

BIRDS OF CENTRAL LUZON

BY CAPTAIN L. R. WOLFE, U. S. ARMY

THE ensuing notes are from personal observations made during the writer's tour of duty at Fort McKinley, Rizal Province, Philippine Islands, from December, 1927, to March, 1930, and are presented with the intent to record some little-known or heretofore unpublished data concerning the life habits of the birds of this region. In addition there has been included some information concerning the habitats and distinguishing field-marks which would be of use to one interested in field study. The native dialect (Tagalog) name, where known, is given in parenthesis under each species. These notes relate only to such species as were actually found nesting, and are meant in no way to indicate a complete list of the resident birds of the region. Especial care was observed in all identifications and in every case where the slightest doubt existed, specimens were secured.

Practically nothing has been published concerning the life histories of Philippine birds, excepting an article by Grant and Whitehead, which appeared in 'The Ibis,' volume 4, 1898, and a few miscellaneous notes in various issues of the 'Philippine Journal of Science.' The nests and eggs of some of the species here described have heretofore been unknown; others have been known only from closely related species breeding in continental Asia, while the subspecies resident in the Philippines have remained unknown. Still others have been described from specimens taken in India, China or Australia, but never recorded as occurring in the Philippines. The reason for this is very apparent to one who has spent any time in the Islands. The breeding period of any individual species is never confined to a few weeks as is the case with birds inhabiting a temperate climate, but may cover any time within several months. Dense vegetation, a tropical sun and the complete lack of any preliminary data concerning habits, all add to the hardships of an observer and the return for expended effort is so small that it might well discourage the most enthusiastic worker.

In central Luzon there are two distinct seasons of the year—the rainy and the dry seasons. The former begins about the first of June, with July and August the months of heaviest precipitation; then the rains gradually subside until October. During November there is usually little rainfall. The ground becomes dry and the temperature increases month by month until the rains come again in June. March, April and May constitute the season of highest temperature; during these months the ground becomes extremely dry and hard, many of the trees become bare and grass takes on a withered, brown aspect.

The breeding cycle of any species is of course directly related to food

supply and the seasonal changes of climate. In view of this the nesting periods are here very much prolonged; birds of the various orders breed in different seasons, and the nesting period of an individual species normally covers two or three months. In fact, occupied nests were found in every month of the year, although the only species found breeding throughout the entire year was Cabanis's Weaver. In general the breeding periods of birds in central Luzon may be divided somewhat as follows: Falconiformes, from December to April; Rallidae, Ardeidae and other marsh-inhabiting species, from June to November. Among the Charadriidae, *Charadrius dubius dubius* breeds in April or May before the rains, and *Rostratula benghalensis* breeds after the rainy season. The majority of the Passeriformes nest from February to June, and more species breed in April and May than in any other months.

To one familiar only with the nesting habits of birds of the temperate zone, the study of Philippine birds is an interesting contrast. Strangely enough, all nests are placed in relatively more open situations, since the dense foliage, which we of the temperate zone are accustomed to think of as protective cover, is here infested with numerous arboreal lizards and snakes and therefore open situations are really protective; all nests are much more frailly and loosely built, which apparently is to avoid excessive temperatures within and afford ventilation. An additional point of interest is supplied by the fact that most tropical species deposit a smaller number of eggs to a set than do birds of the same family breeding farther north—two or three eggs constitute a full set for most of the small Passeriformes. This characteristic is even more strikingly seen in the rails and gallinules, which lay ten or more eggs in temperate climates, but only three or four in the Philippines.

It is the writer's desire to express his thanks and appreciation to the late R. C. McGregor of the Philippine Bureau of Science, Manila, Philippine Islands, for valuable assistance in the identification of specimens, and for granting free access to the wonderful collection of skins in the Museum of the Bureau of Sciences. He is equally indebted to Mr. James Lee Peters of the Museum of Comparative Zoology, Cambridge, Massachusetts, for the systematic arrangement of species in this list, and for editing and checking of scientific names.

PHILIPPINE GREBE, *Poliiocephalus ruficollis philippensis* (*Su-li-a'-si*).—These little grebes are rather common in favorable situations. They were found breeding in the immense marshes along the northern edge of Laguna de Bay and in the marshes around the fish ponds in the western part of Bulacan Province. The birds were very wild, and when disturbed kept well out in the open water, which, due to their agility in diving, rendered specimens very hard to secure. The writer found a fairly large colony breeding in the marshes near Obondo on September 16, 1928. The water

there was then about three and one-half feet deep, and the nests were floating among the scattered growth of reeds.

Whenever a bird leaves its nest, it covers the eggs with part of the nesting material, so that each nest appears as only a mass of floating vegetation. The nest is always wet, and the decaying vegetable matter doubtless furnishes much of the heat required for incubation, while the mud and water in the nest further abet the decomposition of this material. The covering of the eggs, then, seems to have two objects: protection from enemies and continuance of incubation during the bird's absence. Some nests which were examined, had apparently been covered for several hours, as the outer surface was nearly dry; nevertheless, beneath the outer surface they were still wet and very warm.

A typical nest is a floating mass of moss, dead reed stems, grass and other bits of vegetation, about six inches in diameter; a small amount of mud is mixed around in the center and the whole nest is thoroughly soaked and more or less decomposed. The number of eggs varies from three to six with four the usual complement. When fresh these are a light sky blue in color, and are coated with a thin, chalky deposit, which soon becomes nest-stained; after a few days in the nest, this color changes to a light yellow or olive brown. The average size of the eggs is 35.9 x 27.1 mm.

LITTLE YELLOW BITTERN, *Ixobrychus sinensis astrologus* (Ba-cau' bing-ey).—The Little Yellow Bittern is usually common about the shallow marshes where water hyacinths and other aquatic plants abound, but is seldom observed, even where common, unless one penetrates its chosen habitat by canoe. The writer has never observed them other than in areas covered with water, emphatically never in marshy meadows. In general appearance and habits the birds very closely resemble the American Least Bittern; they are difficult to observe when they are perched in a clump of reeds, and seldom flush until very closely approached.

Several nests with eggs were found on May 26, 1929, just northwest of Los Baños in an extensive marsh along the western shore of Laguna de Bay. All these were placed in marsh grass, just a few inches above the water and were very frailly built—merely a few stems on a loose platform of broken-over grass. The eggs are plain white with a slight bluish cast and number two or three; eight eggs have an average size of 32.6 x 23.6 mm.

CINNAMON BITTERN, *Ixobrychus cinnamomeus* (Ba-cau' ca-ne'-lo).—The Cinnamon Bittern is seldom found in the swamps or flooded areas which are inhabited by the Little Yellow Bittern. It is rather a bird of the low, marshy meadows where there is only sufficient water to keep the ground wet and spongy throughout the breeding season. The writer has never observed it in areas which were actually flooded, though an occasional bird was flushed along the edge of a stream.

This species breeds much later in the season than the Little Yellow Bittern, probably due to the fact that much of the potential breeding area is very dry until after the beginning of the rainy season. Eggs have been found from July until August 21 in nests that were usually placed on top of bent-over stems in grass two or three feet high—only occasionally in a low bush. A nest found July 17, 1929, was located in such a grassy situation in a wet meadow. It was about seven inches in diameter and was built on top of a tussock with broken-over stems; it contained three well-incubated eggs. These eggs are white in color with a very faint blue-gray tinge, and the usual number is three or four. Eleven specimens have an average measurement of 36.2 x 27.4 mm.

MALAY BRAHMINY KITE, *Haliastur indus intermedius* (La-uin').—The Malay Brahminy Kite is the most common raptor in central Luzon, and shows a marked

preference for the vicinity of water at all times except during the short breeding season. It is commonly seen around Manila Bay and Laguna de Bay, and is abundant along the northern shore of Lake Taal. Its habits are those of a scavenger, and its food consists mainly of dead fish and offal found floating on the surface of the water. Other items are doubtless included in the diet, but it has never been observed hunting away from the near proximity of water.

The nesting season begins about the first of February, when the birds leave the waterfront and scatter to their nesting haunts in the mountains. This movement is rather concerted and very noticeable: kites were very abundant about Lake Taal on January 20, 1929, when fifteen or twenty could be seen at one time, yet three weeks later there was hardly a kite to be found there. The nest is never found near human habitation. The site selected is always two or three miles back in the mountains, usually in the top of a partially dead tree growing on a steep slope, a situation affording an immense view of the surrounding country. There appears to be a distinct preference for a particular type of tree ideally located, as several sites examined showed the same characteristics.

The breeding season of this kite is less prolonged than that of most other tropical species, extending from the first to the third week of February; slightly incubated eggs have been found on February 9, and young a few days old were observed on March 9. A pair occasionally uses the same nest in succeeding years, and it is believed that they habitually nest in the same locality year after year. However, they strongly resent the interference of man and will leave the vicinity upon the least provocation. A newly completed nest was located on January 30, 1929; a bird was flushed from it on February 9, which was soon joined by its mate, both birds circling closely overhead. But when the writer climbed to the nest, they left the vicinity and were not seen again. This nest was about sixty feet from the ground in the uppermost branches of a tree, growing on a steep, densely wooded hillside. It measured twenty-five inches in diameter and twenty inches in height on the outside, with an inner depression five inches in diameter and three inches deep. It was composed of dry sticks and twigs, with a lining of shorter twigs, bits of rough bark, pieces of dirt and carabao dung.

The Malay Brahminy Kite usually lays two eggs, but there may be three. These are dull grayish white in color, occasionally plain, but usually faintly stippled around the larger end with small spots of light brown; rarely they are well marked with reddish brown and lavender. Six eggs have an average measurement of 53.6 x 41.6 mm.

WHITE-BREADED SEA-EAGLE, *Haliaeetus leucogaster* (Ma-na-ol').—The White-breasted Sea-eagle is not uncommon about the larger lakes, but remains well away from all human habitation and is always wild and shy. It is seen often at Lake Taal, and several pairs breed in the mountains north and east of Laguna de Bay. Its food here consists mainly of water snakes, which it has been observed carrying to its feeding perch on several occasions.

The normal breeding period is during December and January. The nest is placed in a large tree remote from human meddling, and is occupied year after year, presumably by the same pair of birds. Each year more sticks and other materials are added, and in the course of time it becomes a huge affair. One such nest was examined in a giant tree in the mountains east of Pililla. It was at least ten feet in height by six or seven feet in diameter, and judging from the accumulation of debris, it had been in use for years. Five occupied nests of this species were examined, three of which were on isolated islands and in large trees close to the edge of the water;

another was about a mile inland from the north shore of Lake Taal, and another east of Pililla, about three miles inland from the Laguna. Whenever a nest is disturbed, both birds circle overhead, but never drop very low. The only notes I have ever heard were while the birds were circling the nest and may be conveyed by the syllables, *cank-conk-cank*, with somewhat of a nasal twang.

A typical nest of this species, visited January 20, 1929, was on one of the small islands in Lake Taal. It was about forty feet from the ground in a tree just back from the water, and was the only nest found that was less than a hundred feet from the ground. It was an old structure about five feet in height and four feet in diameter; the nesting débris was wedged in between two large forks of the tree. The base was a rude platform of old and decayed sticks two or three inches in diameter, on top of which was piled a quantity of smaller sticks, pieces of vine and grass. The center of the nest was a depression, about four inches deep by ten inches in diameter, lined with strips of vine and grass with a mat of green leaves directly underlying the eggs. These fresh, newly plucked leaves were a part of every nest.

The White-breasted Sea-eagle usually lays two eggs, though one may occasionally constitute a complete clutch; these are pure white, rather rough-grained and more or less nest-stained. Three sets of eggs average 72.1 x 55.2 mm.

PHILIPPINE PYGMY FALCON, *Microhierax erythrogenys erythrogenys*.—The Pygmy Falcon is the smallest of the birds of prey and is apparently not very common in any locality. Its preferred habitat is an opening at the edge of the forest or an area that has been cleared but in which scattered dead stubs are still standing. In such a situation, one or two birds may frequently be found perched on the end of a dead limb. They seemed to be most common in the hills just north of Talisay. McGregor says of this species: "Extremely local in habits. Often found perching on a dead limb at the top of some tree, and may be met with in exactly the same place day after day. It feeds on insects and often leaves its perch on short flights in pursuit of its prey, returning promptly, however. When shot at but not killed, it usually takes but a short flight, and returns at once to its favorite perch. Small flocks frequently found together." It is the writer's belief that these small flocks are family groups which have not yet separated.

The nest of the Pygmy Falcon is placed in the deserted nesting hole of a barbet or a woodpecker, and the site chosen may be at any height from the ground; no nesting material is added. The normal breeding period is probably during March and April, though the eggs of this species have not been collected. Two nests containing young birds were found in the hills north of Talisay; one was located on April 16, 1929, the other on April 24, 1929. One or both of the parent birds were always in the vicinity of the nesting tree. They were noisy and pugnacious in the defense of their home and made repeated swoops on the writer while at each nest. The eggs of this falcon have never been described, but those of a closely related form which breeds in India are pure white.

ERNEST'S PEREGRINE FALCON, *Falco peregrinus ernesti*.—Ernest's Peregrine Falcon is the tropical representative of the European Peregrine Falcon and the American Duck Hawk. It is an extremely rare bird, usually found only in association with steep cliffs or rocky canyons. On several occasions a pair of these birds was observed about the high cliffs on Napayong Island in Lake Taal, where they doubtless breed, though evidence is lacking. Another pair was observed in the cliffs near Montalban with better success. The actions of this pair, when first noticed about the middle of April, 1929, indicated that they had young and that the general location of the nesting ledge was near the top of the north canyon. However, it was

several days before the exact location of the nest could be determined, and several days more before the necessary equipment for the climb could be secured. Finally, on May 5, 1929, the writer was able to get to the top of the cliff, and, after much difficulty, to descend to the nest, which was on a narrow ledge about 125 feet from the top. Two young were found, about two-thirds grown. No nesting material was in evidence, though the ledge was littered with bats' wings, feathers and other débris.

Normally, the breeding of these birds is at its height about March 1, and it is characteristic of this species that a pair will occupy the same nesting ledge for many successive years. From the inaccessibility of the eyrie described, it appears that they will remain undisturbed here for at least a few more generations.

FRANCOLIN, *Francolinus pintadeanus pintadeanus*.—The Francolin is an introduced species in the Philippine Islands. Very little information is available as to just when and by whom it was first introduced, although some of the older residents at Fort McKinley assert that the birds were originally liberated about 1918 by a former Post Commander. The species seems to be well adapted to a particular type of terrain and within a restricted area is doing very well; in fact, the birds are sufficiently common on the Fort McKinley Military Reservation to afford excellent hunting. Their present range is the open, grassy country extending from Fort McKinley on the north to about Alabang on the south, and from Laguna de Bay west to the thickly settled district along the Manila South Road. Here they frequent the more open grassland that is broken by scattered clumps of small trees, and are usually flushed from the cogon grass and along the trails.

The males begin to call about the first of February and their crowing can be heard until the rains begin in June. This crowing, however, actually precedes the breeding season, and it is doubtful if any eggs are deposited before May. The nest of the Francolin is a slight depression in the ground, usually very well concealed under a thick tuft of grass; the female sits very closely, and usually flushes within a few feet. The nesting depression is lined with bits of grass and a few feathers. Occupied nests were found from May 3 until about August 15. The eggs number from three to five and the color varies from tan olive drab to light café-au-lait; they average 37.4 x 30.3 mm. in size.

ISLAND PAINTED QUAIL, *Excalfactoria chinensis lineata*.—The beautiful little Painted Quail is commonly found about old rice fields, meadows and open grassland, where it is exceedingly hard to flush, usually bursting up just beneath one's feet. Its flight is sustained by very rapid wing beats and after going a few yards the bird will drop almost vertically to the ground, where it runs swiftly through the grass and can seldom be flushed a second time. Two or three birds are usually found together. It should be noted that this quail is easily confused with the button-quails and identification is almost impossible unless the bird is in hand.

The breeding season evidently extends from June until September; eggs have been found on June 6, and intermittently until September 20. The nest may be found in an abandoned rice paddy, along the edge of a field or in a pasture, where the grass is not over six or eight inches high. It is a slight depression in the ground, lined with fine blades of dry grass, usually so well concealed beneath a bunch of grass or weeds that it is discovered only by flushing the bird. The eggs number from three to six, the normal number being four or five; in color they vary from light to dark olive brown, and are well speckled with chocolate brown. They average 23.4 x 18.8 mm. in size.

PHILIPPINE BUTTON-QUAIL, *Turnix suscitator fasciata (Pu-go)*.—The Philippine Button-quail is very similar in habits to the Painted Quail. But, whereas the latter

is more often found along the edge of a rice paddy or in low meadows, the Button-quail keeps to the higher and better-drained ground. It is extremely hard to flush. The flight is short and low, and the bird after covering ten or fifteen yards drops to the ground, whence it can seldom be flushed a second time. In grassland where they are numerous, these quail always have little runways through the grass, which they apparently use in preference to wandering about at random. This habit regularly results in their undoing, for the natives trap hundreds by means of horsehair snares placed in the runways. They are used as food or sold in the markets. Near Calamba the writer found this species especially abundant in fields from which the sugar-cane had just been harvested; four or five birds are frequently flushed close together.

The breeding period begins about the middle of May and continues through the rainy season. Three sets of eggs were collected: one on May 20, 1929, another June 6, and the third on August 26. The set taken on May 20 was in a slight depression, lined with only a few blades of grass, and hidden beneath a small tussock. The two eggs are grayish white, the ground color partially covered with yellowish brown, which in turn is finely spotted with lavender and purplish black. In another set of three, the eggs have the same general appearance, but the gray ground color is nearly covered with a darker shade of yellowish brown; the purple-black spots are about the same shade but appear less distinct against the darker background. All eggs are more heavily spotted at the large end, and average 24.2 x 19.6 mm. in size.

SPOTTED BUTTON-QUAIL, *Turnix ocellata* (Pu-go').—The Spotted Button-quail is easily separated from the other species of the genus by its larger size, though in habits it is similar to the Philippine Button-quail. However, it is not so frequently found on the open grassland, but seems to prefer the patches of low brush bordering the edge of ravines, and broken country that is characterized by scattered bushes and bunches of grass. It also occurs in the bamboo thickets growing at the margin of the rice fields. This species is commonly known as the Mountain Pugo by the natives of Rizal; it flushes more easily than either of the two other quails, and when raised will fly a considerable distance. It resembles the other Button-quails in that the female has very modern and up-to-date ideas; for, after the eggs are laid, the male takes over the incubation duties and cares for the baby chicks, while she promptly seeks out a new mate and begins courting all over again.

The breeding season is doubtless much extended, for eggs have been observed from March until August. The nest is placed on the ground, frequently under a small pile of dead branches or in a group of low, dense bushes. The general location of the site resembles that selected by the American towhee. A typical nest, found March 25, 1928, was located in the center of a small group of bushes and grass about twelve inches high in a low, brush-covered area. The male was shot as he flushed. This nest consisted merely of a depression in which there were a few dry leaves and feathers; it was very well concealed, and partially roofed over by the surrounding grass. In size the eggs average 28.4 x 21.6 mm. They are grayish white in color, so densely speckled with gray, slate and purple as completely to conceal the ground color around the larger end. From two to four eggs are deposited in a nest.

BLUE-BREASTED RAIL, *Rallus striatus striatus* (Tic-ling).—The Blue-breasted Rails are rather common birds in the lower marsh country and about flooded rice paddies during the rainy season. Though seldom flushed or seen, a great many of them are snared by the natives, and they are often found in the markets. This species does not begin to breed until the rainy season is well advanced and there is an abundance of water over most of the lowland and in the rice fields. The first nest

was found on August 15, and the latest, on September 20, but these dates probably mark only the height of the breeding season.

The nest of the Blue-breasted Rail is rather well built and is usually located in the marsh grass of some wet meadow or along the edge of a flooded field; it is either on ground that is covered with a few inches of water or on damp ground in the immediate vicinity of water. It is composed of grass, and may be built up from the ground to a height of one or two inches, or it is woven to the stems of standing grass just off the ground. It is rather well cupped and usually well concealed. The number of eggs laid varies from three to six, the most frequent number being four or five. They are rich creamy white, variously spotted, streaked and blotched with dark red, reddish brown and purple; these markings are lightly sprinkled over the whole surface but are normally heavier around the larger end of the egg. Thirty-one eggs have an average size of 32.7 x 24.4 mm.

PECTORAL RAIL, *Rallus philippensis philippensis* (Tic'-ling).—The Pectoral Rail is common in the vicinity of Manila and is snared in considerable numbers for sale in the markets. It is closely associated in habit with the Philippine Rail. Both species are frequently found a long distance from water, ranging through dry grassland and over open hills; the present species, however, stays a little closer to water holes and is less abundant in the higher areas. Both species are difficult to flush, and when driven from cover, fly less than fifty yards before dropping back into concealment; both may be most frequently observed either early in the morning or late in the evening. At such times they like to dust themselves in a deserted roadway and feed along the edge of a cultivated field or clearing; when disturbed, they rarely fly, but prefer to dart back into the grass or bushes.

The breeding period is coincidental with the rainy season. Occupied nests with eggs have been observed on May 15, intermittently until November 17. The nesting site selected by the Pectoral Rail is on low, wet ground in the neighborhood of water or on dry ground close to the edge of a water hole or a flooded rice paddy. The nest is usually rather well concealed under a bunch of grass or weeds. Its construction is variable, sometimes consisting of a slight depression lined with a little grass, at other times it is fairly well built of grass, stems and leaves. The eggs vary in number from three to six. Their ground color is light creamy tan, marked with small spots and specks of several shades of red-brown and purple; the coloring is heavier around the larger end. A small series of eggs averages 35.0 x 27.1 mm.

The eggs of the three species of Philippine rails are easily confounded and the identification of an individual egg is often impossible. Small eggs of the present species may be confused with those of *Rallus striatus striatus*, and the larger eggs with small eggs of *Rallus torquatus torquatus*. In general, however, the eggs of the former are smaller in size, more creamy in color and more heavily spotted than those of *Rallus p. philippensis*.

PHILIPPINE RAIL, *Rallus torquatus torquatus* (Tic'-ling).—The Philippine Rail might be more properly called the Land Rail, since it occurs most frequently on high, open prairie, often at a considerable distance from a marsh or other source of water; it was particularly common along the ridges south of Fort McKinley. This rail is frequently found associated with the Pectoral Rail, but is more abundant than that species, and prefers higher, drier localities; few were observed on marshy ground. The general habits of the two species are similar. Both are hard to flush, preferring to run off through the grass, and both are more active in the early morning and in the evening, just before sundown, when they skulk out into open short grass or bare areas to feed. Large numbers are snared for the markets.

The nesting season begins in May and continues until November; nests with eggs have been observed from May 17 until November 10. The nesting site is usually in the grass of some high upland field at a distance from water. The nest is placed beneath a low bush, bunch of grass or tangle of vines, and resembles more the nest of a grouse than that of a rail, merely a scratched-out depression more or less lined with grass. A typical nest was found on May 23, 1928, on a high, dry ridge at least a mile from the nearest source of water. The female flushed at about five steps, disclosing the nest under a small thorn bush at the border of a dense thicket. The nest was six inches in diameter and three and one-half inches deep, the depression formed of grass padded down with some additional grass and leaves for lining. This nest contained three slightly incubated eggs.

The Philippine Rail lays from three to five eggs, creamy tan in ground color, and spotted around the large end with several shades of reddish brown and purple. One set of four has no red or brown markings, but the large end of each egg is colored with deep lavender under-shell markings. In general appearance the eggs of this species are very similar to those of the Pectoral Rail. A comparison of a small series of each shows that the eggs of the Philippine Rail average larger with larger spots that frequently are smeared; also they show more lilac and purple under-shell coloring. Twenty specimens have an average size of 38.4 x 27.9 mm.

RUDDY RAIL, *Porzana fusca fusca*.—Very little is known concerning the habits of this small rail. It was found only in marshy places where the grass was not over ten or twelve inches high, and was very hard to flush; the few specimens collected were birds that were cornered in a rice paddy or similar situation where flight offered the only means of escape. The birds are apparently rather rare, though occasionally snared by the natives; the general habitat and actions remind one of the American Black Rail. However, in his 'Manual of Philippine Birds' McGregor says, "It is usually found in dry brush-land or on forest paths and is extremely quick in making its escape."

The Ruddy Rail doubtless breeds during and after the rainy season. One nest and two eggs, together with the parent bird which was snared, were taken on September 10, 1929. This nest was in a wet meadow where the water just covered the surface. It was very well concealed, rather flat and composed of short bits of reed and grass, and was placed just above the water in grass about eight inches high.

The two eggs average 29.8 x 22.1 mm. They are light creamy white in color, rather glossy and well peppered with light reddish brown; there are a few shell marks of lavender and the speckling is slightly thicker about the large end.

PHILIPPINE ASHY RAIL, *Poliolimnas cinereus collingwoodi* (Y-a-gut-yut').—In suitable situations the Ashy Rail is rather abundant. It is commonly found along the margins of lakes or ponds, on flooded grass farms or in wet marshes characterized by patches of low grass. It is a good swimmer, taking readily to the water, and like other rails flushes only when surprised or when there is no available concealment. The flight is sustained with apparent effort and is of just sufficient duration to carry the bird to the next patch of cover.

The breeding period occurs at the height of the rainy season; occupied nests have been found only during July and August. A typical nest is well concealed and extremely hard to locate. It is a cupped affair about four inches in diameter, of grass, which is woven about the stems of standing grass or rushes usually two or three inches above the ground or shallow water. The eggs, which vary from three to five, are totally different from those of any other species of rail the writer has ever seen. The ground color is light tan, almost obscured by streaks and spots of

light reddish brown, which form longitudinal streaks along the shell; they are in fact very beautiful. The average size is 29.0 x 20.8 mm.

PHILIPPINE WATERHEN, *Amaurornis olivacea olivacea*.—The habits of the Waterhen very much resemble those of the gallinules, except that it shows a distinct preference for the drier portions of the swamps. It is very rare in the vicinity of Manila, and only a few birds were observed.

A nest containing four eggs just ready to hatch was found on September 4, 1929, on a stretch of low, marshy ground adjoining a flooded area. The surrounding grass, which was about two feet high, had been pulled down and twisted together to form somewhat of a cover over the site. The nest itself, measuring eight and one-half inches in diameter and three inches deep, was composed of grass and stems. In ground color the eggs are light cream white, well spotted with red and a few shell stains of lilac, the spots confined mostly to the larger end of the egg. The four average 41.0 x 30.2 mm.

WATER-COCK, *Gallicrex cinerea (Can-nu-toc')*.—The Water-cock is one of those inconspicuous birds of the marshland that are more often heard than seen. In suitable localities it is fairly common and the deep-throated call consisting of a series of syllables resembling *tug-tug-tug* is most often heard in the early evening. In habits it much resembles rails and waterhen and when disturbed prefers to run off through the grass but is not particularly hard to flush. The flight is slow and heavy. As a game bird the Water-cock is too slow and clumsy on the wing to afford good shooting but its flesh is delicate and well flavored.

The breeding season probably extends throughout the rainy season. A single nest and three eggs were taken on July 5, 1928. The female flushed at about ten yards, revealing a nest in the thick grass of a wet hayfield. It consisted of a pile of grass, stems and leaves, built to a height of about four inches, slightly cupped on top and lined with grass. The eggs have a ground color of light bluish gray, profusely covered with spots, smears and streaks of several shades of brown and a few stains of lavender. They are beautifully marked specimens and in general appearance resemble well-marked eggs of some of the Accipiters. The three eggs average 44.7 x 32.6 mm.

LUZON GALLINULE, *Gallinula chloropus lozanoi*.—The Luzon Gallinule is apparently a widely distributed species, and is abundant in all suitable localities. Its most ideal habitat conditions are found in those shallow lakes and ponds that are overgrown with patches of reeds and bushes or covered with water hyacinths and lily pads. It is considered a very desirable game bird, and is usually hunted from a boat.

As in other marsh-inhabiting species, the breeding period extends throughout the rainy season, and occupied nests were found in July, August and September. Breeding birds were especially abundant near Pagsanjan, at Obondo, and in the marshes along the northern shore of Laguna de Bay. The nest is placed in grass, weeds or bushes in any convenient situation, sometimes just above the water in a bush or bunch of reeds, again on a mass of floating débris. A bird was flushed from one nest that was eight feet above the water in a low tree, but this was evidently an old nest of some small heron, which had been appropriated and lined with bits of grass and reed. A typical nest, found September 16, 1928, was three inches above the water in the thick stub of a bush; the surrounding water was about three feet deep at this point. This nest was seven inches in diameter and two inches deep, and was composed of grass, water-moss and a few bits of reed stems, placed on a base of small twigs. This nest contained three eggs which were slightly incubated. The

Luzon Gallinule usually lays from three to six eggs, varying from grayish buff to olive buff in ground, peppered with small spots of light reddish brown. The spots are more thickly distributed around the larger end in most cases, though a few are evenly colored all over the surface of the egg. In size they average 42.7 x 30.5 mm.

PAINTED SNIPE, *Rostratula benghalensis benghalensis* (*Pa-co'-bo* or *Can-du-ro'*).—The Painted Snipe is an inhabitant of open grassland where the vegetation is not over two or three feet high, though it is frequently found also feeding in the flooded rice fields. The birds are resident wherever found, and are somewhat solitary in habits; only pairs are associated together, though several pairs may be scattered over a large area of marsh. In these birds as in the phalaropes, the female is slightly larger, more brightly marked and does very little of the incubating; at least all the birds flushed from nests were males.

The breeding season seems to be at its height during August and September, a period unfortunately coincident with the arrival of the immense flocks of migrating snipe from China. These are persistently hunted, and many of the breeding "painters" are taken also, since all snipe are game for the hunters.

The nest of the Painted Snipe is placed on the ground in thick grass or on the edge of a dike between two rice paddies. The male sits very closely and is usually flushed within one or two steps, uncovering a nest that is rather flat and consists of only a few pieces of grass and stems. Two or three eggs are laid; these vary from clay color to light olive in ground, and are well covered with spots and blotches of blackish brown. When fresh they are very beautiful specimens but they quickly become mud-stained and faded. Five sets average 38.5 x 26.6 mm.

ASIATIC RINGED PLOVER, *Charadrius dubius dubius*.—This species is not uncommon in suitable localities; two or three pairs are commonly found associated together on bare, gravelly flats along the larger streams. The protective coloration of these small plovers is such that they are very difficult to see, and they are seldom observed unless one is particularly watching for them. They rarely take flight except when closely pressed, but prefer to run off and hide among the larger stones.

The breeding season probably extends from February to April or May, since available nesting grounds are usually flooded soon after the rains begin. Upon several occasions the writer found pairs he felt certain were nesting, but was never able to locate the eggs. Two young birds about a week old were taken April 17, 1929, on a gravel bar along the Pasig River near San Tolan.

EASTERN SWALLOW-PLOVER, *Glareola maldivarum*.—The Swallow-plover is seldom seen except on the wing, and inasmuch as it resembles both a tern and a swallow in flight it is very hard to identify until one becomes familiar with the species. This bird has been known only as a migrant in the Philippines, hence the writer was very much surprised to find two distinct breeding colonies in the dry fields near Taguig, Rizal Province.

Several birds were first observed on April 25, 1928; their actions were those of breeding birds, and several specimens were collected which had enlarged sex organs. However, as several hours of searching failed to disclose anything that looked like a nest, it was finally concluded that these were merely late migrants. The following year, on April 20, 1929, Swallow-plovers were again found near the same locality. A prolonged search this time resulted in the discovery of a breeding colony of about thirty pairs. This colony was scattered over about fifty acres of dry rice land; the stubble had been partially burned and elsewhere pastured so closely that the ground was practically bare. Nests were placed on the bare ground with no cover or con-

cealment whatever, and consisted of only a slight depression. In some cases this had been scratched out by the birds, in others, the old hoof-marks of animals or other existing depressions had been used; no nest lining was found in any nest.

Another colony of about twenty pairs was found a few days later about half a mile from the first on an open, plowed field; a few nests were scattered along an adjacent tomato patch. The nesting depressions were all similar to those of the other colony; no nests were found very close together, but usually averaged from fifteen to twenty yards apart.

At their nesting grounds the actions of these birds resemble those of the avocets. They leave their nests at the first sign of disturbance, and circle about or hover overhead, occasionally diving at the intruder. All the birds of the colony seem to join in this, contributing to the general commotion with their yelping alarm notes. Sometimes a bird will alight on the ground, fall over on its side and, with wing and leg outstretched, flutter about as though in a death struggle.

Fresh eggs were found on April 20, and nests with eggs were observed until May 30. Two or three constitute a set, more frequently the former; their color varies from grayish white to olive white, and they are speckled, streaked and spotted with blackish brown, slate and a little lavender. Different sets of eggs show very little variation either in ground color or in markings, and average in size 32.0 x 24.2 mm.

NORTHERN WHITE-EARED PIGEON, *Phapitreron leucotis leucotis* (Ba-to ba-to).—The White-eared Pigeon is normally an inhabitant of the thickly wooded areas, but occasionally strays into the more open country. It keeps well to the thick foliage and is seldom seen very far from the ground, although it is not a ground-inhabiting species. The flight is not prolonged, and the birds may be distinguished in flight by their rather short and rounded wings.

Two nests of this species were found on the Fort McKinley Reservation. One, located May 30, 1928, was fourteen feet from the ground in a low tree. It was small, very frail and composed of twigs, criss-crossed on the supporting branchlets at the end of a horizontal limb. The brooding female sat very close and could be approached within five feet. This nest contained one white egg which showed signs of heavy incubation and measured 30.1 x 21.0 mm. The other nest was found on May 12, 1929, about twelve feet from the ground in a small tree bordering a dense woods; again the bird sat very close, flushing only a few feet over the writer's head. This nest contained two eggs, also white, and scarcely distinguishable from eggs of *Streptopelia*. The three eggs average 29.0 x 21.1 mm.

BLACK-CHINNED FRUIT PIGEON, *Leucotreron leclancheri leclancheri* (Ca-pil'-la).—The Black-chinned Fruit Pigeon is common in the wooded hills of eastern Rizal Province. It is usually encountered in pairs that never habitually stray far out into cleared areas, though occasionally a bird is seen flying across a valley or a clearing from one woodland to another. The protective coloration of this pigeon is so effective that, unless it is seen on the wing and followed into a particular tree, it is almost impossible to separate it from the surrounding green foliage. It is common belief among the natives that these birds are a cross between the Brown Dove and a green parrot.

The writer's only breeding record is based on a single nest, found east of Taytay on April 24, 1929. The female was collected as she flushed from this nest, which was located on a horizontal branch about twenty-five feet from the ground in rather open woods. The structure was composed of a few loosely placed twigs, and contained a single, plain-white egg. This was partially incubated and measures 33.0 x 22.7 mm.

DUSSUMIER'S TURTLE DOVE, *Streptopelia bitorquata dussumieri* (*Ba-to ba-to*).—This Turtle Dove is an inhabitant of open country and is rarely seen in the wooded districts. It was found to be rather generally distributed throughout the lowlands but not particularly abundant in any one locality; its habits are similar to those of the Red Turtle Dove, from which it is readily distinguished in the field by its much larger size. The breeding period is doubtless very much prolonged, as is that of all doves in the Philippines, March, April and May constituting the breeding season in the vicinity of Manila.

The nest of the Dussumier's Turtle Dove is a frail, loosely constructed platform of twigs, usually placed on any convenient horizontal branch not over thirty feet above the ground. On May 5, 1929, a flushing female—which was taken—revealed a rather typical nest of the species near Arayat. This nest, about twelve feet above the ground in a low tree growing at the edge of a marsh, was a loose affair of a few twigs and vine tendrils in the slender branchlets of a small limb. The eggs could be readily seen from below.

There are usually two eggs, which are clear white and entirely lack the creamy tinge characteristic of eggs of the Red Turtle Dove. A small series averages 30.1 x 20.3 mm.

RED TURTLE DOVE, *Streptopelia tranquebaraca humilis* (*Ba-to ba-to*).—The Red Turtle Dove, like the Dussumier's Dove, is a bird of the open country, where a hillside covered with cogon grass and scattered patches of brush or trees affords ideal habitat conditions. In such localities these birds are often very numerous, associating with Dussumier's Dove but occurring much more abundantly. Both species are often seen feeding on the ground in dry rice fields, and are persistently trapped for the markets.

The breeding season is much prolonged, and extends at least from February until June, these months limiting the period in which eggs or young were found. However, in the vicinity of Manila, the months of March and April witness the height of breeding. The male is a gallant lover during the mating, when he frequently takes a perch close to the female, and with distended throat and crop bobs up and down repeatedly, all the while uttering a soft, cooing note. These notes are repeated five or six times in succession, and may be described as *cu cu-cuu cuu*; they are followed by a pause of three or four seconds and then repeated anew.

The nest is a very frail platform placed on a horizontal branch or in the heart of a spray of new twigs; it is usually about three and a half inches in diameter and composed of twigs and vine tendrils. All nests observed were within thirty feet of the ground. Two eggs constitute a normal set; these are white with an ivory or creamy-yellow tinge, and average 25.1 x 19.9 mm. in size.

BARRED GROUND DOVE, *Geopelia striata striata* (*Ba-to ba-to ca-tic'-bi*).—The Barred Ground Dove is the smallest of the Philippine doves. It frequents open country, fields, gardens and parks, and is often observed feeding on the ground along the roadside. The species is common throughout all the lowlands of western Luzon, and is especially abundant and tame at Fort McKinley where it is never molested.

The breeding season extends from about February until June; fresh eggs are found from February 16 until May 28, though individual pairs probably nest in nearly every month. The nest is placed in any convenient crotch or on some horizontal branch of a low bush or tree usually not over fifteen feet from the ground; it is always frail, being ordinarily composed of only a few twigs or grass stems. A nest found near Dagupan, Pangasinan, on February 16, 1929, was eight feet from the ground in a small coconut palm. It was placed between one of the broad leaf-

stems and the main trunk, and consisted of only a few bits of grass. The eggs are usually two in number, clear white, and average 22.6 x 16.9 mm. in size.

RED-WINGED COUCAL, *Centropus viridis* (*Sa-ba-col'*).—This is the best known and most common of the Philippine coucals. Though abundant in suitable localities, it is not often seen except during the mating and breeding season, when it is particularly active in the late afternoons. At such times the birds are encountered along little-used roadways or climbing about through the grass or bushes, where doubtless their principal food of lizards, ants and possibly termites is found. When disturbed, they prefer to slip away through low bushes rather than take wing, and if forced into the air fly only a short distance.

Mating activities begin some weeks before the rainy season, but the nest is not actually built until the rains are well along, and the new growth of green grass is two or three feet high. This nest is commonly placed one or two feet above the ground in the thick grass of an open area, and is built of green grass-blades woven into a dome-shaped structure. It is generally supported by the standing stems and is so well concealed that it is almost impossible to distinguish it from an ordinary bunch of grass.

A nest found on June 10, 1928, was situated two feet above the ground in thick grass, growing about three feet high, and was only discovered because it was noticed that the tops of some of the grasses had been pulled down and bent over the structure. This was a typical dome-shaped affair, eight inches high and five inches in diameter with a single entrance about midway along the side; it was rather loosely constructed of wide grass-blades, which were woven about the standing stems. The surrounding green grass had been pulled down and worked around the nest to form most of the top and part of the sides of the dome. It was lined with grass and a few green leaves, the latter apparently added after the three eggs were laid.

The Red-winged Coucal lays two or three eggs, which are white in color, rather rough grained and coated with a chalky deposit. A small series of eggs averages 29.4 x 24.7 mm.

GRASS OWL, *Tyto amauronota* (*Cua-gong ta-la'-hib*).—The Grass Owl inhabits open grassland, and may be found either on the open plains or in any area of marshland that remains unflooded. The birds are not at all uncommon, and one or two can usually be flushed in suitable country; they are resident wherever found, and apparently well distributed over the island. In habits, this species most resembles the Short-eared Owl, frequenting the same type of terrain and nesting on the ground. However, since small mammals are so rare in the Philippines, its food runs chiefly to snakes, lizards and frogs.

Grass Owls were frequently flushed along the prairie ridges south of Fort McKinley, but in each case a search for the nesting location proved futile. However, while engaged in maneuvers in this district on December 18, 1929, one of the sergeants in the writer's company flushed an owl from a nest containing two eggs. The writer was at that time confined in the hospital but the location was marked and the site was visited at the earliest opportunity, which was about two weeks later. By this time the nest had been broken up and the birds had disappeared, but the nest was found—apparently only a depression lined with grass stems in the thick grass of an open situation.

PHILIPPINE NIGHTJAR, *Caprimulgus affinis griseatus* (*Tu-ca'-ro*).—This species is the smallest of the Philippine nightjars. It is very local in occurrence and rather rare, even in typical habitat situations, but is most likely to be encountered on a dry,

sparsely grown ridge or along some open, sandy beach. In central Luzon the normal breeding period extends from about the first of April until the beginning of the rains; occupied nests were recorded for March 21, May 2 and June 6. The immediate site chosen is usually a bare, sandy place, though frequently the nest is placed on an out-cropping stratum of rock or among scattered stones; there is never any attempt at cover or concealment for either eggs or nestlings. Several birds have been flushed just back of the high-water line along the beach.

The eggs are deposited in a slight depression and there never is any pretense at nest building. The brooding nightjar normally sits very closely on the eggs, permitting one to approach within one or two steps before it takes wing. The usual complement of eggs is two. These have a ground color which varies between gray and pale, creamy white, spotted and scrawled with slate and pale lilac; there are a few under-shell markings of gray. Four sets average 27.7 x 18.4 mm. in size.

MANILA NIGHTJAR, *Caprimulgus manillensis* (*Tu-ca'-ro*).—The Manila Nightjar can scarcely be separated from the Philippine Nightjar in the field, but the habits of the two are so totally at variance that any nightjar flushed from thick cover can be assumed to be of this species. In his 'Manual of Philippine Birds,' McGregor observes of this species: "The Manila nightjar is the most common of its genus in the Philippines, and has a considerable vertical range, being found in the pine woods of Benguet Province as well as in the lowlands and near the sea. Its food consists largely of moths and beetles which it takes on the wing. During the day it rests in dark thickets and comes out to feed only after sunset." The writer has found this bird most often in dense bamboo thickets, where it spends the day resting on the dead leaves beneath the overhanging branches; it is rather difficult to flush, and when disturbed during the day flies only a short distance. These birds are most often observed feeding on the wing just before dark.

The usual nesting period for this species is during April and May; fresh eggs and young birds just able to fly have been taken on May 10. The nesting site is on the ground in a dense bamboo thicket and is usually protected by dead branches or a small heap of dry brush. Strictly speaking, there is no nest; the eggs are merely deposited in a slight depression in the leaves. A typical "nest" was found on May 9, 1928, in a well-shaded spot between two small thickets of bamboo and beneath a small heap of dead branches. The female flushed almost underfoot, uncovering the two eggs in their shallow depression among the bamboo leaves.

The Manila Nightjar normally lays two eggs, gray in ground color with a tinge of creamy white; this is marbled and clouded with slaty gray and lavender. A small series of eggs averages 28.9 x 21.3 mm.

Several ornithologists have recently classified this species as one of the geographical forms of the *Caprimulgus macrurus* group. While it is appreciated that the coloring of eggs is rarely considered important in separating species, nevertheless, in this case the eggs of the two forms differ so greatly that it seems unlikely that there can be any subspecific relationship between them. The writer has examined a considerable series of eggs of the various forms of *Caprimulgus macrurus*, including specimens from Java, Palawan and several localities in India. These eggs all show a basic ground color of pinkish salmon, which persists through all the individual variation of the different sets. The eggs of *Caprimulgus manillensis* have a grayish or light creamy ground color and in the writer's series of eighteen eggs taken near Manila, not a single specimen has any hint of the pinkish-salmon coloration, but all are so distinctly different from any of the eggs of the *Caprimulgus macrurus* group that subspecific relationship appears impossible.

SALVADOR NIGHTJAR, *Caprimulgus macrurus salvadori*.—This nightjar is not a resident of Luzon, but it is desired to make use of this opportunity to record the description of two eggs of this form which were taken in Palawan. This set of eggs was presented to the writer by Dr. Alfred Worm, who was formerly a dealer in birds and wild animals in Manila; it had been collected by him together with the parent bird near Guinlo, Malanpay Sound, Palawan, on July 2, 1927. The eggs were in a slight depression among dry leaves in a dense patch of brush. They have a ground color of light salmon, and are slightly clouded with gray and pale lilac; they measure 32.0 x 22.5 and 29.0 x 21.8 mm.

WHITE-THROATED KINGFISHER, *Halcyon gularis gularis* ('Til-ma-ma-noc').—This is one of the most strikingly colored birds of the tropics; its red and blue coloration render it easily recognizable at a considerable distance. The birds are fairly common in all suitable localities in central Luzon, and are most frequently observed along the larger streams or the shores of the freshwater lakes. In districts where fish-farming is carried on, they are often to be seen perched around the fish pens, and are a source of great annoyance to the natives. This species is rarely found along the small streams frequented by the White-collared Kingfishers.

The White-throated Kingfisher probably breeds all through April and May. A single set of two eggs was taken April 7, 1929, from a hole in a low bank, located at the edge of a small stream but close to the shore of Lake Taal and about a mile east of the barrio of Talisay, Batangas Province. The nesting hole had evidently been excavated by the birds; it was three inches in diameter and extended back some thirty inches. The end of the burrow was somewhat enlarged, and the eggs were surrounded by a small quantity of fish scales and bones. They are nearly round, pure white and glossy, averaging 31.6 x 27.6 mm. in size.

LINDSAY'S KINGFISHER, *Halcyon lindsayi lindsayi*.—This kingfisher is rather rare. A few specimens were taken along streams in the mountains of Cavite Province, but the bird was not observed in any other locality.

The only known egg of this species is one presented to the writer by M. Ligaya; it was taken from the oviduct of a female he shot in Cavite Province on May 12, 1929. It is pure white with a slight amount of gloss, and is more pointed than any egg of this genus ever seen by the writer; in size it seems to be unusually large by comparison with the size of the bird. This egg measures 36.0 x 27.5 mm.

WHITE-COLLARED KINGFISHER, *Sauropatis chloris collaris* ('Tick-a-rol).—This is the most abundant kingfisher in central Luzon. It frequents small streams and shallow pools that are not too thickly grown up with vegetation, and is often perched on a bamboo pole or convenient dead branch overhanging the water. Indeed, it is not averse to appearing in parks or gardens at a considerable distance from a suitable feeding place; and, during the mating and breeding season, White-collared Kingfishers are often observed a long distance from any water whatever. At such times their actions resemble those of any passerine species.

During this period they are very active and noisy and perform an interesting mating ritual. One bird will leave its perch in a tree and fly to the ground; then it will fly back into the tree and then, perhaps, to the ground again. Meanwhile, a short distance away in a tree or on the ground, its mate views this performance, while both birds join in a harsh, incessant chattering. After a short time both may take part in this heated tree-to-ground ceremonial, or one may sit out a round or two and cheer the other on. Such behavior by kingfishers was a source of bewilderment to the writer until it was discovered that they were nesting in trees, either in a

natural cavity or in a mud termite nest. The latter seemed to be in greatest favor and all such nests observed were from twenty to forty feet above the ground. It is not known whether the birds select occupied termite nests and then proceed to clean them out or simply preempt some deserted nest. However, the general procedure remains the same: a hole two or three inches in diameter is cut in the side of the mud nest, the inner compartments of the insects are broken down and the shell is cleaned out. The eggs are then deposited on fine particles of earth, well mixed with fish-bones, scales and the remains of termites. No real nest lining was ever found.

The normal breeding period is during the latter part of April and May; eggs have been found on May 2 and upon intermediate dates until June 6. Well-developed young were observed on May 16. The eggs number from three to five, are nearly round and pure glossy white; a small series averages 28.5 x 23.7 mm. in size.

CHESTNUT-HEADED BEE-EATER, *Merops viridis americanus* (*Pe-ric'*).—The Chestnut-headed Bee-eater is not as commonly observed as the Green-headed form but the habits of the two are similar, and they occasionally flock together. Both feed wholly on insects caught on the wing. While the two are not readily separated in the field, the characteristic long tail and bright coloration are sufficient to identify the genus. Both breed in small colonies and excavate nesting holes in the ground; but the nesting sites of the two species are decidedly different. The present species digs its burrow on comparatively level ground, usually selecting a plowed hillside where the soil is a little sandy. If the slope is sufficiently steep, the burrow slants directly upward from the opening and then levels off for the nesting cavity; if the ground is flat, the burrow first slants downward a foot or two before turning upward to the nest.

The writer had his first experience with the nesting of the bird on April 7, 1929, when a small colony was discovered breeding in the hills north of Talisay, Batangas Province. The birds had been noted in a plowed field, but were not suspected of their burrowing propensities until one was observed to alight on the ground and immediately disappear. Investigation revealed a colony of ten or twelve pairs. The burrows were scattered a good deal with no two very close together; to the casual observer they might appear to be the burrows of some small mammal. A typical nest had an entrance three inches in diameter and a tunnel extending back thirty-two inches, with a gradual upward slope; this was leveled off, slightly enlarged and rounded at the end for a nesting compartment. The eggs were resting on fine, soft earth, and there was no nesting material in evidence.

The Chestnut-headed Bee-eater lays from three to five eggs, which are pure white and have a high polish. A small series averages 23.1 x 20.5 mm. in size.

GREEN-HEADED BEE-EATER, *Merops superciliosus philippinus* (*Pe-ric'*).—This bee-eater is a common breeding species in central Luzon and, while its actions and feeding habits resemble those of the Chestnut-headed form, the writer has never found it nesting in a field. All colonies observed were nesting in burrows excavated in perpendicular banks. They are most common along the larger streams, and nest preferably where there is a sandy flood-plain with perpendicular banks bordering the watercourse. The female sits very closely, and can usually be captured when the hole is dug out.

The breeding period occurs principally in April. A typical nesting colony examined near San Tolan, Rizal, on April 17, 1929, consisted of about twenty pairs. The burrows were within a foot or two of the top of a low bank, with openings two to three inches in diameter. Several nests were dug out and it was discovered that the tunnels extended almost horizontally inward for an average of about four feet; in each instance the end was enlarged and rounded into a suitable nesting cavity.

From three to five eggs were laid on fine soil; they were nearly round and glossy white with an average size of 22.7 x 20.2 mm.

FORMOSAN SKYLARK, *Alauda gulgula wattersi*.—This skylark is common in the vicinity of Manila from September until about April, when the majority seem to migrate northward and it is a rare breeding species. It frequents the same open grassland and dry fields as the Malay Pipit; both flock together and their habits are similar.

A nest and two eggs taken on May 20, 1928, near Angelas, Pampanga Province, was in an open, sandy field—a slight depression at the side of a tuft of grass, scantily lined with a few dry blades. The eggs are greenish white, spotted with light yellowish brown, and have a few pale lilac stains; they average 21.5 x 16.5 mm.

PHILIPPINE BUSH LARK, *Mirafra javanica philippensis*.—The Philippine Bush Lark is rather common in suitable localities, and is usually encountered in open fields and grassland, particularly in dry areas that have been closely pastured and where the grass is only a few inches high. It was rarely found in cultivated districts or in tilled fields. Unlike most ground-dwelling species, it never attempts to run off or hide in the grass when disturbed, but immediately takes flight. In many respects it resembles the larks, and like the Skylark it sings while on the wing. The notes are rather short but very pleasing.

The breeding season extends from April until June. The nest is placed on the ground and is generally well concealed in grass from three to six inches in height. The sitting bird is very shy and wild, and can rarely be flushed from the nest, which it leaves at the first approach of danger.

The eggs of this species are similar to those of the Malay Pipit, but may be distinguished by being more rounded, with the spots larger and more distinct. They have a light bluish-gray ground, speckled with slate, blackish brown and lavender, and normally two or three constitute a set. Twenty specimens have an average measurement of 19.7 x 15.6 mm.

CHINESE BANK SWALLOW, *Riparia paludicola chinensis*.—The Chinese Bank Swallow is a rather rare breeding species in central Luzon, but is occasionally met with in suitable places. The sandy banks along rivers and streams afford the proper nesting sites, and a few birds are likely to be found about such places. They are most frequently observed in late afternoon, darting low over the water and adjacent fields after low-flying insects, when the characteristic flight of the genus is a ready means of identification. These birds further exhibit the traits of swallows by nesting in colonies of from two to twenty or more pairs. The nesting burrows are always within a few feet of the top of the bank and extend horizontally inward for several feet, where they are terminated by the nest proper. While most of these holes are excavated by the parent birds, the swallows were nesting close to bee-eaters in all colonies examined, and some of the nests were in larger holes that were probably the work of bee-eaters.

The breeding season extends through March, April and May. A typical nest found on May 4, 1929, near Pasig, Rizal Province, was in a colony of about ten pairs of swallows and five or six pairs of bee-eaters. This burrow was in a low, sandy bank along the river, and measured two inches in diameter and thirty-eight inches in depth; the nest of rice-straws, bits of grass and a few rootlets was lined with feathers, and occupied a slight depression at the end. The three eggs are pure white and average 15.3 x 11.15 mm.

PHILIPPINE ORIOLE, *Oriolus chinensis chinensis*.—This is one of the most showy

birds of the Philippines, its strikingly contrasted black-and-yellow plumage rendering it a conspicuous and easily recognized species. In central Luzon it is found rather commonly about clearings and wooded areas in the agricultural districts, but remains well away from human habitation. The flight is somewhat low and consists of a series of dips like that of the American Goldfinch. This oriole has a wide variety of notes and calls, none of which could be termed a song; the alarm note is a coarse *me'aww*, and sounds just like a domestic cat.

The breeding period normally extends through April and May, but may extend into June. A number of nests were observed, all located at a rather low elevation, and suspended from the forking outer branches in true oriole style. The nest is a rather shallow one, six or seven inches in diameter, composed of strips of fiber, grass, fragments of bamboo leaves and strips of fine bark. These are twisted and woven together, and looped securely over the supporting twigs in several places; the nest-lining invariably consists of vine tendrils and small rootlets.

The Philippine Oriole lays two or three eggs which are pure white, rather boldly marked with spots, scrawls and smears of black, with a few shell stains of lilac. These eggs vary a good deal in size, but a small series averages 33.6 x 25.5 mm.

PHILIPPINE CROW, *Corvus coronoides philippinus* (Wak).—The Philippine Crow is a well-distributed species throughout most of the inhabited parts of Luzon, where it is particularly partial to coconut groves, and is reported to do some damage to young coconuts. Though of wide range, it is not especially common in any given locality, and was never observed except as pairs or single birds.

All nests of this species were found in April. Philippine Crows have previously been reported as nesting in coconut palms, but all nests examined were in isolated trees standing in open grassland. The actual location of the nest in the tree and its construction are especially noteworthy; it is shallow and loosely constructed, and is always found in the small outer forks where the foliage is thin, as far from the main trunk as possible. This habit is in direct contrast to that of all species of crows breeding in the temperate zones, where the nest is normally placed in the main forks of the tree, and is deep and compact.

The nest of this species is a rather small, flat and loosely arranged affair, composed of small sticks, stems and twigs, and lined with a few rootlets. Three or four eggs constitute the normal set, though one very unusual set of six was found. These are of the usual *Corvus* type, having a bluish-green ground, thickly covered with spots of dark slaty brown and ashy gray; the average size of a small series is 43.3 x 29.4 mm.

PHILIPPINE BULBUL, *Iole gularis gularis* (Tam-si).—The Philippine Bulbul is widely distributed throughout central Luzon, and was found to be equally common about Laguna de Bay and in the highlands of Benguet Province. It has a decided preference for the upper branches of medium-sized trees, and is most often observed in small flocks about clearings close to dense forest, where it feeds on wild fruits and berries. It was rarely found in the cultivated districts and seems to avoid human habitations.

A single nest and two eggs, together with the female bird, were secured for me by M. Ligaya near Talisay, Batangas Province, on April 12, 1929. The nest was located about twenty feet above the ground in a small tree at the edge of a dense forest. This nest was four and one-half inches in diameter and three inches deep; it was composed of twigs, plant fiber, dry bamboo leaves and bits of grass, and was lined with rather coarse tendrils.

The eggs of this species are of the usual bulbul type—similar to those of the Guava Bulbul but slightly darker. The pinkish-white ground color is nearly obscured by a

speckling of red brown and a few lilac marks. The two eggs measure 24.4 x 18.8 mm. and 23.5 x 18.7 mm. respectively.

GUAVA BULBUL, *Pycnonotus goiavier goiavier* (*Luc-lac* or *Cul-cul*).—The Guava Bulbul is one of the most common birds in the vicinity of Manila, frequenting the low bushes and vines bordering roadsides, open fields and gardens. It apparently prefers the association of man, and, unlike the Philippine Bulbul, is never found very far from the cultivated areas. Two or three pairs may occupy the same brush-thicket or garden, but the birds were never observed in flocks; they are rather noisy, especially when nesting, but—beyond a variety of short notes—have no proper song.

This species probably breeds throughout most of the year for young birds have been observed in February, and nests with fresh eggs, every few days from March until August. The favorite nesting sites are in low bushes or trees bordering on a field or in patches of brush and vines, but many nests were found in egg-plant, tomato and bean vines in vegetable gardens. A few were observed in low trees but never more than fifteen or twenty feet above the ground.

The nest is rather loosely constructed of plant fiber, strips of bamboo leaves and grass, and is lined with rootlets or small stems. Two or three eggs are the usual complement, four being rare. These are pinkish white, mottled and spotted with light red and a little lavender, so that the general coloration is a strawberry red. A small series of eggs averages 20.7 x 15.6 mm. in size.

DOMINICO, *Copsychus mindanensis* (*Do-mi-ni-co*).—The Dominico is not a very common bird in the area considered, but it is very distinctive and could scarcely be confused with any other species. It frequents brushy areas, particularly where there are clumps of thick bamboo, and is most often observed on the ground or close to it. When disturbed, it will run along the ground or fly into a low bush, where it exhibits a nervous trait of jerking its tail up and down, simultaneously opening and closing it. Its habits and attitudes are similar to those of the American Towhee.

One nest with a single egg of this species was taken on May 24, 1929, but the female, having been disturbed several times, finally deserted before the set was complete. This nest was about eighteen inches from the ground in a thick clump of bamboo shoots, and was constructed of grass, leaves and plant fiber and lined with rootlets. The egg has a ground color of light bluish green, heavily marked with spots of slaty brown, tending to form a series of more or less longitudinal stripes; it measures 21.2 x 16.7 mm. in size.

PIED STONECHAT, *Pratincola caprata caprata* (*Si-pao*).—The Pied Stonechat is fairly common all through the central lowlands, but was not recorded from the mountainous districts. It is most frequently seen either on the ground or in a low bush in open fields or grassland, but never occurs in thick woods or forest land. The favorite habitat is a dry hillside, studded with two or three deserted termite mounds which the birds appropriate as perches. During the breeding season mated pairs are often found. The two birds appear to be much attached to each other and, even when the female is incubating, the male is usually to be seen on a lookout perch a few yards away.

The nesting period extends from late March until June. The nest is placed in a small hole, pocket or cup-like depression in a road-embankment or gully; occasionally it is found a few inches back in the hole, but the majority observed were fully exposed, and located just over the top edge of the bank. The birds never make a nesting hole but select any suitable niche that will hold the nesting material. Several nests were found in small holes in the sides of deserted termite mounds.

A typical nest examined on May 15, 1929, was in a small pocket just over the edge

of a sandy bank along the Pasig River; it was three inches in diameter and two and a quarter inches deep, and was composed of grass roots, lined with fine rootlets and a few hairs. There are normally two or three eggs; these are light blue, spotted and peppered with light reddish brown, the spots thicker and more numerous around the larger end. Twenty specimens average 16.6 x 13.5 mm.

STRIATED MARSH WARBLER, *Megalurus palustris forbesi* (*Su-nod ca-lo-bao*).—The Striated Marsh Warbler is an abundant species in the vicinity of Manila and throughout the lowlands of central Luzon; it occurs less commonly also in the highlands of Benguet Province. It inhabits open fields, grassland, marsh, or areas of low brush, and is frequently observed perched on some dry stick or flying low over the cogon grass. When disturbed it takes refuge in thick grass or brush, running or climbing about through thick cogon with apparent ease. The brown plumage and long tail render the species easily identifiable in the field, and to one not familiar with Philippine birds, it at once suggests the American Brown Thrasher.

The female is somewhat retiring and keeps well to cover, but the male is restless and noisy, especially during the breeding season; he has the habit of mounting thirty or forty feet in the air, then sailing to the ground on set wings, all the while broadcasting his unmusical repertory of short *chucks* and calls. At other times he selects a perch atop a bunch of tall cogon grass and makes a serious attempt to sing, but the result is equally coarse.

The breeding season in the vicinity of Manila extends from about February until July; birds were observed carrying nesting material on January 27 and either young birds or eggs were recorded regularly until July 14, when a nest with fresh eggs was taken. The nest is normally placed in a small, isolated bunch of grass, attached to the upright stems, and though one nest was observed on the ground, most of them are from six to thirty inches above it. A single record of one found about four feet high amid the leaves of a bejoco palm was made. The nest is a globular structure of rather coarse stems and thick grass-blades, which are loosely woven around the upright stems, arched over the top and tucked in again on the side to form a ball six or seven inches in diameter. There is little real lining within the nest but a few short pieces of grass, arranged on the bottom, are just sufficient to prevent the eggs from slipping through; the single entrance is on the side and close to the top.

The Striated Marsh Warbler lays two or three eggs; these have a ground color of gray, thickly peppered with darker gray, slate and light brown with an occasional splash of lilac. Despite some variation, all exhibit these same general characteristics. Twenty specimens have an average measurement of 21.8 x 16.8 mm.

GOLDEN-HEADED CISTICOLA, *Cisticola exilis rustica* (*Pit-pit*).—The cisticola, though not uncommon, is rather difficult to observe because of its seemingly restless trait of darting back and forth through the thick grass of its haunts. Appearing abruptly out of a mat of thick grass, it fidgets and scolds a moment, then vanishes quite as suddenly, only to reappear an instant later a few yards farther on. It is found only in areas of thick, dense grass, particularly where the ground is matted with the broken-down growth of the previous season. In both habits and actions the species resembles the American Short-billed Marsh Wren (*Cistothorus stellaris*).

The breeding season extends from about May to July. The nest is placed two or three feet above the ground in dense growth of grass and consists of a ball of soft grass lined with bits of the same material, with an entrance on the side.

Two or three eggs are laid. These are characterized by a clear white shell, peppered with light red and a little lilac so as to form an irregular wreath about the larger end. Five specimens average 15.4 x 11.5 mm. in size.

PHILIPPINE GERYGONE, *Gerygone fusca sulphurea*.—"This little flycatcher closely resembles the species of *Zosterops* in habits, but it is less common in occurrence. At times small flocks are found feeding in clumps of bamboo or in high mangrove thickets. It has a pleasing note by means of which the members of a flock are kept together. In its active movements from tree to tree it resembles the titmice, but we have never found *Gerygone* in forests." This account from McGregor in his 'Manual of Philippine Birds,' is very characteristic of this species and need scarcely be enlarged upon; however, it might be added that the flocks disband during the breeding season, when the nesting pairs seem to prefer open, brushy hillsides or brushy, reclaimed clearings.

A female, together with her nest and two eggs, was taken on April 22, 1929, and another nest and two eggs, on May 28, 1929. The first was about fourteen feet from the ground in the outer spray of a small tree; and the second, about twenty feet high at the extreme tip of a large mango branch. The nest itself is a purse-shaped affair with entrance on the side, and is made up of fine grasses and plant fibers with plant cotton, spider webs and tiny cocoons, all so closely woven together as almost to approach coarse cloth in texture. The supporting fibers are looped over the tips of small twigs in such a manner that the nest resembles a dangling scrap of old bark; the nest-lining is of soft plant cotton and a few feathers.

The pure white eggs are finely peppered with red, which occurs much more profusely about the larger ends; the four average 16.8 x 11.4 mm. in size.

BLACK AND WHITE FANTAIL, *Rhipidura javanica nigritorquis* (*Ma-ri-a cong*).—The Black and White Fantail was observed to be common in all localities not characterized by dense forest. Its favorite haunts appear to be the scattered clumps of bamboo which occur on the borders of rice paddies or along the edge of a stream. Habitually nervous and inquisitive, this fantail is constantly on the move, hopping from one twig to another, and all the while alternately spreading and jerking its tail. While not a bird of the forest, it prefers shaded nooks and is usually found under thick bamboos or in the lower branches of large mangos. Like other flycatchers, its food consists mostly of insects, taken on the wing. Both parents are conspicuous and noisy in the vicinity of their nest, and their scolding is frequently the first indication that a nest is near.

The principal breeding season is during April and May, though occupied nests were observed until June 9. The nest is always situated in a well-shaded spot, most often saddled on the forks of a dead branch from five to thirty feet from the ground and several feet away from the nearest foliage; it is amply protected and shaded by the surrounding clumps of bamboo. Normally cup-shaped and about three inches in diameter, it is compactly and very artistically built of bamboo fibers and strips of bamboo leaves, bound together with fine fibers, spider webs and bits of grass. The outside is festooned with spider webs and dead leaves and appears to be an old bit of drift or a tangle of cobwebs and leaves. The inside is well lined with fine fibers and hairs.

The Black and White Fantail lays two or three eggs. These have a ground color of cream white, peppered with spots of yellowish brown and a few specks of lavender, which often tend to form a band or wreath about the larger end. Twenty-five specimens average 18.6 x 13.7 mm. in size.

MALAY PIPIT, *Anthus rufulus malayensis*.—The Malay Pipit is a resident species in central Luzon and is very common throughout the year. It is most often seen on the ground in dry rice fields, and after the rice is harvested flocks of several hundred are not of uncommon occurrence in such places. Early in March these flocks break up

into breeding pairs, which scatter throughout the dry rice fields in search of nesting sites; they never nest in colonies, but several pairs are usually found nesting in the same field. Breeding activities begin early in April and continue until the arrival of the rains in June.

The nest is placed on the ground in a slight depression or old track, and at this hottest and driest season of the year is virtually unprotected from the sun. It seems incredible that the young are able to survive, exposed to a heat under which the ground has become dry and as hard as concrete and scorching hot. The birds are always extremely wild, slipping away from the nest at the first indication of danger; consequently, a nest can only be found by a careful and systematic search over the field. Several sites were kept under observation for some time, but the parent birds never could be flushed from the nests. One or two nests were placed beside traces of stubble, but the majority were fully exposed to the direct heat of the sun.

Two or three eggs constitute a complete set; these are gray, speckled and peppered with slate and yellowish brown, particularly about the larger end. Twelve specimens average 21.1 x 16.0 mm.

WHITE-BELLIED SWALLOW-SHRIKE, *Artamus leucorhynchus leucorhynchus* (*Git-git*).—The Swallow-shrike is a widely distributed species, fairly common in most localities. However, it displays a decided preference for old clearings or open grassland having a scattered growth of low trees with an abundance of dead limbs or standing stubs. It is one of the most interesting birds of the region in that it combines habits and characteristics peculiar to three different genera. Much of its time is spent in the air, just sailing around or in search of insects, which are taken on the wing. At such times its soaring flight and general contour are like those of a large swallow. Its noisy and pugnacious actions about the nest are traits similar to those of the American genus *Tyrannus*, and the creamy-colored eggs closely resemble those of many of the flycatchers. However, the markings on the eggs and the construction of the nest are essentially those of shrikes.

All nests observed were found in April, but it is probable that the nesting season extends from March until May. The nest may be at any height above the ground, but is usually less than forty feet, and is normally confined to the outer twigs of a partially dead branch. A few nests were found in the very tops of tall bamboos, but such sites seemed to be utilized only where no dead branches were available. After a nest is completed, one or both of the parent birds are constantly close at hand and if the nest is disturbed, they immediately set up a tremendous fuss and loud outcry, circling close overhead and diving repeatedly at the intruder.

A typical nest examined April 20, 1928, was sixteen feet from the ground in the topmost branch of a small tree standing on an open hillside. It was five inches in diameter and three inches high, and was composed of small stems and vine tendrils loosely woven together with stray ends projecting from the sides. The lining consisted only of small, dry stems.

The Swallow-shrike lays from two to four eggs, which show similarity to the eggs of both the shrikes and the flycatchers, and suggest a close relationship to the latter group. They are very attractive—deep creamy white in tone, blotched about the larger end with light brown and a small amount of lilac. Thirteen specimens have an average measurement of 22.8 x 17.4 mm.

PHILIPPINE BLACK-HEADED SHRIKE, *Lanius nasutus nasutus* (*Ca-bi-so-te*).—The Black-headed Shrike is a very common breeding species in the open country between Fort McKinley and Los Baños, where it was found abundantly throughout the year.

Only a few birds were observed in other localities. The favorite haunt of this shrike is some open field with scattered clumps of bushes, where from a conspicuous perch it can scan its surroundings and watch for its prey which consists mostly of small lizards and large insects. Every pair appears to have three or four favorite lookout perches, and on one of these the birds may be found day after day.

The nesting season extends from early in April until June; occupied nests were observed from March 26 until June 1. The nest is usually less than six feet from the ground in a thick bush or low tree standing alone. However, a few nests were found in bushes bordering open fields, and one in an isolated bunch of cogon grass—but these are exceptional cases.

The nest is unusually well built for a tropical species. It is composed of grass stems, bamboo leaves and bits of weeds, interwoven with strips of plant fiber, and lined with fine rootlets. When completed, the nest is normally about five inches in diameter and three or four inches in height. Three or four eggs constitute a full set, though six were observed in one instance. These are light bluish gray, spotted and clouded about the larger end with yellowish brown and a few shell stains of lilac. The average measurement of twenty specimens is 22.7 x 18.0 mm.

CHINESE STARLING, *Aethopsar cristatellus* (Martinez).—The Chinese Starling or Crested Myna, as it is sometimes called, was introduced into the Philippines by the Spanish in about 1850. It seems to have thrived very well and is commonly observed about Manila and in the barrios bordering Laguna de Bay. It is less commonly seen elsewhere, however, though rather generally scattered throughout central Luzon. A single pair was observed at Baguio. These birds are usually seen in small flocks of from three to eight; they remain close to human habitations, never straying far from the farming districts, and might be considered a bird of the street and garden. None was ever observed in the woods or mountains. The birds are locally known as Mar-ti'-nez, and many of the rural Tagalogs claim that they have the ability of language to speak.

This species breeds principally during April and May. The nest is located either in a tree-cavity or in some hole or crevice in the eaves of a building. In either event the recess is completely filled with grass, rubbish, rags or any other convenient material, and this is lined with grass and feathers. Three or four eggs are laid; these are light blue, rather glossy and without markings. The average size of a small series is 27.0 x 20.5 mm.

YELLOW-HEADED SUNBIRD, *Cyrtostomus fernatus jugularis* (Pit-pit).—The sunbirds and flowerpeckers are very small and possess many of the characteristics of the hummingbirds. The present species is not particularly rare, but the birds are so small and active that they are easily overlooked; thus little is known concerning their habits. These birds frequent areas that are dotted with low bushes or small trees, and especially those in which there is an abundance of flowering shrubs.

Two nests were collected: one containing a single egg, on February 26, 1928, and the other with two eggs, on June 1, 1929. Both were similarly located and were constructed very much alike. The first nest was about four feet from the ground, suspended from the outer twigs of a small bush, surrounded by dense brush. It was a purse-shaped affair with entrance near the top, and was composed of spider webs, leaf skeletons and bits of cocoons. These were all woven together with plant fibers, and the nest was lined with soft plant cotton. On the outside it was festooned and draped with bits of old grass and partially decayed leaves.

The three eggs are light grayish green, spotted with slate and olive brown. They average 15.8 x 11.5 mm. These eggs do not compare very well with the description

given by Grant and Whitehead in 'The Ibis' (vol. 4, 1898), but the identification of both nests was confirmed by collecting the female parent in each case.

MAYEN'S SILVEREYE, *Zosterops mayeni*.—The Mayen's Silvereye is a rather common but inconspicuous species about the open rice fields, and remains well concealed in the bamboo thickets around the border. The male is an excellent songster and, during the breeding season, frequently sings in the vicinity of the nest.

Two nests with three eggs each were collected, both in similar situations and of nearly identical construction. The first was found on April 5, 1928, when it contained only a single egg; it was about thirty feet from the ground in the outer tip of a horizontal acacia branch at the edge of a rice field. On April 12, when the nest contained three eggs, it was collected, together with the female bird. This nest was of the vireo type and was suspended from the fork of a small branchlet; it was three inches in diameter and two inches deep and was composed of plant fibers, spider webs, fine grasses and plant cotton, the whole lined with hair-like grass. The outside was decorated with a few small leaves, which had evidently been picked and tucked into the side of the nest while green.

The eggs of the Mayen's Silvereye are pale sky blue, without markings and the shell shows a slight amount of gloss. Six specimens have an average size of 15.0 x 12.1 mm.

MALAY TREE SPARROW, *Passer montanus malaccensis* (*Gor-re-on*).—According to McGregor, this is an introduced species in the Philippines, but it is not known whether this statement was based on fact or opinion. Tree Sparrows are rather abundant in the immediate vicinity of Manila and at Fort McKinley, but elsewhere in central Luzon they are rare. A few sparrows were observed in most of the larger towns, but never in the immense flocks that are common in and around Manila. Like its near relative, the English Sparrow (*Passer domesticus*), the Malay Tree Sparrow is a bird of the city streets and alleys, and is seldom found very far from human habitations, except during the period that rice is being harvested. At this season immense flocks appear, banding together with two of three species of weavers. These do considerable damage to the ripening rice, and are a source of much annoyance to the agriculturalist.

Nearly all of the nests observed were in the period between March and August, but it is quite possible that individual pairs may be found nesting in nearly every month. The nest is placed either in a crevice or nook in a building or in a low tree. If in a tree, the nest is rather a bulky affair and is roofed over, with an entrance on the side; if in a cavity, the available space is rather well filled. In either case, the nest is made up of a nondescript accumulation of any convenient material, but usually consists of rags, bits of paper, old grass or strings, and is lined with grass and feathers.

In central Luzon the Tree Sparrow lays from two to five eggs to a set, three being the most common number. The ground color is grayish white and, though there is considerable variation in the color and arrangement of markings, they are usually spotted, speckled and blotched with varying shades of ashy brown.

PHILIPPINE WEAVER, *Munia atricapilla jagori* (*Mi-ha*).—This species is commonly known as the Ricebird, and is abundant throughout central Luzon. It is normally seen in small flocks, but with the ripening of the rice crop flocks of several hundred invade the fields, causing considerable damage. Large numbers are shot or snared for food, but it is also a favorite cagebird, and can always be found for sale in the markets.

The breeding season is much prolonged and isolated pairs probably breed throughout most of the year, but the majority are found nesting between February and June.

They may nest in colonies or again, in widely separated pairs, but at least two or three nests are usually found close together. These are usually four or five feet from the ground, either in the tall cogon grass or in a low bush. If the choice is a bush, it is one growing beneath an overspreading tree or as undergrowth beneath heavier foliage. A rather unusual colony was observed near Arayat on May 5, 1929. Here the birds were nesting in low marsh grass, none of the nests being more than eight inches above the ground.

The nest is a loosely built, somewhat globular structure with an entrance on the side. It is composed of grass and grass-tops, with usually a few bamboo leaves interwoven in the outer framework. The lining consists of fine grasses or grass-tops with the seeds still attached.

The Philippine Weaver usually lays four or five eggs to a set, but the number may vary from three to seven. They are dull white without gloss and vary greatly in both size and shape; even eggs of the same set show much variation. Twenty specimens have an average measurement of 15.6 x 11.3 mm.

CABANIS'S WEAVER, *Munia punctulata cabanisi*.—Cabanis's Weaver is similar in habits to its close relative, the Philippine Weaver, and both species are frequently found together. However, it is less gregarious than that form, for only two or three pairs are normally associated together. It is the most abundant breeding species in the vicinity of Manila, although *Munia a. jagori* is more numerous throughout the region as a whole and large numbers of both species are often observed in the markets, where they are sold both for food and as cage pets.

Cabanis's Weaver breeds throughout the year; occupied nests are found in every month, but the principal nesting period occurs from February until May. Two or three nests are sometimes found in the same tree or at least fairly close together, but there is never a large nesting colony, and a single nest is the normal occurrence. This is similar in appearance and construction to that of the Philippine Weaver, but its situation is very different. Cabanis's Weaver always places its nest in the outer twigs of a branch, well toward the top or outside of a tree and at almost any height above the ground. The Philippine Weaver, on the other hand, nests in grass or brush more normally, and if in a tree at all, the nest is found well toward the center and well covered by taller foliage. After young have been reared in a nest, it is frequently cleaned out, relined and used for a second brood, provided it has not in the meantime been preempted by lizards or ants.

The eggs of Cabanis's Weaver are dull white, without gloss or markings, and cannot with certainty be distinguished from those of the Philippine Weaver, though they average smaller and are slightly more pointed. Full sets may range from three to seven eggs, but the usual number is four or five. Twenty specimens have an average measurement of 14.8 x 10.2 mm.

EVERETT'S WEAVER, *Uroloncha everetti*.—Everett's Weaver, though not nearly as common, has much the same habits as Cabanis's Weaver and like it, was most often seen in pairs or small flocks which favored the open trees bordering woods instead of the grass fields.

The breeding season is doubtless as prolonged as that of the other weavers and the nest in its situation and construction cannot be distinguished with certainty from that of Cabanis's Weaver. Several nests with young were observed during the months of March and April and a set of five eggs was taken in Pampanga Province, May 25, 1928. This nest was the usual globular affair, about seven inches in diameter with an entrance on the side. It was composed of narrow blades of grass, grass-tops and bamboo leaves all well laced together and lined with fine grass-seed stems.

The eggs are pure white, rather round and without markings. They are similar to the eggs of the other weavers but the shell texture is more close-grained and they appear slightly glossy. The five eggs have an average size of 15.1 x 11.8 mm.

*2620 Grays Ferry Ave.
Philadelphia, Pennsylvania*