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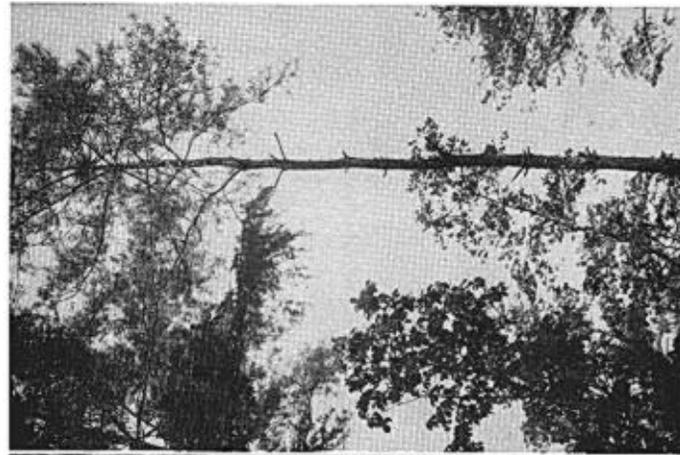
NOTES ON THE BIRDS OF KOREA

BY L. R. WOLFE

THE presently known ornithology of Korea has been admirably summed up in Dr. Austin's recent publication ('The Birds of Korea.' Bull. Mus. Comp. Zoölogy, Harvard, 101) which shows many gaps still remain in our knowledge of the bird life of this area. My recent observations have established several new nesting records for species not previously known to breed in Korea and supplied other interesting information that fills some of these gaps. The following notes are, therefore, presented to assist future workers in this little known region.

During the years 1947 and 1948 I was assigned to military duty in Korea. From February until July, 1947, I was stationed at the seaport town of Inch'on, formerly known by the old Korean name of Chemulpo but now named Jinsen on recent maps. From early July, 1947, until the last of December, 1948, I was stationed at Seoul. Poor roads, transportation difficulties, and other circumstances beyond my control limited my trips afield to week-ends or holidays. Consequently, my activities were confined principally to the area of Kyonggi Do Province and the western part of Kangwon Province. My notes are based primarily on my personal collecting, field observations during the course of military duty, and numerous hunting trips throughout this area. I collected many specimens particularly during the spring and fall waterfowl migrations, but only a few of these ended as study skins. During the entire period only about 125 skins were preserved. These have since been presented to the U. S. National Museum. For uniformity of reference I have followed the sequence of species and scientific names used by Dr. Austin in his recent book.

I wish to express my appreciation to Dr. Oliver L. Austin, Jr., for his many valuable suggestions in the preparation of this paper, and my thanks to Dr. Herbert Friedmann for verification of the reference cited in paragraph one under *Accipiter soloensis*.



(Left) NEST AND EGGS OF *Accipiter soloensis*. (Center) NEST AND EGGS OF *Charadrius dubius curonicus*. (Right) TYPICAL NESTING SITE OF *Eutorides s. amurensis*.

Ardea cinerea jouyi Clark. JOUY'S GREY HERON.—Rather abundant summer resident and a few stragglers may be found as long as there is open water. The majority move southward in early fall and few were seen after the first week of October. The return migration begins in late February; several were observed March 10, 1947, in a marsh about 15 miles southeast of Inch'on, near the village of Sin-gil-li. By March 15 they were common along the coastal flats and beginning to appear inland. Scattered pairs soon started nest building and by the first week of April colonies were well established and some birds were incubating. I never found them nesting in lone trees as noted by Austin, but always in colonies. Frequently the majority of nests were in two or three trees with other single nests near by. Both the Grey Herons and Great White Egrets were found together in all colonies observed. Each species seemed to have its own area, although scattered pairs of one form were commonly found in the area of the other. In both 1947 and 1948 the Grey Herons were incubating full sets by the time the Egrets completed their nests. One of the largest colonies I visited was in the Chang Duc Palace grounds in Seoul. A count of this colony on April 14, 1948, indicated over 800 pairs. Fresh eggs were collected April 14, 1948, and slightly incubated eggs were seen in another colony April 25, 1948.

Bulorides striatus amurensis (Schrenk). AMUR GREEN HERON.—Summer resident and common in suitable localities. Two instances were noted where five or six nests were close together in adjacent trees, but this species does not nest in colonies. More than one nest was never found in a single tree, and where nests were close together it was only due to the abundant food supply and availability of the preferred type of trees. The typical nesting site is in the top of a small slender pine in scattered woods close to open marshland. Normally the nest is placed from 20 to 35 feet from the ground and near the top of the tree. It is a frail platform of twigs, so flat on top the eggs are easily rolled out. Birds were seen carrying nesting material April 28, 1948. Fresh eggs were collected May 8, 1948. Nests with eggs nearly ready to hatch were found northwest of Seoul on May 15, 1948. Fresh eggs were again found on June 5, 1948, east of Seoul. Young just hatched were observed west of Anyang June 8, 1947.

Casmerodius albus modestus (Gray). GREAT WHITE EGRET.—Abundant summer resident. This species arrives about two weeks later than the Grey Heron. In the vicinity of Seoul it was first observed about the middle of March, and by early April birds were seen frequently feeding in the rice fields. Nesting is always of the community type, and the colonies varied from about 50 pairs to well over 1000. In general their colonies were much larger than those of the Grey, but in all cases a few pairs of Grey Herons nested close together on one side of the main gathering of Egrets. The nesting trees were always the highest in the vicinity and many of their nests were well over 100 feet from the ground. In one small colony of about 60 pairs of Egrets and 10 pairs of Grey Herons, 28 nests were counted in one huge pine. This colony was just off the main road about two miles north of Suwon. A colony at Yangsu-ri on the Han River about 25 miles east of Seoul which I visited on April 25, 1948, was estimated to contain over 1000 pairs of Egrets and about 30 pairs of Grey Herons. In this colony the nests were so thick that from a distance the sitting birds obscured the green foliage and gave the entire grove of trees a white appearance. Fresh eggs were collected April 25, 1948. Young birds nearly half-grown and fresh eggs were found May 18, 1947.

Cygnus cygnus cygnus (Linnaeus). WHOOPING SWAN.—Rare winter visitor. During January, 1948, several were often seen in the open water on the Han River

below Seoul. Swans were seen several other times but these were the only ones that were positively identified as this species.

Cygnus bewickii jankowskii Alpheraky. EASTERN BEWICK'S SWAN.—Not common, but a regular winter visitor from mid November until early in March. Numerous small flocks were seen in the sheltered bays both north and south of Inch'on. No specimens were taken personally, although several were examined that had been brought in by hunting parties.

Chen hyperborea (Pallas). SNOW GOOSE.—Rare winter visitor. A flock of about 15 birds was seen on the flats west of Chungnyul on the afternoon of February 23, 1948. Again on the evening of March 17, 1948, while in a goose blind on the marshes northwest of Ilsan-ni, eight Snow Geese came in for a landing but when about 150 yards away they suddenly veered off and went on down the valley. In both instances the distinctive black primaries were seen clearly in contrast with the otherwise white plumage. They could not have been mistaken for any other species.

Anser albifrons albifrons (Scopoli). WHITE-FRONTED GOOSE.—Very common spring and fall migrant. First observed in late October, by mid November they were common on all of the suitable feeding grounds but they moved southward when the country began to freeze up. On the northward migration they were seen in February but were gone by the last week of March. During the migration of 1947 and 1948, the White-fronted Geese were much more numerous than any of the other species of geese.

Anser fabalis (Latham). BEAN GOOSE.—Common spring and fall migrant, a few remained as long as there was open water on the inland rivers. They were seen a little earlier than the White-fronted Geese, several small flocks being noted in September. During all of the fall migrations the different species of geese were usually seen in small flocks not to exceed about 20 birds. On the other hand, in the spring very few small flocks were seen and flocks of 300 or 400 birds were not uncommon.

Cygnopsis cygnoid (Linnaeus). SWAN GOOSE.—Not uncommon spring and fall migrant, but never as common as the other two species of geese. I only shot two Swan Geese, but these birds were often brought into Seoul by other hunters.

Casarca ferruginea (Pallas). RUDDY SHELLDRAKE.—Common spring and fall migrant. The earliest spring record was March 10, 1947. These birds were often seen in pairs or in small flocks on the mud flats along the coast or feeding in the rice paddies in the inland valleys.

Anas platyrhynchos platyrhynchos Linnaeus. MALLARD.—Very common spring and fall migrant; many remain as long as there is any open water. Several Mallards were shot December 21, 1947, and again on February 25, 1948. This is probably the most evenly distributed of all of the waterfowl in Korea. While never appearing in the immense flocks like some of the teals, Mallards were consistently common all through the season and in every part of the lowlands.

Anas poecilorhyncha zonorhyncha Swinhoe. SPOT-BILLED DUCK.—Rather common spring and fall migrant; a few pairs remain to nest in the vicinity of Seoul. In a small marsh about five miles southeast of Inch'on, May 25, 1947, a female was flushed from a nest containing nine eggs which were nearly ready to hatch. After she flew up, she circled over the marsh and was joined by the male; then they both settled on a nearby pond and were later examined closely through binoculars. The nest was on a slight hump in the marsh where the ground was comparatively dry. It was well concealed under a bunch of thick grass and composed of a padding of down mixed with bits of dry grass. During the summer of 1948, Spot-billed Ducks were seen several times in a coastal marsh west of Kimpo.

Anas querquedula Linnaeus. GARGANY TEAL.—Not uncommon spring and fall migrant, but not nearly as abundant as the Spectacled Teal or the Eurasian Teal. It was seen only in small flocks along the coastal marshes. No definite records were kept of this species, but one or two birds were shot on nearly every hunting trip between early March and mid April.

Anas crecca crecca Linnaeus. EURASIAN TEAL.—Abundant spring and fall migrant; they arrive early in September and the majority have gone southward by December. The spring migration begins about the first of March, but belated stragglers were seen until the last week of April. The fall migration usually consists of numerous small flocks, but in the spring they can be seen in huge flocks numbering several thousands.

Anas formosa Georgi. SPECTACLED TEAL.—Abundant spring and fall migrant but much more numerous in the spring. The first spring arrivals were seen during the last week of February. From mid March until late in April they were present on all of the marshes, sometimes in pairs but normally in huge flocks numbering thousands. These flocks would appear like fast-moving, dark clouds and the noise of wing beats could be heard when the flock was at least 500 yards away.

Anas falcata Georgi. FALCATED TEAL.—This species is a rather uncommon spring and fall migrant, and was most often seen in pairs or in small flocks. A beautiful male in full breeding plumage was shot near Gunja Station, March 21, 1948, as a pair came in over the marsh.

Anas acuta acuta Linnaeus. PINTAIL.—Very common spring and fall migrant. The first fall arrivals were seen in early October; they were very numerous during November, and then rarely seen until the big northern flights began in March and continued until about the second week in April.

Mareca penelope (Linnaeus). WIDGEON.—Not uncommon spring and fall migrant. Like the other species of ducks, they first appear in late September. The majority have moved southward by early November and are rare until the spring flights start north again in early March.

Spatula clypeata (Linnaeus). SHOVELLER.—Rather uncommon spring and fall migrant. Shovellers were shot in March and April and again in October of both 1947 and 1948. A few were observed from time to time in the bags brought in by other officers.

Aix galericulata (Linnaeus). MANDARIN DUCK.—A rather rare migrant. A male and female were shot from a group of three April 26, 1948. These were found on a small pond west of the Kimpo Airport. No others were identified positively as being this species.

Aythya fuligula (Linnaeus). TUFTED DUCK.—Rather common migrant; a few remain nearly all winter; frequently seen on the Han River as long as there was open water. Many more were observed during March and early April than at any other time. It was never seen in large flocks but small groups of 10 to 20 birds were common on all of the ponds along the coast. The latest spring migrants were seen on the marshes west of Kimpo, April 26, 1947.

Aythya marila mariloides (Vigors). GREATER SCAUP DUCK.—A male was shot March 30, 1947, from a flock of six found on a coastal pond about 15 miles north of Inch'on. No others were collected, but they were often seen along the coast during the spring migration.

Bucephala clangula clangula (Linnaeus). GOLDEN-EYE.—Rather common winter visitor along the coast and on the larger rivers. In December, 1947, and January, 1948, Golden-eyes were usually present along the Han River near Seoul.

Mergus merganser orientalis Gould. GOOSANDER.—Not uncommon spring and fall migrant. Birds were seen several times along the Han River near Seoul and on the Imjin River north of Munsan. A single female was shot on the Han River west of Ilsan-ni, November 20, 1948.

Mergus serrator Linnaeus. RED-BREADED MERGANSER.—Rather common spring and fall migrant. They were often seen along the larger streams and wherever there was open water on the deeper ponds. Several birds were shot in October, 1947, and in March, 1948.

Milvus migrans lineatus (Gray). BLACK-EARED KITE.—Common summer resident. Birds were seen in every month of the year, but those present during the winter may have been migrants from farther north. It seems strange that nesting records of this kite have not been reported previously in Korea as it is a comparatively common breeder in all of the central area. During the spring and summer of 1948, I found two nests on Nam-San, the South Mountain overlooking the city of Seoul, another in a big tree in the heron colony in the Chang Duc Palace grounds, two more in other parts of Seoul, and I probably overlooked one or two others in the vicinity. I examined seven additional nests within a radius of 25 miles from Seoul.

This bold scavenger seems to be equally at home either in the city streets or on the uninhabited hills. During the winter months they congregate around trash dumps in the towns and villages, to feed on any available scrap or bit of refuse that may be found. They are common around all seaport towns and along the rivers where there is open water. By late March the majority have paired and scattered to their nesting localities. In April, May, and June, they are seldom seen except in the vicinity of a nest. After the young are fully grown, they all seem to move out of the country, as only an occasional bird was seen until mid September when they were again common. Possibly the local nesting birds migrate southward in the early summer, and those which appear in September are migrants from the north. However, there seems to be no logical reason why such a hardy bird should move south so early. I believe the local breeding pairs move northward to the cooler mountains during the hot summer weather and then return to their home territory in the fall.

Nest building or rebuilding, as frequently an old nest is used, begins in mid March, and by early April some pairs have started to incubate. A set of three eggs was collected April 3, 1948, on Nam-San. These were only slightly incubated. Another nest with two incubated eggs was collected May 22, 1948. Young birds a few days old were found April 25, 1948, and well feathered young were taken from a nest May 12, 1948. Every nest observed was high up in the top forks of a big tree. The favorite site is the tallest available tree on a hill or mountain side where an excellent view of the adjacent country can be had from the nest. A nesting pair was found close to or in every heron colony, and in two instances several herons nested in the same tree with the kite. The kites seemed to respect the heron property as long as there was a heron on the nest, but if the nest was left unguarded one of the kites would quickly make a swoop for an egg or a young heron.

The nest of the kite is a big, compact affair, very filthy and especially odorous after the young are hatched. A typical example 70 feet from the ground in the top of a pine was composed of sticks, grass, trash, a piece of rope, rags, and pieces of paper, with a lining of rags, bits of paper, mats of hair, and miscellaneous trash. The normal complement of eggs is two or three, but in two nests only a single egg was laid.

This kite is frequently quite "vicious" in the defense of its young. While I climbed to one nest with incubated eggs, the female dived at me repeatedly. Just as I reached the nest she struck me on the back and shoulder with terrific force, ripping my shirt

and nearly knocking me out of the tree. At another nest I induced a soldier to do the climbing for me. As he reached the nest the female first knocked off his cap. Then, as he hesitated, she struck the back of his head, cutting a deep gash in his neck and ripping his shirt. He was in a rather bad position and I grabbed the gun and gave her a charge of small shot which only knocked out a few feathers, but did drive her away and permitted him to descend.

Accipiter soloensis (Horsfield). BLUE FROG-HAWK.—Summer resident and common in suitable localities. Although first described in 1821, very little information about the nesting habits of this species has ever been recorded. Pere Courtois (Memoires concernant l'Histoire Naturelle de l'Empire Chinois, Tome 5, 3 me Cah. "Les Oiseaux du Musee de Zikawei" 1912: 1-98; pls. 1-13, 1914; 1916: 101-109, pls. 14-30; 1918: 111-121, pls. 31-45; and 1937: 124-159, pls. 68-103) was the first ornithologist to describe the nest and eggs. Except for his records and a nest and five eggs secured for me by Dr. L. H. Snyder in Korea in 1933 (Ool. Rec., 18 (2): 25) their nidification has remained unknown. Consequently I studied this little hawk in its summer home with unusual interest.

The first arrivals were seen on May 15, 1948, when two small hawks subsequently identified as this species were sailing over a marshy woods northwest of Seoul. During the following two weeks I saw one or more of these hawks in nearly every patch of woods around the inland valleys. After that the main flight seemed to have passed northward, or perhaps the mated pairs had just scattered to their selected nesting areas. At any rate after the first of June, birds were never seen except close to a nesting site.

Mating activities began shortly after they arrived from the south. During this period the males which are smaller were often seen chasing the females through scattered trees at incredible speed. Sometimes three or four birds were seen in the same patch of woods, flying around excitedly and often repeating a rather sharp 'kee-kee-kee' call. Once, seven individuals were seen streaking after one another through a patch of low trees not over 100 yards in diameter. During this performance sometimes one would sit out for a round, while all the others acted like they were playing tag by flying around and back and forth through the trees. At other times one left the group and flew up in the air over the trees, circled a few times and then returned to join the others. I watched one performance by two birds which chased each other for 15 minutes and then alighted close together in a pine. After a moment's rest the male flew out. Shortly thereafter he appeared overhead and sailed around and around over the immediate area. One male was seen to go through a series of aerial acrobatics. After circling low for a few minutes, he climbed steeply for several hundred feet, then suddenly set his wings and dived straight downward until just above the tree tops; then he leveled off, circled, and went up again to repeat the dive. This was repeated four times. He then leveled off and continued to circle over the tree tops for about ten minutes.

Soaring lazily in wide circles with wings almost motionless seemed to be a common habit during the early mating period, but it was observed only a few times after incubation began. While a bird might circle for 15 minutes or longer, the actual sailing time between wing-beats was never more than a few minutes. Altitude is first gained by a series of fast wing-beats, then the bird sails, gradually loses altitude, and regains height by another short series of rapid wing-beats. Except for these occasional periods in the air and the activity during the selection of mates, the species is comparatively inconspicuous. Both birds remain in the general vicinity of the nest and keep pretty well under cover, even when going out for food and returning to the nest.

In the defense of their eggs or young, a great deal of difference was noted in the actions of different pairs. Some were very bold and aggressive while other pairs were timid and retiring. One female was very noisy and made repeated dives at me when I approached the tree containing her newly built nest, although her eggs had not yet been laid. Generally during the early stages of incubation the female will slip off of the nest at the first sound of an intruder, and neither parent will be heard nor seen again. After the eggs are well incubated or when young are in the nest, the female usually appears and scolds in a series of high pitched 'kee-kee-kee-kee' notes, repeated over and over. One female with young was exceptionally bold, making repeated power dives close to me while I was at the nest. Her mate remained perched near by or circled close overhead a few times, but he made no dives. No males were observed to incubate, but several were seen to carry food to their incubating mates and there would always be some "whining" from each bird as the male neared the nest. During the latter stages of incubation or when there were young in a nest, the male was usually found on a favorite perch near the nest when he was not actively engaged in securing food.

A total of 14 nests of this species was found during June and July, 1948, in the area northwest, north, northeast, and east of Seoul, and varying from six to 40 miles from town. Two of these were deserted before the eggs were laid, perhaps because of my disturbance, but the others were all observed either with eggs or young birds. The typical nesting habitat is a small clump of chestnut trees on a low hill or along the edge of an open valley, always close to open rice fields or near marshy ground. Birds were never seen back in the higher mountains. Two nests were found in pine trees, two in water oaks and ten in chestnut trees. One was in a crotch of the main trunk, but all the others were in forks well out in the horizontal branches. The lowest nest was 20 feet from the ground, and all but one were less than 35 feet up. The exception was 48 feet from the ground in the top of a pine. The nests varied from 14 to 17 inches in diameter and averaged about five inches in depth. In all instances they were of new construction, rather frail and loosely built, and composed of small dry sticks and large twigs. The inner cup was always a mat of fresh chestnut leaves, those just beneath the eggs either fresh or slightly wilted and becoming progressively older farther down until at the bottom they were dry and brittle. Apparently fresh green leaves are added to the top of the nest almost daily during the incubation period and then less often after the young are hatched. A few nests contained occasional green pine needles or sprays of cedar mixed with the chestnut leaves. In addition to the green leaves, nearly all nests contained a few bits of bark around the outer edge of the inner nest.

The fresh eggs are a pale bluish gray but are soon stained by the green leaves to a light yellowish tan which gradually darkens as incubation advances. As a rule the eggs are unmarked, but occasionally one or two in a set are very sparsely specked with dots of yellowish brown. The number of eggs in a nest varied from two to five. Three or four may be considered the normal number. Only one nest contained five eggs. The two that were found with only two eggs each might have been incomplete or one egg might have been lost from the nest. A series of 18 eggs from six different nests has an average measurement of 37.2 by 29.9 millimeters. The largest was 39.0 by 30.5 and the smallest 35.5 by 28.5 millimeters. Nest building begins about the first of June. Sets are completed and females are incubating by the second week of June. Fresh eggs were collected June 6, 1948; eggs with advanced incubation were found June 19, 1948; young a few days old were found July 10, and well feathered young were seen July 14, 1948.

The food of this species during the summer breeding season consists almost entirely of frogs. So far as could be determined the young were fed entirely on them. The stomachs of seven adult birds collected contained only frog remains. During the early mating season two different males were seen to catch a frog, carry it to a female, and share it with her. Several times males were seen to carry a frog to the nest to feed their incubating mates.

These birds vary a great deal in color. Most of those actually breeding were in the typical adult color phase with light bluish gray upperparts, the breast and abdomen varying from almost white to vinous pink, and some even barred rufous brown. However, some were seen with dark brown upperparts or barred with brown, and one or two were seen that were nearly a dark slaty color above. Apparently the delicate, light, bluish gray dorsal plumage is not reached until after three or four molts. In the field the males can not be distinguished from the females with certainty except by size. In hand the sexes are easily separated by the color of the iris, which is reddish brown in the male and lemon yellow in the female. At a distance this species can be confused with the Japanese Sparrow Hawk, but can usually be distinguished by its white under-wing coverts and black primaries which the latter lacks. These characters are plainly visible from beneath when the bird is in flight.

The common name of Chinese Goshawk or Horsfield's Goshawk that has been used for this species is neither appropriate nor descriptive. It breeds in north China but is not restricted to that country, so this name is not well applied. Horsfield was the original describer, but he also described many other new forms and there is little reason to attach his name. Moreover, the name of Goshawk is used only for the reason that it is an *Accipiter*, but this name is not distinctive as the bird has neither the size nor the characteristics of a goshawk. In the fully adult plumage it is a beautiful soft bluish gray color, and as frogs constitute the principal item of food during the summer breeding season the name of Blue Frog-hawk is suggested as an especially appropriate common name.

Accipiter nisus nisosimilis (Tickell). ASIATIC SPARROW HAWK.—Rather common spring and fall migrant; many were seen during the spring and in the fall but none between early April and October. There is no evidence that this species breeds in Kyonggi Do Province, but it is probably a summer resident in the highlands farther north. Specimens were shot on February 23, March 14, October 31, and November 21, 1948. While in the hills west of Kimpo, April 6, 1947, I was watching several Dusky Thrushes, *Turdus naumanni*, feeding in some low bushes about 20 yards away. Suddenly a Sparrow Hawk shot past through the bushes and picked up a thrush without ever slackening its speed.

Accipiter virgatus gularis (Temminck and Schlegel). JAPANESE SPARROW HAWK.—Rare summer resident. The first one seen was in an open woods in the Kings Tomb area east of Seoul on June 2, 1948. On June 5 while crossing a low ridge in the foothills about 20 miles north of Seoul, I saw a Japanese Sparrow Hawk in the top of a small pine. When it flew it was joined by another and larger bird which I presumed to be the female. This pair was watched for some time and their actions indicated that they were either nesting or getting ready to nest. However, several hours of searching through the scattered pines and intermittently watching the birds produced no results. The following day, June 6, in the hills north of Masogu-ri, I located a rather small nest about 35 feet from the ground in a small clump of pines; examination through the glasses disclosed a bird on its nest. I stood about 25 yards from the tree in order to see the bird when she came off the nest, and my Korean boy went up and tapped on the tree. At the first disturbance, the bird raised up

and stood on the nest for perhaps a minute before she flew off to be seen no more. I was able to examine her carefully through binoculars before she flew and to identify her clearly as a Japanese Sparrow Hawk. The nest was of new construction, built of small dry sticks and lined with dry leaves, bits of bark and a few pine needles. It contained three nearly fresh eggs which were collected. These eggs are similar in size to those of *Accipiter soloensis*, but the shell color is bluish white and all are rather well marked with small spots and thin blotches of reddish brown and pale chestnut and there are a few specks of blackish brown.

Buteo rufinus hemilasius Temminck and Schlegel. UPLAND BUZZARD.—Winter visitor but not common. In the field this species can be distinguished easily from the Japanese Buzzard by its larger size, longer wings, light colored head and nearly white tail. A pair were seen February 8, 1948, in the mountains about 16 miles east of Seoul. These birds were watched for 15 or 20 minutes as they soared around the top of a rugged peak. Two other birds were seen north of Seoul on February 24, 1948.

Buteo buteo burmanicus Hume. JAPANESE BUZZARD.—Common winter visitor. One or more of these hawks was seen on every field trip from November until early in March. I am sure that they do not breed in Kyonggi Do Province as no birds were observed after the last week of March. Specimens were collected north of Seoul, December 7, 1947, east of Suwon, December 21, 1947, and northeast of Seoul, February 15, 1948.

Butastur indicus (Gmelin). GREY-FACED BUZZARD-HAWK.—Summer resident. This hawk has not been recorded previously as a breeding species in Korea, but it cannot be considered rare in Kyonggi Do Province as three different breeding pairs were found in 1948. The species was first noted in the low hills east of Anyang on March 17, 1947. In 1948 the first arrivals were a week later, but in both years birds were seen intermittently until late in June.

Very little seems to have been written about the habits of this species and the few recorded notes do not agree with my observations. The Caldwells ('South China Birds,' 1931: 426) write—"very harrier-like in habits and characteristics." La Touche reports—"is said to build its nest in Japan on solitary trees in rice or other fields." I have never seen this hawk in open grass lands or in open fields. Its habits and characteristics as observed in Korea were more like those of the smaller buteos. In fact, their actions, habits, and the typical nesting site are all similar to those of *Buteo lineatus*. The three nests I found were in similar surroundings, open woods, checkered with small areas of wet grass which supported an abundant frog population. Frogs are apparently its principal diet. Each of three birds collected had the remains of frogs in its stomach, and other birds were seen to catch frogs.

While mating and nest building, both the male and female are quite noisy in the vicinity of the nesting site. The male is especially active and noisy in the late afternoons. One was observed calling from a branch of a low tree, then moving 10 or 15 yards to another perch and calling again. This was repeated until he had nearly circled the female which was all the while sitting quietly in the top of a pine.

Like the buteos, they have the habit of soaring around over the nesting area. Sometimes the male, then the female, and occasionally both are in the air together. After incubation begins, both birds are rather quiet and stay pretty much out of sight. A typical nest found May 12, 1948, was 35 feet from the ground in a small pine growing in open woods at the edge of a marshy valley. It was built against the main trunk but was supported by small branches. It was of new construction,

about 20 inches in diameter, and loosely built of dry sticks. The inner nest consisted of dead leaves, dry pine needles and bits of bark. On top of this was a lining of green leaves and a few green pine needles. This nest contained three slightly incubated eggs which were collected.

Aquila chrysaetos japonica Severtzov. JAPANESE GOLDEN EAGLE.—Rare resident. During the winter months this eagle may be seen in the valleys or over the coastal marshes, but its normal habitat is the wilder mountain districts. A Golden Eagle was seen south of Inch'on on March 10, 1947, and another near Suwon March 25, 1947.

While on a hunting trip in the mountain area of Temma-San, about 20 miles northeast of Seoul on October 19, 1947, I saw two Golden Eagles that were apparently hunting together. My hunter-guide of that day, Kim Hun Suc, told me this pair had been in the same area for many years and were there during the entire year. In early March, 1948, I again contacted this mountaineer and through an interpreter learned there were two pairs of eagles in his district. Arrangements were made with him to locate a nest. Some weeks later he reported that he had seen an eagle fly to a cliff and disappear in a hole which probably contained the nest. On April 4, 1948, I picked him up in a jeep and we started for the top of Yebong-San. This is a mountain on the north side of the river, about 35 miles directly east of Seoul. By mid-afternoon we had arrived at the head of a narrow valley well up in the mountain and had to abandon the jeep. After a most difficult climb we came out on a crest near the top of the mountain. Kim pointed to a ledge on the opposite side of a narrow gorge, probably 600 yards away directly across the valley. Through the binoculars I saw sticks in a dark pot hole but could not distinguish the outline of a nest. In the hope that this was an occupied nest I fired a shot in the direction of the cliff. As the sound echoed over the ravine a Golden Eagle came off of the nest, flew low down the valley and then around the mountain.

It took us another hour to circle around the head of the gorge to the base of the cliff. In the meantime the eagle had returned to the nest. As we started to climb around the ledge to get above the nest, she flushed just over our heads. She returned soon and for a short time perched on a dead stub not over 50 yards away. Through the binoculars I was able to examine every detail, the most prominent character being the almost pure white feathers of the tarsi. The nest contained one egg nearly ready to hatch and a newly hatched chick. Both were taken. The egg is now in my personal collection and the skin of the chick is in the U. S. National Museum. This nest was about 30 feet from the top of a 75-foot cliff and about 10 feet back in a well protected crevice. It had apparently been used for many years as the base was a huge pile of partly decayed sticks. On top of this were new sticks, branches, and bunches of straw. The inner cup was lined with dry grass and a few sprays of cedar.

While on the upper slopes of Chomma-San, on April 16, 1948, I located another eagle's nest in a pocket about 25 feet from the top of a 100-foot cliff. On this trip we had no rope, so I was unable to get down to the nesting ledge, but from the amount of droppings on the edge of the nest it must have contained young birds.

Haliaeetus albicilla (Linnaeus). WHITE-TAILED SEA EAGLE.—Rather common winter visitor. This eagle was seen first in early December and the latest spring record was March 25, 1947. During January, February, and early March, one or more of these eagles was seen on nearly every field trip. On March 10, 1947, one was seen perched on a dike along a rice field about 10 miles south of Inch'on and two others were in the air. Near the same place on March 16, 1947, five were seen in the

air at one time, all just sailing over the mud flats. Back from the coastal flats they were often seen perched on a dike in an open rice field or flying low along the rivers. When the rivers freeze they move down along the coast to open water. Several remained in and around Inch'on harbor nearly all winter. They often perched out on a pile of broken ice and several times I saw one pick up something from the water. These birds were very wild and difficult to approach. However, even at a distance they can not be confused with any other species, except possibly Steller's Sea Eagle when in immature plumage, but even then the immense bill of the latter is distinctive.

Haliaeetus pelagicus (Pallas). STELLER'S SEA EAGLE.—Rare winter visitor. Only two birds were identified positively as this species. Both were examined through binoculars when not over 200 yards away. The white shoulders, immense bill, and unusual size of this eagle preclude confusion with any other species. The first one seen was over a coastal marsh near the village of Sin-gil-li, south of Inch'on, on March 16, 1947. I watched it for nearly half an hour as it flew low over the duck marsh apparently looking for food. The other was on a similar coastal marsh on February 23, 1948. When first seen it was perched on a dike. After an unsuccessful attempt to stalk it, it flew on down the coastline. On three other occasions I saw dark plumaged birds which were too large to be *Haliaeetus albicilla*, but I could not identify them positively. They were possibly young Steller's Sea Eagles in immature plumage or they could have been the darker form *niger*.

Circus cyaneus cyaneus (Linnaeus). HEN HARRIER.—Rare winter visitor. Only one *Circus* was seen all the time I was in Korea. This was a female shot about 30 miles southeast of Seoul, February 23, 1948.

Pandion haliaetus haliaetus (Linnaeus). OSPREY.—Rare visitor. I saw a single osprey flying over the Imjin-Gang River just north of Munsan on October 5, 1947. I watched it through binoculars for about 20 minutes as it circled up and down over the river. It finally struck the water and came up with a fish about half the length of its body, then flew down the river.

Falco peregrinus leucogenys Brehm. SIBERIAN PEREGRINE FALCON.—An uncommon migrant and a rare summer resident on the coastal islands. Two or three large falcons were seen at different times flying over the duck marshes. No specimens were collected, but by a process of elimination these were identified as peregrines.

I have recently received from K. Kobayashi of Kobe, Japan, a set of two peregrine eggs collected by a Japanese lighthouse keeper on Shichihatsu Island, on April 2, 1937. This island is about 30 miles off the coast of Mokpo, Cholla Namdo. Mr. Kobayashi has another set of four eggs collected on the same island. I have examined carefully both sets and there is no doubt as to their identity.

Falco columbarius insignis (Clark). ASIATIC MERLIN.—Rare migrant. The only bird I identified as a Merlin was a male which I shot about six miles east of Inch'on on December 1, 1948.

Falco tinnunculus interstinctus Horsfield. JAPANESE KESTREL.—Summer resident in Kyonggi Do Province and occurs during the entire year. Those present during the winter would be expected to be *dorriessi*, the lighter colored form from northern Manchuria. However, a male which I shot east of Suwon on December 21, 1947, has been identified by Dr. Friedmann as *interstinctus*.

Although not rare, these little falcons are sly and wary around their nesting site, which probably accounts for the lack of definite breeding records. When one is several hundred yards away from an occupied nest the female will slip away unobserved, to appear in the air some distance away. Even after a pair was known to occupy an area, it required hours of watching, sometimes several days, to locate the

nest. One pair was so sly that the nest was never found, although they were continually in the same area. A positive nesting record was established only after the young had left the nest and two of them were collected.

I also found two pairs nesting within the city of Seoul. One pair had taken over an old magpie nest on Nam-San; the other nested under the eaves of a temple. I found three other pairs breeding within 10 miles of the city. One of these nested under the roof of a small temple in front of an ancient tomb, and two in old magpie nests. One of these was in the very top of a big spruce about 80 feet from the ground, and the other was about 40 feet from the ground in a pine. When an old magpie nest is used, all of the inner lining is cleaned out and the eggs are laid on the dry mud in the base of the nest.

Nesting activities begin early in April. Nearly fresh eggs were collected April 24, 1948; heavily incubated eggs were found May 8, 1948; young just hatched were found on May 16, 1948; and young birds apparently out of the nest for a week or more were collected June 16, 1948.

Tetrastes bonasia amurensis Riley. AMUR HAZEL GROUSE.—I saw a small flock of five birds January 26, 1948, in the mountains of western Kangwon Do Province.

Colurnix colurnix japonica Temminck and Schlegel. JAPANESE QUAIL.—Generally reported as quite common, but I did not find them so. A single bird flushed from the edge of a dike in a rice field south of Inch'on March 10, 1947, and a male was shot east of Suwon on December 21, 1947. Apparently their habitat is very localized, as these were the only ones I saw during my stay in Korea.

Phasianus colchicus karpowi Buturlin. KOREAN RING-NECKED PHEASANT.—Resident. Formerly abundant, but during the three years of army occupation it was greatly reduced in numbers. Not only did the thousands of soldier hunters take a heavy toll during the hunting season, but the "liberated" Koreans recognized no restrictions. They resorted to both trapping and poisoning for the market. By the fall of 1948 the pheasant had become a comparatively rare bird except in isolated localities. Numerous birds were shot, but only two skins were preserved. A male taken 12 miles northeast of Seoul on April 25, 1948, and a female shot six miles south of Seoul on April 18, 1948. Both of these were identified by Dr. Friedmann as *karpowi*. I flushed a female from a nest containing three fresh eggs on April 24, 1947.

Turnix tanki blanfordi Blyth. BURMESE BUTTON QUAIL.—A female collected about five miles northwest of Ilsan, October 30, 1948, was the only Button Quail seen. While I was tramping through a rice field en route to a goose blind, it flushed from a small clump of grass just under my feet and a lucky shot brought it down. I thought it to be a Japanese Quail until I picked it up for examination.

Gallixrex cinerea (Gmelin). WATER-CK.—Summer resident and rather common around the rice fields in some localities. I found it only in or around cultivated fields. It may be that these birds arrive from the south in May, but they were neither heard nor seen until the last week in June. After early July the males are quite noisy, and their loud thumping calls are heard in the rice fields until about the first of August. Their call has been well described by Chester Fennell who wrote me of his observations near Pusan, "A far carrying call of two distinct pitches, the average performance consists of about eleven regular low pitched notes, immediately followed by 20 to 26 higher pitched, stake-striking, resonant notes, rushed at the beginning of the series and gradually petering out in tempo. The performance is continuous and is repeated several times."

A typical nest with four slightly incubated eggs was collected on July 22, 1948. This was in thick grass on a dike between two rice fields. It was well formed of grass

blades woven around standing stems which supported the nest so that the bottom was just off the ground. A characteristic feature of the nest is that the surrounding grass is pulled down and tucked in over the nest to make a well formed canopy over the eggs. The female usually will sneak off through the grass at the first sign of danger, but the pulled-over grass stems betray the location of the nest.

Fulica atra atra Linnaeus. COOT.—Uncommon summer resident and a common spring and fall migrant. Birds were seen occasionally during the summers of 1947 and 1948 in the shallow marshes along the coast between Inch'on and the mouth of the Han River. A male and a young female were collected east of Inch'on September 15, 1948.

Otis tarda dybowski Taczanowski. SIBERIAN BUSTARD.—Rare winter visitor. During January and February, 1948, bustards were seen several times in the big valley north of Susong, some 10 miles east of Seoul, and one was shot there February 10, 1948. Three were seen south of Kimpo Airport on February 21, 1948. During the winter of 1947-48, I examined two that were shot by other officers and I heard of several more that were brought in by hunting parties.

Charadrius dubius curonicus Gmelin. LITTLE RINGED PLOVER.—Summer resident and common along sandy stream beds or on open gravelly areas not too far from water. The first spring arrival was seen March 30, 1947. From early in April until July in 1947 and 1948, Little Ringed Plovers were seen on nearly every field trip. Several pairs were found nesting on an abandoned railway fill and other nesting pairs were seen along all of the wide gravelly stream beds. In general they tend to associate in scattered colonies, as several pairs were usually found in the same area. The nest is only a slight depression in the sand or among small stones, and the eggs look so much like small pebbles that they can hardly be recognized even though one is looking directly at them. Young two or three days old were seen May 29, 1948, and fresh eggs were collected on May 30, 1948.

Numenius phaeopus variegatus (Scopoli). EASTERN WHIMBREL.—Rather common migrant in the spring but was not seen in the fall. On two different occasions Whimbrels were found in scattered flocks feeding in open woodlands. This to me was most unusual, as previously I had only seen them along the sandy beaches or on open grassland. One bird was shot near the beach south of Inch'on, April 25, 1947, and another in a wooded valley north of Kimpo, May 5, 1947.

Tringa nebularia (Gunnerus). GREENSHANK.—A common fall migrant, it was not seen in the spring. During October and November in both 1947 and 1948 several flocks were seen along the coastal flats about 25 miles south of Inch'on. One was shot from a flock of about 10 birds on November 3, 1948.

Heteroscelus incanus brevipes (Vieillot). ASIATIC WANDERING TATTLER.—The only bird identified as this species was a female shot May 18, 1947. This was a lone bird first observed feeding along a stony stream bed south of Anyang. Austin writes ". . . uncommon transient on the east coast, and practically unknown elsewhere in Korea."

Capella stenura (Bonaparte). PINTAIL SNIPE.—Common spring and fall migrant. Many were seen in the rice fields in April, and in late September they were present in sufficient numbers to afford good shooting.

Larus canus kamtschatschensis (Bonaparte). ASIATIC COMMON GULL.—Common winter resident all along the west coast. Gulls were abundant in Inch'on harbor from early September until mid April but this was the most common species and the only one that was identified positively.

Sterna albifrons sinensis Gmelin. ASIATIC LITTLE TERN.—Not uncommon summer resident. Occurs principally on the sand bars at the mouth of the Han River or on the wide sandy beaches along the river. First seen near the coast south of Inch'on, May 25, 1947. Several terns were seen along the Han River about 10 miles east of Seoul on May 30, 1948. These were probably nesting or ready to nest, as they were very noisy and excited when I walked across a wide sandy beach. Another colony of about 20 pairs was found on a wide sandy beach on the Han River northwest of Seoul on June 5, 1948. Eight occupied nests with eggs were found and three sets of eggs were collected. All nests observed contained only two eggs each and not four eggs as reported by Won.

Columba livia rupestris Pallas. BLUE HILL PIGEON.—Rare summer resident. A few probably remain all winter, as I saw a flock of six about 40 miles east of Seoul on January 24, 1948. This pigeon is an inhabitant of the wilder mountains and can easily be overlooked. It is apparently either much rarer now than in former years, or it has a very local distribution. During the fall hunting seasons of 1947 and 1948, I examined many "wild pigeons" brought in by hunting parties but all proved to be Turtle Doves. A few individual birds were seen at a distance during May, 1948, and on June 5, 1948, three or four pairs were found nesting on a rocky ledge at the top of a narrow valley in the mountains northeast of Suwon. One nest with two incubated eggs was collected. This was on a narrow shelf about 40 feet from the base of a 60-foot cliff and well protected from above by an overhanging ledge; two other nests were near.

Streptopelia orientalis orientalis (Latham). EASTERN TURTLE DOVE.—Common resident and abundant in some localities during migration. Mating pairs were frequently seen from mid April until July. The earliest nest with eggs was seen May 3, 1947, and the latest record for eggs was a set of two collected July 25, 1948. Possibly two or more broods are raised in a season.

Cuculus canorus telephonus Heine. JAPANESE CUCKOO.—Common during the summer and presumably breeds. Birds were first seen May 16, 1947, and on May 15, 1948. All through May and June, cuckoos were seen or heard during every field trip but no eggs were found.

Otus asio ussuriensis (Buturlin). FEATHER-TOED SCOPS OWL.—The only Scops Owl seen was a male collected February 28, 1948, about eight miles northwest of Seoul. This bird was flushed from a magpie nest in open pine woods in the rolling foothills.

Bubo bubo tenuipes Clark. CLARK'S EAGLE OWL.—Rare resident. I saw no Eagle Owls during the time that I was in Korea, but they were reported by several different officers, one telling me that he had seen a nest with young on a rocky ledge near the Han River east of Seoul. My hunter-guide, Kim Hun Suc, offered to take me to a nest in the Chinjim-Myon area about 40 miles northeast of Seoul but bad roads prevented the trip. He did bring me a fresh skin that was taken near Chuncheon on November 30, 1948.

Ninox scutulata scutulata (Raffles). BROWN HAWK-OWL.—Summer resident and apparently rather common, as a pair were found in nearly every patch of heavy woods. First observed April 18, 1948, when a male was collected. This bird had enlarged testes and I assumed that it was either breeding or about ready to breed. During the following days many hours were spent trying to trace other owls to their nests, but without success. Afterward it was discovered that the nesting habits of this species are rather unusual in that they do not begin until late in May. After many unsuccessful attempts to find a nest, on May 31, 1948, a bird was finally found

in a small woods, which indicated by its actions that a nest was undoubtedly near by as it would only fly from tree to tree and would not leave the area. After hours of search the female was at last flushed from an old magpie nest about 75 feet up in the top of a big pine. Investigation disclosed that the top of the magpie nest was partly gone, all the inner lining had been removed, and two nearly fresh eggs were resting on the dry mud base of the old nest.

During the following week two other nests were located in old magpie nests and on June 6, 1948, a nest was found about 20 feet from the ground in a big natural cavity of an old stub. As with the other nests, there was no lining or nesting material, the eggs merely resting on bits of decayed wood and debris on the bottom of the cavity. Other Hawk-owls were later found in the vicinity of several different temples. They were presumed to be nesting in some hole or cornice of the building, but no eggs nor young were found to prove it. In the defense of its nest, this owl is very much of a battler and will not hesitate to attack the intruder with both bill and talons.

Strix aluco ma (Clark). KOREAN WOOD OWL.—Not uncommon resident. I saw single birds several times during field trips through the mountains north and east of Seoul in April, 1948, and after detailed searching located the home territories of two different pairs. They were in different valleys, but each occupied a comparatively small area of thick spruce trees. In both cases I was sure that the birds were breeding, but hours of careful search failed to disclose anything that could have been used for a nest. On May 19, 1948, after it was too late in the season for either eggs or nestlings, two more Wood Owls were found in a similar thick growth of spruce about 15 miles north of Seoul. Both were collected and subsequent examination indicated that although they were fully grown, they were probably young of the year. I collected a third specimen, an adult male in the Kings Tombs area northwest of Seoul on May 22, 1948. In the summer of 1949, Kim Hun Suc sent me a set of two eggs he had collected from an open stick nest in thick pine woods in eastern Kyonggi Do Province February 15, 1949.

Asio flammeus flammeus (Pontoppidan). SHORT-EARED OWL.—Spring and fall migrant. In the late evening of March 17, 1948, I shot a male flying over a marsh about 24 miles northwest of Seoul. This owl is apparently more common than available records indicate. Many times during both early spring and fall I flushed owls along the roadway while driving at night. These birds were only seen along a road in an open valley or one that was bordered by rice fields. While they could not be seen clearly, their size and long wings immediately identified them as Short-eared Owls.

Alcedo atthis bengalensis Gmelin. COMMON INDIAN KINGFISHER.—Common summer resident. Seen frequently in all of the valleys and along the streams in the foothills. They arrive in the vicinity of Seoul about the second week of April and were last seen in early August. I found a pair excavating a nesting hole in a low dirt bank about four miles southeast of Inch'on on April 26, 1947. Apparently both the male and female dig together as the two alternate going in and out of the hole and sometimes both were in it at the same time. Numerous nests were found, always in clay banks, some in cuts not over 18 or 20 inches high along a roadway. The nesting hole is about two and a half inches in diameter and usually goes back from 12 to 30 inches. At the end, a rounded chamber with a slight depression holds the eggs. Two or more broods may be raised each year as fresh eggs were found early in May and a set of six well incubated eggs were collected northwest of Seoul July 13, 1948.

Halcyon coromanda major (Temminck and Schlegel). JAPANESE RUDDY KINGFISHER.—My only record of this species is a male secured in the Seoul market September 24, 1948.

Halcyon pileata (Boddaert). BLACK-CAPPED KINGFISHER.—Uncommon summer resident. This kingfisher is most frequently found in narrow valleys bordered by steep gulches. Two nests were found, both in similar locations. They were approximately half a mile back from the stream in the clay bank of a narrow eroded gulch. The nesting hole dug by the birds is about four inches in diameter and goes back two or three feet. Fresh eggs were collected June 10, 1948, and young about two-thirds grown were found July 18, 1948.

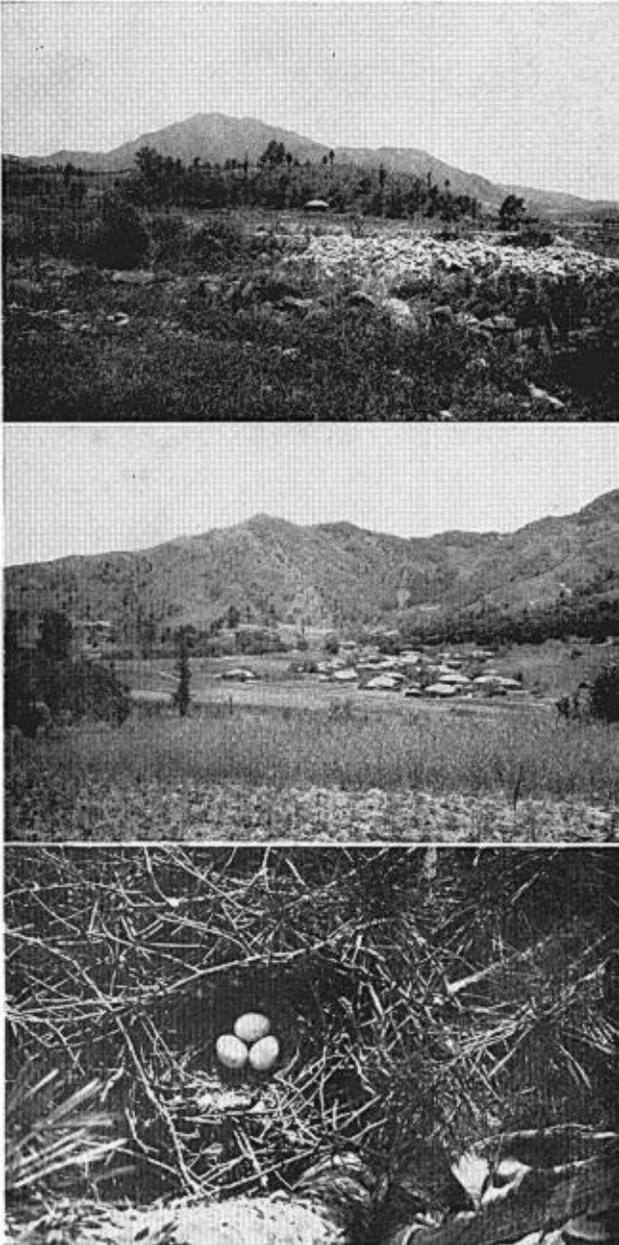
Eurystomus orientalis abundus Ripley. BROAD-BILLED ROLLER.—Not uncommon summer resident. A pair was usually to be found inhabiting the tall trees which surround many of the ancient Korean tombs. Mating pairs were first seen May 12, 1947, in a tomb area about six miles northwest of Seoul. During the mating period and again about the time the young are leaving the nest, these birds are very noisy and much in evidence flying from tree to tree and repeating their harsh guttural calls. After the young are grown, the family remains in the vicinity of its nest until departing for the south in August. These birds make no nest. Most frequently a deserted magpie nest is used, but one was found in a natural cavity of a big tree, and another in a deserted hole made by a Tristram's Woodpecker. Two different pairs were seen at old temples, apparently nesting under the roof as birds were seen to go in and come out of woodpecker holes under the eaves. The usual nesting period begins about the first of June. A bird was flushed from a hole May 23, 1948, but no eggs had been laid. Fresh eggs were collected June 2, 1948, west of Munsan, and another set was taken east of Seoul, July 16, 1948. The latter was probably a second nesting. Two or three eggs constitute a full set.

Upupa epops saturata Lonnberg. TIBETAN HOOPOE.—Rare summer resident. Birds were seen around several of the ancient tombs from the last week in April until mid July. They were always wary and difficult to approach, but I am sure that they were nesting. No nests were found, perhaps because I was always more interested in some other species and did not take the time to hunt for them.

Picus canus jessoensis Stejneger. KOREAN GREEN WOODPECKER.—Not uncommon summer resident, a few remain during most of the winter as I shot one northwest of Seoul on November 23, 1947. Spring migrants were seen early in April and birds were observed frequently in open woodlands during the entire summer. A female was shot April 25, 1948, just as she left her nesting hole in a dead stub about seven feet from the ground. The nest contained four fresh eggs and another soft shelled egg was in her oviduct. A male collected May 22, 1948, was one of a nesting pair. The female was flushed from a hole about 12 feet up in a partly dead stub, but the nest was not disturbed as I presumed that it contained young birds. Other Green Woodpeckers were collected June 5, 1948, and October 31, 1948. As noted by Austin, the habits of this species are similar to those of the American Flicker (*Colaptes*), especially in regard to feeding on or near the ground, the selection of a nesting site, and their general habitat.

Dendrocopos major japonicus (Seeböhm). JAPANESE PIED WOODPECKER.—Not uncommon resident throughout the year. Birds were collected January 18, April 11, and November 20, 1948. I saw a pair on May 5, 1948, that were apparently mating and the actions of a male seen on May 23, 1948, indicated a nearby nest. While no eggs were collected, there seems to be little reason to doubt that the Pied Woodpecker breeds in Kyonggi Do Province.

Dendrocopos canicapillus doerriesi (Hargitt). MANCHURIAN PYGMY WOODPECKER.—Not uncommon summer resident in suitable localities. This is a bird of the open woodlands and is most frequently found at low elevations and near a stream



(Top) NESTING GROUNDS OF *Accipiter soloensis*—IN TREES BEHIND HOUSE. (Middle) NESTING GROUNDS OF *Accipiter soloensis*—IN TREES TO RIGHT OF VILLAGE. (Bottom) NEST AND EGGS OF *Butastur indicus*.

or in a swampy area covered with medium-sized timber. It was never seen in heavy forest. The first spring arrivals were seen in early April. Both males and females were seen on April 11, 1948, and a female with enlarged ovaries was shot on April 18, 1948. In a small swampy woods about 12 miles northwest of Seoul on May 16, 1948, I flushed a female from a nesting hole about 15 feet from the ground in a small partly dead water oak. This nest contained three fresh eggs. During May and June I saw other breeding pairs but no nests were examined.

Dryocopus martius martius (Linnaeus). GREAT BLACK WOODPECKER.—Rare resident. This species is found only in the wilder areas of heavy forest. I saw a male about 35 miles northeast of Seoul on November 6, 1948, and shot an adult female east of Chun-Chon on November 30, 1948. The species undoubtedly breeds in northeastern Kyonggi Do Province, but as the large trees are being rapidly cut off these birds are being forced to move to the uninhabited areas farther north.

Dryocopus richardsi Tristram. TRISTRAM'S WOODPECKER.—This huge woodpecker has been reported as very rare and on the verge of extinction, but I was fortunate enough to find three breeding pairs. Two of these pairs were in separate areas northwest of Seoul and the other was in a hidden valley of giant spruce trees northeast of Seoul. Each pair occupied a restricted zone of large timber adjacent to an ancient Korean tomb where the trees had been protected for hundreds of years. Both the male and female birds were seen in each area, but the males were especially wary and difficult to observe. Each territory contained several nesting holes, some old and partly broken, others of more recent vintage, and one or two that appeared to be in use. Likewise there were numerous trees which had been worked over and other evidence to indicate that each area had been occupied by a pair for several seasons. In addition to these three pairs, an adult male with a brilliant red crest was seen in an open pine woods west of Kumch'on-ni on October 31, 1948.

A young male just able to fly was shot May 31, 1948, just as he left a nesting hole which from its appearance had been used to raise the season's brood. Calculating backward from this date, eggs must have been laid in early April and not in May and June as quoted by Austin from Mori's account of this species.

Alauda arvensis quelpartae Momiyama. KOREAN SKYLARK.—Common summer resident, and a few may possibly remain all winter. Three skins taken in January, however, were identified by Dr. Friedmann as the larger northern form, *Alauda arvensis pekinensis*. Skylarks are very common during the entire year, but it is impossible to make field identification of the different races. Males were in full song by mid April, and fresh eggs were found from the last week of April until the second week of June. Well feathered young were found on May 12, 1948, and young a week or more out of the nest and fresh eggs were collected May 31, 1948; hence two or possibly three broods are raised each season.

Galerida cristata coreensis Taczanowski. KOREAN CRESTED LARK.—Very common summer resident and some probably remain all winter. In the field this species flocks with the skylarks all winter, and the two are so easily confused that unless birds are collected constantly it is difficult to determine the winter status of either one. Nesting begins in early April and two or more broods may be raised. Young of the year but several weeks out of the nest were collected May 30, 1948, and a nest with eggs was found the same day. Fresh eggs were collected as late as June 26, 1948.

Hirundo rustica gutturalis Scopoli. EASTERN HOUSE SWALLOW.—Abundant summer resident. The swallows top the list of the few common birds in Korea, but unlike the others they are welcomed in the home and are considered a token of good luck. They are abundant around all of the villages and nest undisturbed almost

within the cramped living quarters of the Koreans. I often noticed nests under a sheltered doorway or under the eaves of a porch where the entire family passed back and forth all day without disturbing the birds.

The earliest spring arrivals were observed April 13, 1947, and by the 20th they were common. Nest building began about the last week in May and fresh eggs were found June 10, 1948. By mid September the majority had moved southward again, but a few stragglers were seen as late as October 5, 1948.

Hirundo daurica japonica Temminck and Schlegel. JAPANESE MOSQUE SWALLOW.—A common spring and fall migrant, but I found no sign of its nesting in Kyonggi Do Province. Along with the House Swallows, this species was seen frequently on the telephone wires from early April until mid May. Apparently they moved northward to their summer breeding area, and I did not see them again until the southward flight began in August.

Delichon urbica dasyopus (Bonaparte). JAPANESE HOUSE MARTIN.—Rare summer resident. My only record was of a small colony nesting near the river about 40 miles northeast of Seoul. While investigating a series of low cliffs on the north fork of the Han River near the village of Kuam-ni on June 5, 1948, I noticed 15 or more martins around one ledge. Further search disclosed an area perhaps 50 yards long where a stratum of soft shale was topped with a layer of hard rock which had not weathered away as fast as the under stratum, making a nearly flat roofed shelter some 30 feet high and five or six feet deep. Plastered against the back wall and close to the ceiling were five completed mud nests and two others partly completed. It was impossible to determine whether the latter were abandoned attempts at nest building or new ones being constructed. After some difficulty in securing a three-pronged branch and splicing poles, one nest was eventually brought down without mishap. It contained four nearly fresh eggs.

At the time it was not realized that this would prove to be an unusual breeding record, so no skins were collected. However the size, color, and shell texture of the eggs are sufficiently distinctive for identification.

Oriolus chinensis diffusus Sharpe. BLACK-NAPED ORIOLE.—Not uncommon summer resident. The earliest arrival was a male seen near Seoul, May 8, 1948. Between the 12th and 15th of May, mating pairs were frequently seen both in and around Seoul. During this period the males are very noisy and their loud mewing "cat calls" can be heard in nearly every patch of trees, although the birds are wild and difficult to see. The normal habitat of this species is a rather thick growth of medium-sized deciduous timber, usually in an isolated valley where they are not disturbed. Orioles were never seen in the higher mountains. A brooding female with nest and three eggs was collected north of Inch'on on June 1, 1947, and a nest just ready for eggs was found northwest of Seoul on May 31, 1948.

Corvus corone orientalis Eversmann. EASTERN CARRION CROW.—Crows were seen nearly everywhere in Korea during the entire year. The two resident species are difficult to identify except upon close inspection. As they often feed and flock together during the winter, it is a problem to determine the approximate local population of either form, especially as a large number of migrants from the north mingle with the local birds during the entire winter. In the Seoul area the Carrion Crow is more common during summer, and the Jungle Crow more abundant during winter, but the latter birds scatter to the hills or move northward in early spring. In winter both species intermingle during the day and fight over the same garbage piles, but in late afternoon they separate, each species going to its own rookery. In general Carrion Crows roost in trees around a town or village and the Jungle Crows back in

the hills. This conclusion was reached after watching hundreds going to the different roosting places and was confirmed when continuous evening shooting at several rookeries in and around Seoul did not net a single Jungle Crow. On the other hand, only Jungle Crows were secured during two evening shoots at different rookeries back in the mountains. Similarly, the nesting habitat and summer range of the Carrion Crow are the open valleys and low foothills, while the Jungle Crow spends the summer back in the mountains.

In early March the large winter flocks begin to separate, and the mated pairs scatter out in the valleys to begin their housekeeping. The characteristic nesting site of the Carrion Crow is tall poplars along the stream beds and dikes of the low country. At least 15 or perhaps more occupied nests were examined during 1947 and 1948, only two of which were in pine trees. Both of these, however, were in small pines at the edge of a rice field. Although some pairs nest earlier, normally the eggs are laid and incubation starts about the first week in April. One set of four eggs was collected March 28, 1948; another set of four was collected April 13, 1947; and a set of seven eggs was taken April 14, 1948. Young birds several days out of the nest were shot on May 22, 1948.

Corvus leuillanti mandschuricus Buturlin. MANCHURIAN JUNGLE CROW.—Permanent resident. Contrary to the experience of Dr. Austin, I found this species very common around the trash piles in the outskirts of Seoul and along the Han River from November until the last of February or early in March. Upon the approach of spring the winter visitors migrate northward, and resident birds pair and move back to the wooded hills and mountains. The nesting habits of this species are quite different from those of the Carrion Crow. All nests observed were well back in the hills in pine or spruce trees. Their nests are larger and more bulky than those of the Carrion Crow and are always lined with a filthy mass of dirty hair and feathers. While the eggs of the two species are similar, those of the Jungle Crow average larger and much darker in color. Nesting records in the area east and northeast of Seoul are as follows: three fresh eggs, March 28; four eggs slightly incubated, April 1; five eggs nearly ready to hatch, April 18; two nests with young birds, April 18; four eggs nearly fresh, April 28; and young able to fly, May 19.

Corvus frugilegus pastinator Gould. EASTERN ROOK.—Very common spring and fall migrant, but a few may remain all winter. A female was shot about 15 miles northeast of Seoul January 4, 1948, and several were seen near the Kimp'o Airport in early February. During both the spring and fall migration, Rooks were often seen in huge flocks estimated at several hundred birds. On two or three occasions flocks were seen very high in the air, just milling around in wide circles and gradually drifting southward. Spring flocks were most common in mid March and early April, and the fall migration was first observed in October.

Corvus monedula dauuricus Pallas. DAURIAN JACKDAW.—Recorded by Austin as a common winter visitor, but my observations were limited to a few birds seen with flocks of Rooks on February 21, 1948, and a single male shot February 23, 1948, while he was feeding in a rice paddy with a flock of Magpies.

Pica pica japonica Temminck and Schlegel. KOREAN MAGPIE.—Abundant permanent resident. The magpie is the most prominent bird in Korea. Magpies are most common in the valleys and around the low hills, but they are also seen frequently in the higher mountains. Their large bulky nests remain in a tree year after year, even though they may not be used; consequently, they can be seen everywhere in the single poplars all over the low country. Normally the birds prefer to nest at some distance from human habitations, but where suitable trees are not available a nest is

occasionally built right in the dooryard of a Korean home. My first observation of the mating season was March 10, 1947, when a pair was seen carrying sticks for the repair of an old nest. Nest building or repairing may continue for a month or more before the eggs are laid in the latter part of March or early in April. Only a single brood is attempted unless the first nest is destroyed, but fresh eggs may be found as late as the second week of May. My nesting records are as follows: five fresh eggs, April 11; six eggs ready to hatch, April 14; six incubated eggs, April 27; five incubated eggs, May 11; and young birds just out of the nest, May 15.

Cyanopica cyanus koreensis Yamashina. KOREAN BLUE MAGPIE.—A rare summer resident in Kyonggi Do Province. These birds were never seen in flocks and my observations were limited to two pairs. In the Kings Tombs area northeast of Seoul, May 23, 1948, two birds were seen repeatedly carrying something to a nest about 40 feet up in the very top of a slim pine growing in an open valley. It was presumed that they were feeding young, but examination of the nest disclosed that it was not yet completed; the birds must have been carrying nest materials. Our disturbance caused them to desert the nest. My next experience with the Blue Magpie was on June 20, 1948, when a female was flushed from a nest containing seven slightly incubated eggs. The female, nest, and eggs were collected. This nest was in a narrow valley in the mountains north of Masuk, about 28 miles northwest of Seoul. It was about 21 feet from the ground, saddled in the fork of a horizontal branch of a small chestnut in a thin fringe of trees near a village. The outer framework consisted of twigs and pieces of grass surrounding an inner, compactly built nest of moss and hair lined with hair, wool, and a few feathers. The general appearance of this nest and its location were similar to that of the American Blue Jay (*Cyanocitta*), and the eggs can not with certainty be distinguished from those of that species.

Garrulus glandarius brandtii Eversmann. BRANDT'S JAY.—This jay was seen on only two occasions. A small group of three or four birds was seen in the hills west of Anyang on March 15, 1947, and a male was shot on the upper slopes of Chonmasan, northeast of Seoul, on April 6, 1948.

Suthora webbiana fulvicauda Campbell. KOREAN CROW TIT.—Rather common winter resident and may breed, as birds were seen occasionally in May and June. Crow Tits are very common from December until early in March and are normally seen in small flocks on or near the ground in patches of underbrush. Individual birds are constantly on the move and the flocks never remain in the same place for more than a few minutes.

Parus major wladivostokensis Kleinschmidt. GREAT TIT.—Rather common permanent resident and seen during all months of the year. During winter they were most often in small flocks trooping through the open pine woods, but in spring and summer only single birds or pairs were seen. A nest with three fresh eggs was collected May 26, 1948, about 20 miles east of Seoul. It was about five feet up in a natural cavity in a small pine. Another nest with young was found in a similar location June 4, 1948.

Parus varius varius Temminck and Schlegel. VARIED TIT.—Rare summer resident and probably present during the entire year. A nest and four fresh eggs were collected in the mountains west of Uijongbu, on June 6, 1948. They were in an old woodpecker hole about seven feet from the ground and were discovered when a bird flushed out of the hole.

Aegithalos caudatus magnus (Clark). KOREAN LONG-TAILED TIT.—Rare summer resident but common during the winter. A nest with an incomplete set of four fresh

eggs was collected about 20 miles east of Seoul, on June 3, 1948. This nest was about six feet from the ground in a small tree in a rather thick clump of small pines. It was saddled against the upright main trunk in a crotch between two small upright sprouts. The bird flushed right in front of my face, but the nest looked so much like the moss covered bark of the tree that it was not easily seen.

Troglodytes troglodytes peninsulæ (Clark). KOREAN WREN.—An uncommon winter visitor. On several occasions during the winter months a solitary wren was seen to dart out from under an overhanging stream bank or grass covered ditch, fly along the ground for a few yards, and then abruptly dive under cover beneath a bunch of grass or overhanging roots. Never was more than a single bird seen at any one time.

Turdus naumanni naumanni Temminck. DUSKY THRUSH.—Common winter resident and very common during both spring and fall migrations. During migration many flocks were seen that numbered 50 or more, but from November until about the first week of April the birds were found in small groups of from three to eight, feeding in open woods.

Phoenicurus auroreus auroreus (Pallas). DAURIAN REDSTART.—Rather common winter resident. Not observed later than the last week of March. This species was usually seen in a thicket or bushes adjacent to an area of larger timber. It is always on the move and is difficult to observe.

Muscicapula narcissina zanthopygia (Hay). NARCISSUS FLYCATCHER.—Not uncommon summer resident. Birds were not seen until about the middle of May when they were found nesting. A nest with four fresh eggs was found in a hole in a small rocky ledge on May 15, 1948. Another nest with young a few days old was found May 23, 1948, when a bird flushed from a small hole in a partly dead pine. The entrance hole to this nest was about five feet from the ground, and the nest was 10 inches below the entrance. On May 28, 1948, birds were seen carrying food in and coming out of a cavity six feet up in a chestnut.

Motacilla alba leucopsis Gould. WHITE-FACED WAGTAIL.—Common summer resident; a few were seen as late as early December. This species is one of the earliest arrivals in the spring. Birds were first seen in early March while the fields were still covered with ice; by the last of March they were comparatively common along the roadsides. Many of those seen in early spring move northward, but nesting pairs can be found nearly all summer. From the number of young birds that were seen in May and June, it may be concluded that more than one brood is raised; but occupied nests were only found during a period of about three weeks. A nest with five nearly fresh eggs was taken from a hole in an old stone building May 16, 1948, and another with four eggs was collected from under a small bridge June 3, 1948. A nest with six incubated eggs was found in a slight depression beneath a small pile of flat stones in a stream bed June 6, 1948. The location of this nest was completely unexpected, and it never would have been found if the bird had not flushed from under my feet.

Lanius cristatus lucionensis Linnaeus. RED-TAILED SHRIKE.—Rather common summer resident. It arrives in the Seoul area during the first week of May and mating pairs are seen shortly thereafter. This shrike is most often found around small patches of pines on the low hills, preferably adjacent to open rice fields, where it is seen perched on a prominent lookout watching for food. During the mating period and when the young are in the nest, both birds are noisy and seldom hesitate to pick a fight with any feathered intruder that comes near. Even at the approach of a man they do a great deal of scolding. The nest is usually situated from 15 to

30 feet from the ground and well toward the top of a small pine. A typical nest with six eggs collected May 30, 1947, was in the top of a small pine on the brow of a hill. It was comparatively large for the size of the bird, quite bulky, and composed of grass, bits of moss, pieces of cotton, and bits of paper. These were all woven together and then well lined with rootlets and a few hairs. Eggs or nests with young were observed several times between May 25 and June 16, 1948.

Spodiopsar cineracea (Temminck). GREY STARLING.—A common spring and fall migrant; a few pairs remain to breed, at least in the Seoul area. Three or four pairs of Grey Starlings were first seen when they were examining some natural cavities in two large trees in the Change Duc Palace grounds on April 14, 1948. These birds were seen several different times until the end of May, and I am sure that they raised young there. At the time I thought that central Korea was well within their normal breeding range and consequently did not take time to investigate their nesting holes.

Passer montanus dybowskii Domaniewski. USSURIAN TREE SPARROW.—Abundant permanent resident. Along with the magpies, herons, crows and swallows, the Tree Sparrows constitute the common bird population of Korea. During late summer and early fall they congregate in large flocks around the rice fields and do considerable damage to the ripening grain. As a protective measure to keep them away, the Koreans frequently erect many poles around the field, to which are attached long paper streamers, pieces of cloth or strings of tin cans so that they will move in the breeze. Sometimes small ropes with streamers attached are tied clothesline fashion from one pole to another; a long cord extends from a center pole to a corner of the field. Here a watcher sits motionless for the entire day, only pulling the cord to rattle the cans and wave the streamers when a flock of sparrows appears.

Nesting begins early in April and continues until mid June; two or more broods are raised each season. All of the nests I saw were either in the cornice of a building or under the edge of a roof. They were always a bulky mass of grass, bits of paper, and pieces of trash with an inner lining of feathers. The number of eggs in a set varies from three to seven, but usually there are four or five.

Euphonia migratoria migratoria Hartert. CHINESE GROSBEAK.—Not uncommon summer resident. It arrives from the south in early May and the latest birds were seen July 26, 1947. A mating pair was seen May 5, 1947, about 15 miles north of Inch'on, and several other pairs were seen north of Seoul on May 12. A nest just ready for eggs was found May 25, 1947, about five miles east of Inch'on, and a set of three eggs was collected 12 miles northwest of Seoul on May 31, 1948. Both of these nests were in the very top of spruce trees about 35 feet high.

Chloris sinica ussuriensis Hartert. USSURIAN GREEN FINCH.—Very common winter resident, but none were seen after the first week of April. During late winter and early spring, numerous small flocks were seen in low shrubbery or in patches of brush in every sheltered valley.

Fringilla montifringilla Linnaeus. BRAMBLING.—Rather common spring and fall migrant; a few remain all winter. The earliest fall record was on September 14, 1948, when birds were found in the Seoul market.

Emberiza rutila Pallas. CHESTNUT BUNTING.—Rare migrant. This species was seen only in small flocks, or single birds were seen in company with other species of buntings.

Emberiza cioides castaneiceps Moore. MEADOW BUNTING.—Very common winter resident and a rare summer resident; birds were seen in every month of the year. During winter they were found commonly in open country or seen perched in low

trees along the roadside. In late March wintering flocks move out and the few pairs which remain to nest are inconspicuous on the brushy hillsides. Dr. Austin mentions the arrival of *castaneiceps* in April. However, three birds which I shot in January have been identified by Dr. Friedmann as this race, so apparently both forms occur all winter. On May 20, 1948, a Meadow Bunting was flushed from a nest containing one egg. It was on the ground in rather thick grass near the edge of a thicket. Both parents were near by and appeared to be quite concerned. However, when I returned to the nest on the 26th it was deserted and the birds could not be found. The egg is now in my collection.

Emberiza fucata fucata Pallas. GREY-HEADED BUNTING.—Not uncommon summer resident. These buntings arrived from the south in mid April and were seen commonly for two or three weeks. Then they disappeared, and it was concluded they were only migrants until a pair was found on May 25, 1948. While driving from Sosa to Shinsen two birds were seen near the road where it crosses the high ridge between the two villages. Subsequent search over the bare hills east of Inch'on and on the slopes of Pup-Yong, west of Kimpo, revealed the summer habitat of this sparrow to be in the grass and brushy ravines around the summit of these treeless hills. Several breeding pairs were found and young birds were later seen, but no nests were found. There were two or three pairs around the top of every hill, and the males were in full song until the second week of July.

Emberiza rustica rustica Pallas. RUSTIC BUNTING.—Common winter visitor from the last of November until about the first week of April. It was seen in small flocks or mixed with small flocks of Meadow Buntings.

Headquarters, 8th U. S. Army, Yokohama, Japan, March 15, 1950.