incubation in most eggs can be clearly seen in a darkened room by holding the egg in the fork of the thumb and first finger with a good electric torch beneath it. In white eggs discolouration of the shell will sometimes give additional evidence to strengthen the opinion which had previously been formed from the state of incubation, as to the precise order in which each egg was laid. Then again if we

turn to coloured eggs, and assume that fresh eggs from several nests have been assembled to form a clutch, you will only need a little experience to enable you to detect certain differences in the eggs, either in the form of the markings, or in the tone of the ground colour, or the amount of gloss, or some other detail, which would not occur in a genuine clutch.

Observation of detail is very necessary in this work, as there is often some characteristic which will give confirmation to your identification. The shape of the egg and the texture of the shell play an important part in the recognition of a white egg, and although the eggs of the different Munias cannot be separated with certainty, there is some distinguishing feature for most of the white eggs. Owls' eggs have a few pimples on the shell, Coucals' eggs have a chalky outer surface which soon becomes scratched by the bird's claws, Rollers' eggs are very highly glossed, Grebes' eggs show deep green when looked at through the blow-hole against the light, and so forth. Then again the colour of the yolk varies considerably, but it often remains constant throughout a subfamily as in the case of the Munias, which all have a very pale-coloured yolk, whereas that of the Flower-peckers' eggs is a deep orange. These are points of interest which help you on with the work, and they should be recorded in your notes as they occur, but the real aim of the work should be the systematic collecting of field notes with descriptions of the habits of the birds, their feeding, moulting, nesting, and the young birds, with dates for everything, as this is a most valuable asset to the scientific side.

I now come to the egg-blowing, which should be done by means of a bent blow-pipe from a single hole in the side of the egg. If the individual has never blown an egg in this way, it will be better for him to have a lesson from someone who understands it, and then practice on some common eggs before settling down to the collection. For the benefit of an up-country enthusiast who may not be able to find personal assistance I will add a little explanation. The plainest side of the egg should be selected for drilling the hole. For small eggs a pin should be used to puncture the shell, and

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great care must be taken to revolve the drill freely without putting too much pressure on it. With larger eggs and a harder shell a sharp tap with the point of the drill will be found the best way of starting the hole, and in this case there will be no difficulty in drilling the hole, to the required size. The eggs should then be held with the hole downwards, and if it is a small egg, the tip of the blowpipe should be supported by the end of one finger of the hand holding the egg, and placed as near the hole as possible, then the contents of the shell should be driven out by gentle or moderate blowing. After that it should be rinsed out with water and placed on sawdust to drain until it is quite dry. When blowing the larger eggs, it will be found advisable to enter the tip of the blow-pipe through the hole in the egg, as more pressure can then be obtained for expelling the contents.

It is advisable to have eggs blown and washed out at the earliest opportunity, as it makes the work so much easier. A fresh egg is very easily blown, whereas the same egg kept for a few days during the dry season will lose some of its moisture and the yolk will settle to one side and soon adhere to the shell, making the task of blowing and subsequent washing out a tedious one. Avoid washing the outside of the egg, as this should be preserved in its natural state; a clot of dirt may be softened with water and removed, but anything of the nature of systematic cleaning should be discountenanced, as it removes some of the natural grease and thereby changes the degree of glossiness on the shell.

In the event of incubation having commenced, it will usually continue although the egg is exposed to the atmosphere, as the temperature is not low enough to check it, so the testing of all eggs with an electric torch becomes very necessary, and if incubation is shown in a good clutch of eggs, which cannot be blown the same evening, it should be placed on ice to stop the incubation. When washing out a partially incubated egg, be careful to see that the blood-stained membrane which contained the embryo chick is removed. This can generally be done by filling the shell half full of water and then judiciously shaking it; after one or more efforts the

membrane should come away when the water is driven out, but if it is troublesome it may be picked up with the bent-over point of a pin or an embryo hook, and carefully taken out.

When valuable eggs are too hard-set to admit of being blown in the ordinary way, the help of chemicals must be resorted to. A fairly large hole is bored, and then as much of the contents as possible blown out, but see that all yolk and albumen are removed before any caustic potash is injected, as the potash turns the yolk to a rubber-like substance and the white to a hard lump. When the shell has been washed out and only the flesh and bones of the chick remain, inject a small quantity of caustic potash with a pen-filler. The amount should be sufficient to cover the remaining contents in the shell, and the strength should be sufficient to quickly bleach the skin of your fingers. Leave this in the egg for ten minutes and then endeavour to blow out the contents; but the operation may have to be repeated several times. Avoid getting any of the potash on your fingers or on the outside of the shell, as it will make the egg very slippery and almost impossible to hold. A good plan is to have the egg close to the surface of the water in a well filled basin, and then if it is dropped it should escape injury; the water is also convenient for immersion if the egg becomes slippery. Potash will injure the markings on the outside of the egg if left on the surface, and will destroy the shell if left inside too long. It is impossible to treat very small eggs in this way, but they can be cleaned with care by leaving them in the water for several days, after the soft parts have been blown out, so that the flesh and bones may soften.

It is important to keep each clutch complete in itself, and it should be numbered so that it can be identified with the date and notes referring to it. Storage will be carried out to your own ideas, but it is advisable to keep the eggs covered, as then they retain their fresh appearance better, and it is also very important that they should not be unnecessarily exposed to light. An almirah makes a good storage place, but it should be isolated with oil-trays so that the little red ants cannot get at the contents. Biscuit tins with a deep layer of sawdust make convenient trays in which the eggs can be placed to drain after they have been blown and washed out.

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When blown eggs are packed for transport, the smallest eggs may be in clutches and touching one another, provided the cotton wool is packed firmly above and below them, but in all other cases, there should be cotton wool between every egg, and each box should be well filled with cotton wool and firmly pressed down; the larger the eggs the firmer the packing.

Outfit for this work is very simple as the only instruments needed are as follows:

2 brass egg-blowers with bone mouth-pieces, but without any blob on the tip.

1 egg drill, medium size.

1 ditto, large size with rose-bit end.

1 embryo hook.

1 pair brass forceps with soft wire loops at the ends, for lifting small eggs.

The above can be obtained from any firm of naturalists, and the following is an old established one:

Messrs. Watkins & Doncaster, 36 Strand, London, W. C.

For collecting boxes, cigarette tins and biscuit boxes filled with cotton wool meet the requirements, and it is advisable to have the district collectors well provided with these articles. Unblown eggs of course require more careful packing than empty ones.

The following localities are referred to :--

IN CENTRAL SIAM.

PAKNAMPHO, at the junction of the MePing and MeYome rivers, 125 miles N. of Bangkok.

AYUTHIA, on the branch of the Chao Phya river, 50 miles N. of Bangkok.

SAMKOK, on the Chao Phya river, about 40 miles N. of Bangkok. This place covers a distance of about ten miles on the river and includes the villages on the west bank in the following order :--BAN KHANG, BAN LAING, WAT TAH, and the Island of KOH YAI with the village of [that name on the mainland. On the east bank there is CHIENGRAK NOI, and above the big canal there is a long stretch of river bank without any habitations known as POH TENG, which extends as far as the bottom end of Koh Yai.

PAKRET, on the Chao Phya river, 20 miles N. of Bangkok.

PETRIU, on the Bangpakong river, about 50 miles E. of Bangkok.

HUA TAKHAE, on the Petriu railway line.

SAPATOOM, outskirts of Bangkok on the eastern side, and including the paddy fields stretching from the Rifle-butts along by the Sports Club, and the "Ditches," down to Klong Toi on the Paknam railway.

PAKLAT, on the Chao Phya river, about half-way between Bangkok and Paknam.

PAKNAM, at the mouth of the Chao Phya river.

MEKLONG, at the mouth of the Meklong river, about 60 miles W. of Bangkok.

TACHIN, on the river of that name, situated about midway between the Meklong and Chao Phya rivers. The railway station is called MAHACHAI.

BAN YANG, on Klong Yang, about 8 miles N. of Mahachai,

BANGLAMPO, Bangkok, fruit gardens situated behind the L. T. Leonowens Saw Mill, on the western side of the river.

BANSAKAI, fruit gardens behind the Bombay Burma Trading Corporation Saw Mill, and below Banglampoo.

SAMRAY, fruit gardens immediately below Bansakai.

1. Corvus coronoides andamanensis.

THE ANDAMAN JUNGLE CROW.

Vernacular, " I ka".

The common crow of Bangkok, and the only species found there. They nest more or less in straggling colonies, either on the outskirts of a town or in and around the villages, and I have only found their nests in the neighbourhood of human habitations. The nesting season is January and February, though I have had a clutch of five fresh eggs as early as Dec. 23rd, and occasionally clutches of fresh eggs may be taken at the beginning of March; but these are probably due to the birds having been disturbed in their earlier nesting efforts.

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The nest is a large structure of sticks and twigs, too well known to require much description, but the materials should be noted. It is lined chiefly with fibre, though roots, scraps of rubbish, and hair of various kinds are also included, but warm material of the nature of vegetable down is not used. The favourite site is a forked branch near the top of a Mango or Tamarind tree, though Pepul trees and sometimes Cocoanut palms are also used.

An interesting feature of the eggs is the great variety which occurs between different clutches in respect to shape and size, and more especially in regard to colour and marking. Individual clutches also exhibit a considerable range in the variety of colour and density of marking, for it is quite a common occurrence to find two or three eggs of a clutch more or less heavily marked in dark brown on a green ground, with the remaining eggs running out into paler markings on a bluish ground. But, at the same time, there will be some clear indication either in the shape of the eggs or the form of the markings, often in both, to show that they are a genuine clutch. The ground-colour varies from a bright green to pale yellowish-green, and from a greenish-blue to pale blue. The markings are either blackish-brown, sepia, or olive-brown, and sometimes there are secondary markings of pale purple; some eggs have a blackishbrown cap on the large end, whilst others are thickly covered all over with fine specks, but the most general form is that of the familiar corvine streaks and blotches running in a lengthwise direction.

In shape they are moderately broad ovals, often considerably pointed towards the small end, and greatly elongated varieties are not uncommon, whereas the short globular form is seldom found. The texture of the shell is close and hard, but the eggs usually show very little gloss. Five is the general complement of eggs, sometimes only four, and I have one very well marked genuine clutch of six.

With regard to the great variations in colour and markings that often occur in a single clutch, I have endeavoured to find out the order in which the various eggs are laid, and to see whether that order remains constant. With this in view I instructed my collectors to visit the nests daily as soon as egg laying commenced, and to

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mark the eggs with small streaks of colouring matter, to show the order in which they were laid. This met with a certain amount of success, although the birds would not always tolerate the regular visits and often forsook the nests after laying two or more eggs. The following are the results obtained, and show that in each of these cases the more densely marked eggs were the first to be laid.

16/1/20. Four eggs, laid in 4 days; eggs a and b are exactly the same, they are heavily covered with fine markings of olive-brown and have scarcely any of the greenish ground-colour visible; egg c is sparsely marked with dark brown spots and blotches on a greenishblue ground; egg d is very finely freckled all over with brown on a dingy blue ground. The eggs were taken three days after the last one was laid. The measurements are :-- 45.5×39.0 , 46.0×39.0 , 45.5×39.3 , 41.5×39.5 mm., respectively.

18/1/20. Five eggs; three were in the nest on the first visit and these are all marked alike; they are heavily streaked with olivebrown and show but little of the greenish-blue ground-colour; the fourth egg is of the same type and colour, but to a lesser degree, so the ground-colour shows up much more clearly; the fifth has specks and blotchy spots of brown with secondary markings in purplishgrey, fairly sparingly distributed on a greenish-blue ground-colour. The measurements are :— 43.0×30.7 , 43.0×30.7 , 42.0×30.8 , 43.0×29.7 , 42.0×29.7 mm.

31/1/20. Four eggs; three were in the nest on the first visit and these are almost alike; they are heavily speckled with dark brown on an olive-green ground, and the markings form a cap on the large end; the fourth is sparingly speckled with the same colour, only the markings are clustered on the small end and the ground-colour is a fairly bright blue. The bird forsook the nest after the second visit. The measurements are :- 44.0×32.2 , 44.0×32.0 , 42.0×31.7 , 43.0×31.5 mm.

18/2/20. Four eggs; two were in the nest on the first visit; they are exactly alike and a similar one was laid on the next day; these three eggs are so thickly speckled with olive-brown that that the ground-colour is practically obliterated; the fourth is well

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freekled all over with the same colour, rather more dense at the large end, but the greenish-blue ground-colour shows up very clearly. No more eggs were laid, so these were taken two days later. The measurements are :-- 46.0×30.5 , 46.0×30.5 , 44.0×30.5 , 43.5×30 mm.

The average measurements for the clutch of the largest \diamond ggs, also for the clutch of smallest eggs, in my collection are :— 46.5 \times 31.5 mm. and 37.0 \times 28.5 mm., respectively. Clutches averaging 45.0 \times 30.0 mm. may often be found, but 42.0 \times 29.0 mm. is a more general average size.

The very great difference in the size of the eggs coupled with the variation in shape and colour, made me at one time think that there were two species of crow in the neighbourhood of Bangkok. In 1913 I obtained from Samkok two clutches of the very long type of egg, the average measurements of which were 46.0×29.0 mm., and in appearance they were very similar to those of the Carrion Crow at home. About the same time I found another clutch at the same place, which was of the globular type and only averaged 37.0×28.5 mm., or 9.0 mm. less in length than the other two clutches. This made me think that we had both the Jungle Crow and the Burmese House Crow breeding in the same place, but further investigation failed to produce any of the latter birds, so the clutch of globular shaped eggs was probably laid by a first year bird of the former species.

2. Crypsirhina varians,

THE BLACK RACKET - TAILED MAGPIE.

Vernacular "Nok ka wen".

I have often visited the nests of this little magpie, and I have found they are unmistakeable as they are always plentifully lined with the twisted tendrils of small creepers, and so far as I know, this is the only nest in these parts which has this distinctive feature. The favourite haunt of this bird during the breeding season appears to be the scrub jungle on the outskirts of a village, where it usually selects a thorny bush in which it builds its nest. The bird is not readily flushed from the nest, and will slip away quietly by running

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along the branches to an adjoining bush, and I have even known it remain in the same bush whilst I examined the nest.

The nest is a rather shallow cup-shaped structure, built of twigs which are firmly knitted together, and neatly lined with the tendrils; it is placed at about six feet from the ground. I have had many nests from Samkok, a few from Ayuthia and I found one at Paknampho, but they will probably be found in many parts of the country. Late May to early July is the general nesting season, though I have had one nest in April, and another as late as August.

The eggs are moderately broad ovals in shape, often much pointed towards one end and sometimes slightly pyriform; the shell is fine in texture, but without gloss. The ground-colour is a very pale stone or yellowish white, and the markings consist of specks and spots and small streaky blotches in a yellowish olive-brown; freekling over the whole surface is often found, but it is always more dense towards the large end where it forms a zone or cap. With some eggs the general tone of the colouring is decidedly yellow, and in others it is almost grey which is due to the numerous dingy purple spots intermingled with the other markings, Then again some eggs are very thickly speckled and are quite dark in appearance, whereas others have much of the ground-colour visible and so appear much lighter. Three or four is the usual number of eggs laid, and the average of seventeen is :—25.0 \times 18.2 mm.

3. Mixornis rubricapilla minor.

GYLDENSTOLPE'S BABBLER.

Vernacular, "Nok kamin".

This was formerly known as the Yellow-breasted Babbler, but since the Siam bird has been given sub-specific rank, the trivial name has been changed to the above. It is a fairly common inhabitant of the fruit gardens, where it may be seen hopping about on the lower branches of the smaller trees, or on the bamboos and hedges. It is a great skulker, and when disturbed quickly disappears into the thick part of a bamboo elump.

The nest is invariably built of dry bamboo leaves, and lightly lined with fibre; it is globular in form, with the entrance at the side

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near the top, and measures approximately $4'' \times 4'' \times 3''$. I have seen many nests, and they have all been built either in the centre of a Pineapple plant or in the top of a young Betel-nut palm about three to five feet from the ground. They are by no means easy to find, as the bird selects a spot where everything is littered with bamboo leaves, and so every pineapple plant or young Betel palm in that part of the garden has a bunch of dead leaves in it which at first sight might be taken for a nest. I have found this Babbler breeding in the fruit gardens on the west side of the river from Banglampoo to Samray, and lower down at Paklat, also up the river at Samkok. The nesting season is in the early part of the rains, during May and June.

The eggs are regular ovals, moderately elongated, and only slightly compressed towards the small end. The ground colour is china-white. and the markings are fine specks with a few irregular spots in reddish-brown, more densely clustered round the large end. There is some variation in the depth of colour of the markings, for some clutches bear quite a pale shade, whilst others carry a rich reddish-brown with a few purple-grey spots.

Three eggs is the normal clutch, and the average measurements are 16.5×12.5 mm.

4. Aegithina tiphia tiphia.

THE COMMON IORA.

Vernacular, "Nok kamin luan on".1

PLATE 8.

My experience of the nesting of this bird is confined to the fruit gardens on the west side of the river, and although I have often seen and heard the bird on the Bangkok side, I have never followed up the nesting in that part. These birds are fairly numerous, but they are more often heard than seen; their note is a long drawn out and rather plaintive whistle, which once heard is easily remembered.

The favourite nesting site is a small branch of a young "ton thong lang"² which is a quick growing tree used by the cultiva-

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This is also used for the Oriole, which is described as "yai" (large).
Erythrina ovalifolia.

tors for shading the Betel vines. The nest is placed at about twelve feet from the ground, where it is usually attached, by means of cobwebs, to a steeply inclined branch with only a very small twig to give it additional security. Occasionally the nest is built in a fork of two or three slender branches, more in the style of the accompanying illustration, and only on two occasions have I seen it placed on a horizontal branch, which is reported to be the usual position in India; in one case it was on a light bamboo branch, and in another it was on the horizontal part of the centre stem of a cocoanut palm leaf.

The nest is a deep thin-walled cup, constructed of fine fibre and coated on the outside with cobwebs; the egg cavity is a little less than two inches in diameter with a depth of about 14 inches. The nest in the photograph is rather an unshapely one for this bird, as there is a very untidy lump on the left side of it; however, the cobwebs show up very clearly on the right-hand side, and the clinging nature of the materials on the main branch illustrates the manner in which these nests are often fixed with but little aid from a branch. Many of the leaves had fallen off before the photograph was taken, as the nest was well screened from view in the first instance. Nests may be found as early as March, though May is the general time for eggs, and occasionally a nest may be found in June.

The eggs are broad ovals in shape and are slightly pointed towards one end. The ground-colour is white, and is without gloss; the markings vary considerably both as regards form and colour; some have spots and blotches whilst others have straggling streaky marks, but in both cases they are in two colours, the more prominent ones being a reddish-brown and the secondary markings pale mauve or lavender. These markings are chiefly confined to the large end, where they form a more or less distinct zone of the darker colour.

Two eggs are usually laid, and sometimes three. They average 17.0×13.0 mm.

5. Pycnonotus blanfordi.

BLANFORD'S BULBUL.

Vernacular "Nok parort suan".

One of the commonest birds in Bangkok, and it may be found

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nesting in nearly every compound, yet it is one of the instances where I delayed collecting a series of eggs to show the difference in marking until it was too late.

The nest is usually built within easy reach from the ground, sometimes in the steep fork of a Croton, though more often on the light branches of some small tree, or even in a creeper. It is constructed of fine grasses, or where there are cocoanut palms near by, of fibre, and cemented together on the outside with small patches of cobwebs. The inside is hemispherical in shape and is neatly finished with the same materials, but the entire structure is always very thin.

The nesting season commences in January and extends to the latter part of September, though the hot weather and early part of the rains are the more general time. These birds do not make successful parents, for despite their devotion and fussiness they are in many ways very casual; this is borne out by the number of instances in which the old birds may be seen in attendance on a single young one. Two eggs are laid, and very occasionally three, but sometimes only one is hatched, and even when there are two young ones, some disturbance usually causes the loss of one of them. The nest is often very insecure, and several times I have known them to be capsized during a wind storm; on one occasion I replaced the nest in a more secure position in a Croton, and after I had replaced the half fledged youngster, the agitated parents continued their family duties. Two or more broods are raised during the season.

The eggs are moderately broad ovals in shape, and only slightly compressed towards the small end; they are fine in texture but without much gloss. The ground-colour is pale pink or pinky white, with markings in deep red or reddish brown, and secondary markings of pale purple. They show much variety and are hand-some eggs, though they are not so richly marked as many of the other Bulbul's eggs. The markings consist of specks and blotchy spots of irregular form with varying depth of colour, and are more closely massed in a zone or cap at the large end. The average size of the eggs is :--21.5 × 15.5 mm.

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6. Pycnonotus analis.

THE YELLOW-VENTED BULBUL.

This Bulbul is not extensively found in Bangkok, and I have only met with it at the "Ditches," Klong Toi, and at Samkok; but it probably occurs sparingly in many other parts of Central Siam.

The nest is very similar to that of P. blanfordi, though rather more solid in construction.

The eggs are of the regular Bulbul type, though slightly larger and much more deeply coloured than those of the previous species. The only clutch taken by me was a poor specimen, and did not come up to those in Mr. Williamson's collection, which are thickly marked in a rich maroon red.

7. Otocompsa emeria emeria.

THE BENGAL RED - WHISKERED BULBUL.

I found this Bulbul plentiful at Paknampho; it was breeding at the time and I took one clutch of two eggs, but I have not sufficient notes to enable me to write about it.

8. Dissemurus paradiseus paradiseus.

THE LARGE RACKET - TAILED DRONGO.

Vernacular, "Nok seng sao hang buang."

PLATE 9.

This Drongo is quite the most interesting bird of the fruit gardens, as its notes are all melodious; it is a wonderful mimic and it is a most fascinating bird to watch. Its cheery metallic notes and piping whistle at early dawn, come as a pleasant contrast to the monotonous screeches of Koel, or Brain-fever Bird as it is often called. It has quite a good song, though it excels more in its rich piping calls and its mimicry. It is sociable in that it delights to take up its position on a branch near to a habitation, and from this point it will hawk for insects in graceful swoops and again return to the same perch. The two long wire-like feathers in its tail, with the tufts on the ends, add to one's fascination when watching this delightful bird.

The favourite nesting site is a Mango tree, either near to a house in the fruit gardens or on the outskirts of a village, and although I have seen a dozen or more nests, I have never seen one in any other kind of tree. The position of the nest is on the very

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fringe of the tree, at about twenty feet from the ground, so it is quite inaccessible from the tree itself. On two occasions there was a Betel palm growing near by, which could be drawn over with a rope, so that a boy on the palm could reach the nest. There is usually some vantage point from which the nest can be inspected, but failing this, it will be necessary to erect a stout Bamboo, then steady it with one rope to the tree and another as a guy rope, so that a boy can climb up the Bamboo to the nest.

The parent birds soon become alarmed when a stranger approaches the nesting site, and swoop from tree to tree uttering various whistling calls. When an attempt is made to climb to the nest, they become still more agitated and commence me-owing and swearing like a cat, and swoop close to the head of the boy as he nears his object.

The nest is cup-shaped, but very shallow, and is built of tiny creepers, roots and stems of grass, often so thinly put together that one can see from below whether there is anything in it. The materials are bound round the sides of a horizontal fork at the end of a branch, so that the nest hangs in the fork like a cradle. This is not very well brought out in the illustration, as the near side of the fork is lower than the other, and at first sight the nest may appear to be resting on this, but the egg cavity is quite clear between the two sides of the fork.

The eggs are typically rather long ovals, and somewhat pointed towards the small end. The ground colour varies from white or a dingy cream to a warm pink, with markings in either red, claret, or reddish-brown, and a few in pale purple. They take the form of streaky or blotchy spots with a few specks, and though lightly distributed over the lower part, they become more numerous and prominent on the large end. The eggs are without gloss, and at times they have quite a mat surface that can be felt, and often give the impression that they have been powdered; one clutch in my collection has the appearance of the markings being almost obscured beneath a mat surface of dingy cream-colour.

The nesting season is May, with the eggs laid by the middle

of the month, and this appears to be a short and very regular period, though I have extremes on either side of it. One clutch of fresh eggs dated 5/6/15, may have been due to the first nest having been disturbed, and is not extraordinary, but a note of two young birds being fed by the parents at Bansakai, 29/4/13, appears to be an exceptionally early record. I have obtained eggs from Meklong, Samkok and Ayuthia, and in Bangkok I have watched several nests in the fruit gardens on the west side of the river.

Three is the full complement, and the average size for eleven eggs is :- 28.8×20.2 mm.

Note. I have one egg that was brought to me from Ayuthia by one of my regular collectors, and he reported it to be that of the Black Drongo (*Dicrurus ater*) which is so common in Bangkok during the cold weather, and leaves the latter part of February.

The egg is quite different from those of D. paradiseus, and compares well with eggs of D. ater, so it is reasonable to assume that it was correctly reported. It will be interesting to hear where the Black Drongo migrates to for breeding, as it may be seen going north when it leaves Bangkok.

9. Orthotomus sutorius maculicollis.

THE MALAY TAILOR-BIRD.

Vernacular, "Nok a chip."

The Tailor-bird is very common in Bangkok, and may be found nesting in any of the larger compounds. It is not in any way shy, and in the early part of the rains it may be noticed flitting about from bush to bush, and uttering its shrill call "too-wit" which is repeated several times.

I have found it nesting in a variety of places; in young seedings at not more than a foot from the ground and surrounded by long grass, in Brinjal plants in the vegetable gardens, also on the wild almond trees at a height of fifteen or twenty feet from the ground, and occasionally on the very prickly palms which make such a formidable hedge in some of the fruit gardens, and which grow to twenty feet or so in height. In the compounds the nest will probably be found in some shrub with a large leaf, which, however, must

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be harsh enough (containing sufficient silicate) to hold the cotton when the leaf is pierced and the cotton is thrust through the jagged little hole. Sometimes a single leaf is used and the edges are drawn together in the form of an inverted cone, but usually two are employed, and occasionally three or more.

The nest is built during the rainy season, and is generally placed beneath one or more of the other leaves in such a way that it is sheltered from the wet. The leaves are first drawn together by twining a few silk threads around them, probably obtained from some cocoon; the edges are then pierced by the long sharp bill of the bird and raw cotton is thrust through the puncture. The cotton fibre is held in the bird's beak is such a way that when it is pushed through the leaf, it forms a loop on the opposite side, which in turn makes the tiny knot when pulled against the serrated edges of the hole in the leaf. When the cone has been securely stitched in this manner, it is lined with cotton, and a few pieces of fibre or hair are sometimes used to keep the inner form of the nest, but this is not invariably the case. I have watched the bird at work on the "stitching" through field glasses, and it is surprising how quickly this is carried out. Nesting is carried on from early May to late August, though June and early July is the most general time.

The eggs are long ovals and taper considerably towards the small end. They are a very pale bluish green in colour, with pale rusty red specks and blotches, occasionally sparingly distributed over the whole surface, but more often they are thicker about the large end, and frequently form a distinct zone. The whole colour scheme has, however, a very washed out appearance. The shell is frail, and carries only a slight amount of gloss.

The usual number of eggs is four, and the average measurements are 16.5×11.5 mm.

- 10. Orthotomus atrigularis.

THE BLACK-NECKED TAILOR-BIRD.

Vernacular, "Nok a chip khor dam."

This' bird is little known in Bangkok, which, however, is not surprising, as it haunts are confined to the fruit gardens where

it appears to prefer the quiet and shade of the thick under-growth to parading itself in the compounds like the Malay Tailor-bird. This natural shyness keeps it very much out of evidence, though its general similarity to the common Tailor-bird would still prevent any but an enthusiast from recognising it. Its note is a sweet sounding trill, kr-r-r-i-i, and is in contrast to the shrill too-wit of its noisy cousin. When once this note has been recognised, it may be regularly heard in the fruit gardens, and I have often heard it on the Bangkok side, though it is more common on the western side of the river, due of course to the much larger area of suitable surroundings.

The nest is identical with that of the Malay Tailor-birdbut so far as my experience goes, the eggs are slightly brighter in colour, with less of the "washed out" appearance, than those of the previous species, only I have not seen sufficient numbers to say whether this is constant or not. The four nests which came under my close observation were in the Bansakai fruit gardens, and were found in June and July 1914; the parent birds were in all cases identified and watched by me through field glasses. There is no variation in size, or number of eggs laid by this bird, from those of the previous species.

> 11. Cisticola cisticola cursitans. The Rufous Fantail-Warbler.

Vernacular, "Nok a chip hang pen".

This little Warbler is exceedingly common in the paddy fields, and in the height of the breeding season I have seen as many as thirty nests in one morning. It starts building as soon as the rains commence, but a spell of dry weather will check the nesting, only to be continued with renewed vigour as soon as the rains set in again.

Nests may be found close at hand in the uncut grass by the fairways of the Golf course, but the favourite situation is the paddy fields, where the bird shows preference for the grass growing alongside the little banks which divide up the fields, to that of the open fallow fields, and doubtless this gives better security from the grazing cattle.

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The nest is a deep narrow purse, formed by the growing stems of fine grass which are woven together with cobwebs and silky fibre, and the interior is then lined with a fluffy down obtained from the flowering heads of the grass (ya kah)1. The nest is built close to the ground, and measures three to four inches in depth by about 13 inches internal diameter, with a neck of one inch diameter forming the entrance at the top. It is a charming little nest, neat and light but very strong, and remarkably inconspicuous. The nesting season is from early May, if the rains are good, to the end of August, and during June any number of nests may be found; at the same time an occasional nest may be seen at any time of the year, provided there is a suitable situation. I have had one from the Tachin side on the 17th of October, and I found another with three fresh eggs on the lower end of the island of Koh Yai on 2nd January. The latter was by the side of a field of young paddy, which is always planted there in January, and no doubt these conditions were chiefly responsible for the bird nesting at this season of the year.

The eggs are typically rather short ovals, and slightly compressed towards one end, but some are elongated ovals with one end moderately pointed. In colour and marking there is great variety; the ground-colour ranges from china-white to pale pink or a very pale shade of blue, and the markings are fine specks and spots in shades varying from a light rusty brown to a dark reddish brown. The more general form of marking is that of specks and spots distributed mostly on the large end and showing a more or less distinct zone, but some clutches have these markings fairly evenly distributed over the whole surface, and it is not unusual to find one egg with a large stray blotch of colour in addition to the other markings. Other clutches have a tonsure-like narrow ring of closely set spots near the large end, and no other markings on the rest of the surface. One clutch in my collection has a pale apricot ground-colour, with a few rusty brown spots for the markings, The majority of clutches are marked in a single colour, but a few have pale purple markings in addition to the reddish brown. There are of course innumerable

1 Imperata arundinacea.

varieties between these different types, though the eggs of each clutch bear a strong resemblance to one another. In texture the shell is fine, and the surface is glossy. Four is full complement of eggs.

The average measurements for the type of short eggs are, 15.0×11.5 mm., and for the elongated type, 16.0×11.0 mm.

12. Cisticola tytleri volitans.

THE GOLDEN-HEADED FANTAIL-WARBLER.

Vernacular, " Nok sare kooey."

Unfortunately I can give but little information about this most interesting small bird. It used to abound on the rough ground alongside the Race-course at the Sports Club, but although I visited the spot in search of nests several times during June 1919, I could not find any birds there, neither did I see any in the paddy fields at Sapatoom. The only birds I saw during that year were a few at Samkok, and I never knew them to be numerous there at any time.

The only clutch of eggs found by me personally came from the Sports Club on the 15th June 1915, and was the first I had seen. The nest was built in the grass on the outside of the Race-course. and as the bird rose from it at my feet, I had a good view of her, In 1919 I endeavoured to obtain more of these eggs, but the only two clutches brought to me were not nearly so bright in colour as the first clutch, and might quite well have been the eggs of C. c. cursitans. The bird, however, was well known to my collector, and also to many of the cultivators, so I am left in doubt as to whether the first clutch is an unusually highly coloured one, or whether the latter clutches are really those of C. c. cursitans. The nest found by me did not vary from some of those of cursitans. Others were also being built at the same time, and there was plenty of evidence to show that much building was going on, as numbers of volitans were to be seen flying about on the western side of the Race-course with fluffy down in their beaks. The note of this little Warbler is very different from that of its cousin, and is more in the nature of a mechanical click, or the noise of an insect, than the chirp of a bird.

The clutch of four eggs which I found are short ovals, slightly pointed at one end, with a very bright blue ground-colour, and

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reddish brown spots forming a moderately defined zone at the large end. They average 14.0×11.0 mm. The eggs brought in by my collector are very much paler in colour, and on one clutch the spots are sparingly distributed without any form of zone. In size they are about half a millimetre larger than the others All the eggs are glossy.

13. Graminicola bengalensis striata. THE HAINAN LARGE GRASS-WARBLER. Vernacular, "Nok hang nark".

This is one of the instances where I failed to get authentic information of the nest. I had two eggs brought to me in 1913, and one in 1914, but at that time I only knew the bird by the Siamese name. In 1915 I sent out instructions to find nests, which were to be reported to me so that I could visit them. Two at Samkok were reported at the end of June, but when I arrived there both nests had been taken, for safety it was said, and they were handed to me with the eggs. I went to the site of the first nest, which was a high clump of grass; the nest was cup-shaped and deep, but had been badly pulled about; the materials were coarse grasses on the outside with fine grass for the lining. The other nest was reported to have been built in a small bush which was overgrown with grass. My Dyak collector was away on an expedition at the time, but when he returned I sent him to Samkok with my egg collector, to procure specimens of this bird, which he did, but it was then too late in the season for nests or eggs. On my return to Siam in 1919, I sent out instructions to find nests, but none were reported. The time for eggs is June and early July, which is the same as for Megalurus palustris.

The Siamese names of birds are usually descriptive of the bird itself or its call, and here the meaning is "pinchbeck tail," – as representing a bird with a dull gold tail, but in this case it really indicates the tail-coverts and lower part of the back, which are tawny fulvous and show up very distinctly when the bird is in flight.

The eggs are short ovals in shape, and are slightly pointed towards one end. The ground-colour is white, cream, or pinkish white,

and typical eggs are boldly spotted in a rich reddish brown with a few pale purple markings, whilst others are more freckled than spotted in a paler shade of the same colour, but in both cases there is a well defined zone about the large end. The shell is fine in texture, but with little gloss. The measurements for a normal clutch are :— 18.0×15.0 mm., and more moderate ovals of 19.0×14.5 mm, are sometimes found.

14 Megalurus palustris. THE STRIATED MARSH-WARBLER.

Vernacular, "Nok a pork ngua."

The Marsh Warbler strikes one at first as having more in common with the Skylarks than with the warblers, owing to its flight as well as its song, for during the breeding season it has a favourite habit of rising perpendicularly in the air, singing like a lark as it goes up, until it reaches a height of 40 or 50 ft., when it folds back its wings and descends rapidly to its perch on the top of a bush. It is a very wary bird, and it will generally be found sitting on some exposed point of vantage, so it is not easily approached. This Marsh Warbler is much larger than the Indian Skylark, and therefore, should not be confused with that bird,; when once known it will be easily recognised by its characteristic habits. I have found it at Samkok, Ayuthia, Paknampo, and also along the Petriu line, as well as at Ban Yang on the Tachin side; it is not very common anywhere, but wherever found several pairs may be seen.

The nest is built in a big clump of coarse grass, and as nothing more than the entrance hole can be seen, it will be realised that this is a difficult one to find. The ground will be dotted with innumerable clumps of this grass, and they will all be fringed with the dead stems and leaves of the previous season. The nest is globular in form, and is made from dead stems of grass firmly embedded together, and lined with rather finer material; the outside dimensions are about 8 inches in height by 6 inches in breadth, with the entrance near the top. Here we have an instance where it is advisable to make arrangements in advance for some of the village boys to find a nest, and set a mark near the spot, so that it can be visited

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without waste of time, and this will probably give an opportunity of flushing the bird from the nest. The building is carried out during the last half of June or early July.

The eggs are moderate ovals in shape, and are slightly compressed towards one end. The ground is white or cream coloured, and is thickly speckled and spotted with two shades of brown – often a blackish brown with a warmer tone of brown, rather of the Bulbul type – and the markings are usually denser towards the large end. One clutch, however, is very different, as it has fine speckles which are practically confluent, and the colour is a pale chocolate. Eggs vary considerably in size, a normal clutch averaging 22.0×17 mm., with smaller ones about a millimetre less each way, whilst my largest clutch averages 25.0×18.0 mm. There is only a slight amount of gloss. Four eggs are laid.

> 15. Prinia inornata herberti. THE SIAMESE WREN-WARBLER Vernacular, "Nok a chip hang yao".

A very common bird in Bangkok and the surrounding country, where it may be seen amongst the sedges and reeds which grow on the banks of the klongs or along the riverside. It is easily distinguished from the Fantail Warbler by its long tail, and it is from this feature that it takes its Siamese name.

The breeding season is a long one, and two or more broods are undoubtedly raised during this time. The latter part of May to the end of September is the regular season, with extreme dates in April and October, for on the 7th October I sent out a collector to see whether nesting had finished, and he brought in three nests with eggs. In the same manner I have a few records of early nests in April.

It builds a long purse-shaped nest, woven throughout from fine strips of sedge. This fibre-like material is torn from the green leaf by the bird, and rapidly turns to a reddish brown colour, thereby showing up the nest in contrast to the green surroundings. Furthermore there seems to be no attempt on the part of the bird to conceal the nest, as it is often built in a very conspicuous place on

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the front of a clump of sedge. It is attached to two or three flowering stems of the plant, which are looped together by the threads, and a very secure structure is made. The nest measures externally about 5 to 7 inches in length by $2\frac{1}{2}$ to 3 inches in diameter, and the entrance is at the top.

The eggs are broad obtuse ovals and are slightly compressed at one end. In ground-colour they generally vary from creamy white to a deep reddish pink, though pure white or a dusky blue is occasionally found. They are boldy marked with large blotchy spots indiscriminately scattered about the surface, and a few spots and wavy lines or scrolls. In colour the inarkings are blood-red, chocolate-red or a blackish-red. They are fine in texture, with a hard shell, and a very glossy surface. Four is the usual number of eggs laid. The average for twenty clutches is 15.7 \times 11.9 mm.

Note: One nest found on the Tachin side was of quite a different construction to the ordinary nest, although built of similar material, for instead of being a long nest supported at the sides and with the bottom left rugged, this one was in the form of a bag with a globular shaped bottom, and suspended by the upper part which was woven to the overhanging part of a low bush. There was nothing abnormal about the eggs, but the collector did not catch the bird, and as the date was October 7th, it was too late for any 'more nesting.

One other unusual nest was found in a small patch of sugarcane in the fruit gardens at Banglampoo, and this was woven between the drooping leaves of the sugar-cane.

16. Prinia flaviventris.

THF YELLOW-BELLIED WREN-WARBLER.

The eggs of this Wren-Warbler may also be found near Bangkok, and I have had them brought in from Samkok on two or three occasions, but I was not able to follow up the bird and its nesting. The eggs are quite remarkable as they are a bright mahogany red, and exceedingly glossy. July is the nesting time.

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17. Lanius nigriceps longicaudatus.

THE SIAM BLACK-HEADED SHRIKE.

This is the only true Shrike found nesting in the Bangkok neighbourhood, and it is very plentiful in the paddy fields or other open parts of the country.

The usual nesting site is a small tree or bush in scrub jungle, or not infrequently a solitary "Makam-tate" tree (*Pithecolobium dulce*) out amongst the paddy fields. The nest is built at 10 to 20 feet from the ground, and is a deep cup-shaped structure, composed of grass stems and fine creepers firmly packed together, with a neat lining of roots and grasses. May and June is the nesting season.

The eggs show considerable variation in shape, but they are generally broad ovals, slightly compressed towards one end, although elongated ovals are not uncommon. In colouration there are two types, but they are quite distinct and are never found in the same nest. The commoner one has a pale green or greenish white ground, with specks and spots of sage-green or brownish olive intermingled with a few pale purple spots; these take the form of an irregular zone about the large end with only a few markings on the lower parts. The other type has a pale stone or salmon pink ground-colour, with blurred spots and specks of dull red and pale purple, and in this case also the markings are in the same form, though they are less numerous than in the previous type. Fresh eggs of the latter type have a very beautiful colouring before they are blown, and often have quite an apricot tint.

The shell is very fine and rather frail for the size of the egg, and there is little or no gloss. The size varies considerably, the length ranging from 27.6 to 20.5 mm., and the breadth from 18.6 to to 17.1 mm., with a normal clutch averaging 25.5 and 18.3 mm. Five eggs are usually laid, and sometimes only four.

The eggs of the red type in my collection are distinctly smaller than those of the green, so it will be interesting to watch whether this is always the case.

18. Pericrocotus perigrinus vividus. THE BURMESE SMALL MINIVET. Vernacular, "Nok si champoo talay." PLATE 8.

This is a bird of very striking plumage, with bright crimson breast and rump, grey back, and orange bars on the wings and sides of the tail, but it has no song, and is known to few people in Bangkok. It frequents the Mangrove trees along the banks of the river from Banglampoo to Paklat, and certain of the canals and fruit gardens on the western side of the river. The breeding of this Minivet in Bangkok was described by me in Vol. I, p. 119 of this Journal, and since then I have seen many nests at Bansakai and Samray. I have also come across the birds at Samsen and Pakret, so it is probable that they breed there as well.

The nest is always built very high up, in fact all those that I have seen have been 30 to 40 feet from the ground. Durian and Tamarind trees are the favourites, and the leaf of a Betel palm is sometimes used. The nest is small, and is usually very shallow, which, however, is not well brought out in the illustration, as the deeper side of the nest is in the front of the picture. It is built of fibre with an outer coating of lichen, and cobwebs are used for adhesive purposes with the fibre as well as for covering. A curious feature about the site of the nest is that there is nearly always a dead stump of branch by the nest; in this case it may be seen in the forefront of the illustration, but it is generally standing out from the side of the nest, and helps to make the nest look more like an excrescence on the branch than what it actually is. The foliage had dried up and much of it had fallen off before the photograph was taken, but even so it will be realised that such a small nest on the top of a high branch is exceedingly difficult to see. The size of this nest is 2 § inches diameter on the outside, with an inside depth of ³/₄ inch. March and April is the breeding season, though I have had eggs as late as June.

The eggs are broad ovals in shape with blunt ends. The ground-colour is either white, cream, or a very pale blue, with markings in the form of specks and blotchy spots of brownish red, reddish

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purple, and a few in pale purple. The speckling is sparingly and evenly distributed, whilst the blotchy spots are always more numerous at the large end, with a tendency to form an irregular cap. The shell is hard and fine in texture, but without gloss. Three is the usual number of eggs, though I have one clutch of four. The measurements range from 17.3×13.5 mm. to 15.5×13.0 mm., with an average of 16.5×13.4 mm. for fifteen eggs.

19. Pericrocotus cinereus.

THE ASHY MINIVET.

I believe this Minivet also breeds in Bangkok, but I was unable to follow it up to a conclusion, as I did with the previous species. My reasons for this opinion are as follows :---

I have several times seen these birds in pairs during the latter part of March. My earliest note of this is the 15th March when I saw a pair settle on a Mangrove tree at Bansakai, and my latest note is that of 29th March, when I watched several pairs feeding on the trees alongside Klong Bansakai.

I have seen young birds out on the trees at the end of May, and on two occasions I have had young birds brought to me which could only just fly – one on 28th May caught near Bush Lane, and the other from Si-phya Road on the 2nd June.

From the above it is fairly conclusive that the Ashy Minivet breeds in Bangkok, and in all probability it was at that time breeding in the fruit gardens by Si-phya Road.

20. Artamus fuscus.

THE ASHY SWALLOW-SHRIKE.

Vernacular, "Nok i-en pong" (Jungle swallow).

The Swallow-Shrike breeds in a colony, which seems to be formed for the breeding season only, but unfortunately I have no notes of their arrival or departure. I knew of two colonies on the western side of the river, one at Bansakai and the other at Paklat; the former colony contained about twenty pairs, and after occupying the same position two years in succession, it moved a little further back the following year. There is little difficulty in finding a colony, as many of the birds will be seen circling round like swallows

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above the tops of the Betel Palms, and uttering a cheery whistling note whilst on the wing. Each flight is of short duration, and after two or three rounds the bird will return to its perch on one of the leaves of a palm.

The nest is built in the head of one of the highest Betel-nut Palms at 40 to 50 feet from the ground, and since it is placed between the centre shoot and the stem of the top leaf, there no covering from above. A mass of coarse fibre is used to fill up the wedge shaped crevice until there is sufficient width for the cup-shaped nest, which is then built of grasses, roots and fibres. The nest is a difficult one to visit as the neck of the palm is tender and not very safe for a boy to climb, so the best plan is to take up a strong dry bamboo of 20 feet in length and lash it to the stem of the palm, with the top of the bamboo about two feet above the head of the Betel palm The boy can then climb through the lower leaves with safety, and examine the nest without touching it, which is a great consideration if laying has not commenced. I have obtained eggs at various dates from the middle of April to the middle of June.

The eggs are moderate ovals in shape, and are slightly pointed towards one end. The ground-colour is a creamy white, with an irregular zone about the large end, of rusty brown specks and spots together with a few pale purple ones. The eggs often bear a very faded appearance even when fresh, though clutches with fairly bright colouring may occasionally be found. The shell is fine in texture, but rather frail, and is almost without gloss. Two is the usual number laid, occasionally three. The average size for a normal clutch is 22.8×17.0 mm.

21. Graculipica nigricollis.

THE BLACK-NECKED MYNA.

Vernacular, "Nok king krong."

This is a very common bird in Bangkok, and may be found breeding in suitable trees anywhere in the paddy field area. I find that the nesting is not recorded in the Fauna of British India, but owing to the bird being so well known locally, I have very few notes of nidification on record. It will therefore be a matter of interest to

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ornithologists in other parts, if some member will give a full description of the nesting in this Journal.

The nest is a very conspicuous object, composed chiefly of straw and grasses and is generally built in a fork of a tree which has not very dense foliage, though a Palmyra palm is sometimes chosen. The nesting season extends over several months from the commencement of the rains.

The eggs are typically elongated ovals, slightly pointed at one end, though moderate ovals are also found; they are a bright sky-blue or greenish blue in colour and occasionally a paler shade is seen. The shell is rather coarse in texture, but hard, and highly glossed. Four appears to be the general number of eggs laid, and the measurements average 32.7×22.7 nm. I have one pair of abnormally large eggs from Samkok, which measure 38.0×24.5 and 36.5×24.1 mm.

22. Acridotheres tristis tristis.

THE COMMON MYNA.

Vernacular, "Nok salika".

The Common Myna of India does not occur in Bangkok, though possibly a stray bird might be seen there, * as it is found in very small numbers on the Petriu side and sometimes at Klong Rangsit or Ayuthia, as well as on the Tachin side. In 1919 I sent my collector to all these places on several occasions but he only found it breeding at Hua Takhae on the Petriu line, where there were five or six pairs nesting in some old temples. Some of the nests were inaccessable, but he procured 2 fresh eggs on the 10th June, and one clutch of 3 eggs (one quarter incubated) and another of 3 fresh eggs on the 16th June.

The eggs are long ovals and mostly pear-shaped; they are a bright pale blue in colour, and fairly glossy. In measurement the average of the eight eggs is := 32.9×22.2 mm.

*This remark was true up to a few years ago, but the bird has now established itself as one of the common species of the Capital, where it breeds from March onwards in suitable nesting-holes in buildings, etc. Eds.

23. Aethiopsar fuscus grandis THE BURMESE JUNGLE-MYNA. Vernacular, "Nok king krong dam."

This Myna is found in fair numbers in the paddy fields, but is not nearly so common as G. nigricollis or S. superciliaris. This is another instance where the nidification is not described in the Fauna of British India, and my notes leave much to be desired.

The five clutches in my collection come from Ayuthia, Samkok, Hua Takhae, and the Tachin side, and were laid in June and July. The bird is said to build only in the branch holes of trees, but I found one pair at Sapatoom with a nest in a Palmyra palm.

The eggs are moderate ovals, and very much of the pearshaped type. In colour they vary from a fairly deep sky-blue to a pale shade of the same, though some of the deeper coloured eggs have a greenish tinge in the blue. There is a fair amount of gloss. The measurements of five clutches average 29.2×20.7 mm.

24. Sturnopastor contra floweri.

THE SIAMESE PIED MYNA.

Vernacular, "Nok king krong lek."

This is just as common as the Black-necked Myna, and the two may be found breeding in close proximity to one another, so, as the nests are very similar, one has to be careful about identification before the eggs are taken. Provided the bird is seen to leave the nest, there is very little difficulty in deciding which it is, as the birds show considerable difference in both size and marking, as well as in flight. The nesting season extends from April to July.

The eggs are moderately broad ovals, considerably pointed towards one end, and often quite of the peg-top type. In colour they are a fairly deep sky blue, with a greenish shade in it at times, but not infrequently a much paler shade is seen. Four eggs are generally laid, and they have little gloss. The average measurements are :— 26.5×20.0 mm.

Note. The variation in shape and colour of the eggs of each of these four Mynas is considerable, and although an experienced person might have doubt little about many clutches, there are quite a

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number of eggs that might well belong to either of two, and sometimes three, of the the different genera. There is of course no difficulty if the bird is seen to leave the nest, and especially when the nest and site are taken into consideration, but eggs alone without true data are liable to be a source of trouble.

25 Rhipidura javanica

THE JAVA FANTAIL FLYCATCHER

Vernacular, "Nok i pert": also "Nok pen", and "Nok pi".

This is the only resident Flycatcher found in Bangkok, though several migrants of other kinds appear during the non-breeding season. It is very common and may be found nesting in most of the compounds, usually in a shady place at the back of the garden.

The nest is a beautiful little structure like a neatly woven basket and in the form of an inverted cone; it is built of fibre and fine grasses with the outside neatly plastered with cobwebs. The inside is cup-shaped with sides of less than a quarter of an inch in thickness, and the diameter is about two inches on the outside. It is usually placed on the horizontal fork of a light bamboo twig, or on the tip of a branch of a Mango tree, and the nesting material is bound round the branch and secured with cobwebs, leaving a little straggly beard below which completes the point of the cone. It is built at about six to ten feet from the ground: The nesting season extends from February to August, and two or more broods are reared; plenty of nests may be found in March and just as many in June or July.

The eggs are moderately broad ovals, considerably compressed towards one end. The ground colour is yellowish buff or a dingy cream, with a broad zone of yellowish brown and inky grey spots around the centre of the egg or towards the large end, but all this is more or less in a yellowish haze. Some eggs have the spots fairly distinct with a few specks quite apart from the zone, whilst others have the markings confluent and confined solely to a blurred zone. The surface is smooth, but quite devoid of gloss. Two eggs are laid, and the measurements for a normal clutch are 17.5×13.0 mm.

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26. Copsychus saularis saularis. THE MAGPIE-ROBIN

Vernacular, "Nok king ken".

The Magpie-Robin in Bangkok occupies the same position that the Red-breast does at home, and the change of costume is most appropriate. It may be seen in any private garden, and is essentially a resident of the compound. It is confiding and very fearless, and has many of the pugnacious habits of the home Robin; it is definitely "cock of the walk" in its own domain, and will challenge all comers. It is a great favourite with natives of India, and I found that some of them delight in putting up a fight between two cock birds. The method was new to me, and as no harm came to the birds I did not interfere. A neighbouring cock bird was caught and brought to their house in a cage; a light elastic band was then put round the bird's wings in such a way that it could not fly, but it still had considerable freedom of wing-movement. This bird was placed on the ground in front of the house, and the "resident" cock at once came down to attack the intruder, which resulted in a good deal of sparring. So intent did the birds become in their fighting that they could be picked up, and then the new bird was released and the "resident" caged. The intruder remained in the compound, and in close proximity to the caged bird, which by the way was also quite happy and ready for another fight. The next day the same performance would be gone through, and after the fight, the positions of the birds would again be changed, so that each was caged in turn. This went on for a week or two, and then both birds were left to their own devices, with the result that one bird quickly chased the other away.

The nesting site is usually a branch hole in a hollow tree, though it is not uncommon for the birds to build in the little spirit ("pi") houses, * which make very excellent nesting boxes. An-

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^{*} These little "pi" houses are put up by the superstitious for wandering spirits to come and dwell in. They consist of a one room house, measuring about fifteen inches by ten, all very neatly finished and erected on a stick at about four feet from the ground.

other nesting site which has been adopted year after year by presumably the same pair of birds or their offspring, for I never came across another instance of it, was the cup-shaped end of a bamboo which was left standing when the top half had been cut away. The nesting season is from early April to the end of July.

The eggs are moderately broad ovals, compressed towards one end, and often with the ends rather blunt, though elongated ovals are frequently found. The ground-colour shows much variation, but it is generally in a greenish blue, and sometimes in pale blue; this is finely freckled with rusty brown, streaky speeks, and blotched with brownish red streaks, more closely clustered at the large end in the form of a mottled cap. I have one clutch of four eggs which are quite out of the ordinary; they are sky-blue in colour with pale purple streaky specks and spots about the large end, but there are very few markings indeed. Normal eggs have a fair amount of gloss, and in measurement they average 21.0×17.0 mm.

27. Ploceus philippinus passerinus.

THE EASTERN BAYA, OR WEAVER-BIRD.

Vernacular, "Nok a charp".

• This is the common Weaver-bird of Bangkok, and is much more numerous in the surrounding country than either of the following Weavers.

The nesting site is easily found, as the birds form colonies and suspend their nests in a most conspicuous position on the outermost twigs of certain trees. It is always near to water, and very often the selected tree is on the bank of a river or canal with the nests overhanging the water. The colony is usually situated close to a house, though this not invariably the case, but I have never seen the nest of this species attached to the eaves of a thatched house, as one often sees the nests of the Weaver in Rangoon.

The nest is in the form of a retort, with the neck pointing vertically downwards, and it is a wonderful piece of work for neatness and strength, especially when one comes to consider the short stout bill of the Weaver, which would seem to be most unsuited for

such an intricate task. At one time when I was living in Rangoon, there was a colony of nests within a few feet of my window, so I had ample opportunities of watching the building in all its stages. The commencement of the nest is made by passing half a long piece of fibre beneath a leaf near the tip of a twig, then taking the other end up from below and passing it over the twig and under a leaf in the opposite direction, so that the fibre thread has been bound round the branch with both ends pointing downwards. It is by the assistance of the leaves that this first strand is kept in position Somewhat similar operations are performed with succeeding threads, and as each new piece is added the scope for weaving is increased, and various strands can be drawn taut. When the crown has been made sufficiently strong, an oval shaped ring is formed beneath it, and this is soon taken possession of by the female. In addition to its being a convenient perch, this ring becomes the main structure of the nest, and the egg chamber is woven on to one side whilst the dome of the tubular entrance is added to the other. Continuity of thread and even balance are maintained for a time by weaving evenly on both sides of this transverse ring, but the egg compartment has priority over the long entrance neck, which is completed at leisure. There is considerable difference in the length of a nest, both in regard to the suspension cord and more particularly in respect to the tubular entrance, for the latter varies from a couple of inches to a foot or more. The longest nest that I have seen, measured 3' 3" over all, with an entrance tube of 18 inches, and this was without any attachment of a partially finished nest at the top.

Both birds are engaged in the work of nest building, the male remaining on the outside whilst the female is working from within. The former passes the end of the thread into the nest, and when this has been drawn taut by the female, it is passed out again in another place. This is all carried on to the accompaniment of an incessant chatter broken by short snatches of song. The colony is not by any means without its disturbances and family quarrels, for an unguarded nest is often raided by a neighbour, who removes one of the latest threads—which will be quite green,—and carries it off to his

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own nest, unless he is unfortunately caught in the act, when there is a fight leading up to much future unpleasantness and distrust. This, rather than the development of some structural defect, probably accounts for the large number of unfinished nests.

The material used for the nest consists of green threads of fibre, torn from the leaves of suitable water-flags or grasses, or sometimes from plantain leaves or even cocoanut palm leaves. The bird alights on the stem of the plant or the leaf, according to the material used, and punctures the leaf near the base, he then tears back a piece of the fibre for a few inches, grips the end of it in his beak and flies off to the nest, stripping out the thread for the whole length of the leaf. This is often varied by the leaf being cut at both ends in such a way that it determines the length of the thread

Entirely new nests are built every year, though one may often see a complete new nest being built on the discoloured portion of a rejected one, for the green fibre is quickly bleached in the hot sun, and then it rapidly becomes discoloured in the rain, so a rejected nest of ten days standing may quite well give the impression of a last season's nest. Another point on this subject, is that a spell of dry, hot weather in the early part of the rains will sometimes put a temporary stop to building, so when work commences again with the fresh rain the colony will bear a decided appearance of repair and patchwork.

The nesting season usually commences in the first half of May, but I have a note dated 17th May 1914, that Weavers at Samkok were still in considerable flocks in the paddy fields, and that nesting had only commenced in a few shady places; this was due to a very dry season. Nesting is continued through June and July, and my latest note is August 22nd for two clutches of fresh eggs.

The eggs are not very regular in shape, but typically they are moderately long ovals and fairly well pointed towards the small end; they are pure white with little or no gloss. The number laid is three or four, but I have once found as many as

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six, probably laid by two birds. The average measurements for a normal clutch are 20.5 \times 15.5 mm.

28. Ploceus manyar flaviceps.

THE INDIAN STRIATED WEAVER-BIRD.

The Striated Weaver is fairly numerons in the Bangkok district, but I know of no place where it approaches the Baya in numbers. It is very similar to the previous species in general habits, the chief differences being that the nest has a very short entrance, it has little or no suspension cord at the top of the crown, and it is often built in tall grass or rushes. The colonies are very faithful to the same spot year after year, and often to the same tree, but this applies in like manner to the last species.

The nest is, I believe, always overhanging water, and when built on a tree or bush, it is often firmly attached to a light branch instead of being snspended in a flexible manner to the tip of it. There is nothing superfluous about it, and even the entrance tube is cut to a minimum. There was always a colony built in this way at the "Ditches". Another situation for a colony is where the swamp toddy palm overhangs a canal and in this case the nests are firmly woven to the tips or the fringe-like edges of the leaves. There was always a colony like this at Paklat, and the nests would be about ten to fifteen feet from the water at high tide. The third type of colony is when the nests are built on rushes at the edge of a canal or on high grass in a swamp; in this case two or more heads of rushes are usually drawn together, and the nest suspended from the tip of them. Colonies of this type may be seen at Samkok, and there were always two at Koh Yai. The colonies mentioned are in no case single instances, for I knew of many of each kind. The nesting season for this species appears to be nearly a month later than the previous one, as mid-June to August is the usual time, though I have had fresh eggs as late as September 11th.

The eggs are practically the same as those of the Baya, but they are more regular in shape and size. Four is the usual number.

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29. Ploceëlla javanensis. THE GOLDEN WEAVER-BIRD. Vernacular, "Nok a charp yippun".

This Weaver bird is quite unmistakable, for, with the exception of the cheeks and throat which are black, the entire plumage of the male is a rich golden yellow. It breeds in small colonies like the other Weaver birds, but the general type of nest is very different from either of the former ones. Samkok is the only place where I have found these birds, and I have seen several colonies on the western side about a mile to three miles back from the river. Unfortunately, they are much molested by the buffalo boys, owing no doubt to their attractive colouring, and to the ease with which their nests can be found, for the bird is easily recognized when flying overhead with a green streamer, and by following up the direction the colony can be located.

I have found two distinct types of nests, which appear to be built by the same colony under different conditions, and it seems that the birds accommodate themselves to their surroundings. The first colony I visited consisted of ten or a dozen nests, which were hanging from small scrub trees over a little pond situated behind Ban Khang, and about two miles from the river. The nests were woven from threads of grass in the same way as those of *Ploceus*, only with a very short tubular entrance. I shot a pair of the birds and took the nest with two eggs; this was on the 19th July 1914, and the birds were sent to Mr. Williamson for preservation. The next year I went to Samkok at the same time, and I was given two nests by my local collector with a pair of eggs in each, but the nests were totally different from the previous ones, and despite the man's assurance that they were genuine, I took them to be the Chestnutbellied Munia's nests in which some boy had placed Ploceëlla eggs. I went out to the place, which was some rough land near a swamp and about a mile to the north of the old colony. The birds were there with a few nests in building, and there was no question about the collector's statement being correct. He also told me that the old colony at the pond had been started, but that the boys had destroyed the nests.

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The second type of nest is spherical in shape and is composed of grass stems firmly interwoven on the outside, but owing to the stiffness of the material the weaving has a very angular appearance, more like the coarser kinds of basket work. It is supported on several stems of high weed or grass, and the entrance is at the side surrounded with heads of flowering grass standing out in trumpet form, just as Munias often decorate the entrance to their nests. The heads of grass are not of the fluffy kind, but have numerous long wire-like antennæ with a small seed on the end of each. The only noticeable difference between one of these nests and that of a Chestnut-bellied Munia, is that in the former the material is clearly woven, whilst in the latter it is loosely intertwined without any definite weaving. Since that time I have seen many nests of the second type, which appears to be the general kind, but on the other hand the Golden Weavers which I had in the aviary were continually building in the first style, with threads stripped from the leaves of the tall khine-grass; a fuller account of this, however, will be found in the Aviary Notes.

It seems very extraordinary that this bird should at one time build a nest of the same shape and construction as *Ploceus*, and at another time one of exactly the same shape as a Munia, with the entrance at the side. It appears to me that in this we have a very strong connecting link between the two subfamilies of Ploceinæ and Viduinæ, and that evolution in the nest building is still in a state of transition.

The nesting commences with the rains, and I have had eggs as early as the first week in June, also a fully fledged young bird on the 6th July. The latest date I have for fresh eggs is the 13th August, but that is very late, and June – July should be looked upon as the regular nesting time.

The eggs normally are regular ovals, often pointed towards one end, and sometimes with both ends equally pointed. The ground-colour varies in shades of grey, and may be greenish-grey, a greyish stone-colour, or a purplish-grey; usually with a few inconspicuous markings in the form of spots or lines of a darker shade of

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the same colour, but these markings are not always present. A few eggs have odd black hair-lines on them, or one or two black dots. The surface is smooth with a fair amount of gloss, and the shell is exceedingly hard for the size of the egg. Two eggs are laid, and the average size is 18.5×14.0 mm.

30. Munia atricapilla rubronigra.

THE CHESTNUT-BELLIED MUNIA.

Vernacular, "Nok a charp it deng" (red brick) and "Nok deng kru."

This Munia belongs to the paddy fields, where I have seen it in flocks when the paddy was being reaped. I have found it fairly numerous both at Daokanong and at Samkok, and there is no difficulty in obtaining eggs in June and July. I have also had it brought to me with the nest and eggs from Ayuthia. I had several of this Munia from Daokanong in my aviary, and occasionally they used to be visited by a flock of their own species. I once saw as many as two dozen clustered on the outside of the wire netting; further reference to this will be found in the Aviary Notes.

The nest is composed of stems and leaves of grass, closely bound into a ball of 7 to 8 inches in diameter, and supported on grass stems at about four feet from the ground; but I have also had a nest which was taken from a clump of the prickly ribbon-leafed water palm. Flowering heads of grass of various kinds are used in the construction of the nest, and often protrude from the entrance, but to a lesser extent than in the two following species. June – July is the usual nesting season, and I have had eggs as late as the end of August.

The eggs are elongated ovals, very regular in form, and tapering slightly towards one end; they are pure white and glossless. As a rule, they are rather smaller than those of Hodgson's and the Spotted Munia, but the eggs of these three Munias cannot be separated with certainty. Five or six eggs are laid, and they average 16.0×11.3 mm. in size.

31. Uroloncha acuticauda ? subsp. Hodgson's MUNIA.

Vernacular, "Nok a charp ki mu".

My experience of this Munia is mostly confined to it as an

inhabitant of the fruit gardens where it nests, though I know it visits the paddy fields with the young, as I have had it trapped at Daokanong. I also know that it is to be found in some of the compounds on the Bangkok side.

The nest is generally built in the main fork of a small tree of about fifteen feet from the ground; this usually confines the the width and makes the shape an oblong oval. It is constructed of grass stems with the leaves and flowering heads, the latter being freely used in the adornment of the entrance. This Munia seem to have a very varied breeding season, as I have seen nests at Bansakai in December as well as in the early and late parts of the rains.

The eggs are of the regular Munia type, though they are slightly larger than those of the previous species, and average 16.5×11.5 mm., but no clutch can be identified by this.

32. Uroloncha punctulata subundulata. THE SPOTTED MUNIA.

Here again, my experience is chiefly confined to Bansakai, where I have found the Spotted Munia breeding throughout the rainy season, though I have also seen their nests in Mr. Williamson's garden.

The nest is very similar to that of the previous species, except that bamboo leaves are very plentifully used in conjunction with the grass stems. The favourite site for the nest in the fruit gardens is in the flower stems of a Betel palm, at a height of 20 to 30 feet from the ground.

The eggs on an average are a trifle broader than those of the others, but they are quite inseparable from them with any degree of certainty. The average is 16.6×11.8 mm.

33. Passer sp.

The two species of Sparrow come next in order, but I did not make notes of them. The so called Tree Sparrow (*Passer montanus* saturatus) is common, and there is no difficulty in obtaining its eggs. The Pegu Sparrow (*P. flaveolus*) on the other hand, is far from common, but it may be found breeding at Sapatoom and in certain other paddy field areas.

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There is great variety in the markings of the eggs, and it is just as well to have a collection of them, as they may be useful in solving the question of the mysterious eggs which are brought in by unreliable people.

(To be continued.)

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DISSEMURUS P. PARADISEUS.

