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By Ernst Mayr and A. L. Rand

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Article I.—RESULTS OF THE ARCHBOLD EXPEDITIONS. NO. 14

THE BIRDS OF THE 1933–1934 PAPUAN EXPEDITION

BY ERNST MAYR AND A. L. RAND

PLATE I; FIGURES 1 TO 3

The basis of the present report is the bird collection made by the American Museum's 1933–1934 Papuan Expedition in southeast and south New Guinea, sponsored and led by Mr. Richard Archbold. At the same time, a collection made by Mr. J. T. Zimmer in southeast New Guinea in 1920–1921, a collection made by the Whitney South Sea Expedition (Mr. Hannibal Hamlin) in 1928–1929 in southeast New Guinea, and a few specimens collected by Mr. R. H. Beck in extreme eastern New Guinea in 1928 were also worked out and the results are included.

Foremost among the men who explored the avifauna of southeast New Guinea are Signor D'Albertis whose results are incorporated in Salvadori's 'Ornit. del Pap. Mol.,' Sir William McGregor who directed the work of Guilianetti, Kowald, Goodwin, and English, whose material was reported on by De Vis of the Queensland Museum, and Meek, whose collections went to the Tring Museum to be examined by Rothschild and Hartert.

Many other early collections were made by such men as Anthony, Barton, Broadbent, Eichhorn brothers, Finsch, Forbes, Goldie, Hunstein, Moncton, Morton, Weiske, and more recently by Stalker, Goodfellow, and Crandall.

Mr. Zimmer's collecting localities, 1920–1921, are mostly near the coast and are listed below in alphabetical order, with an indication of the position of the less-known stations (C. D. = Central Division, E. D. = Eastern Division).

Aroa R.	C. D.
Baubauguina, Cloudy Bay	C. D.
Bioto Creek, Hall Sound	C. D.
Cloudy Bay	C. D.
Doini Is.	E. D.
Duro, headwaters St. Joseph R.	C. D.
Ethel R., Hall Sound	C. D.
Grange Is. (near Samarai)	C. D.
Hisiu, Redscar Bay	C. D.
Inawaia, Mekeo, near Hall Sound	C. D.
Inawabui, " " " "	C. D.
Kanosia, Galley Reach	C. D.
Kikori, Delta D.	
Lolorua, Galley Reach	C. D.
Oibada R., Orangerie Bay	E. D.
Orangerie Bay	E. D.
Oriropetana, Angabunga R.	C. D.
Port Moresby	C. D.
Rorona, Galley Reach	C. D.
Veimauri, " "	C. D.

The localities at which Mr. Hamlin collected, 1928–1929, are listed below. Mr. Hamlin made one trip inland from Yule Island and these localities are so indicated; most of them may be found on the map published in 1935, Bull. Amer. Mus., LXVIII, Art. 8; the other localities are near the coast.

Samarai[1] (= Dinner Island)	E. D.
Belesana, six miles across the China Straits from Samarai	E. D.
Sariba Island, near Samarai	E. D.
Milne Bay	E. D.
Annie Inlet, on north side of Cape East peninsula, Milne Bay	E. D.
Rigo	C. D.
Kapa Kapa, very near Rigo	C. D.
Hall Sound	C. D.
Yule Island	C. D.
Deva Deva, inland from Yule Is.	
Mafulu, " " " "	
Iola, near Deva Deva	
Fane, near Mafulu	
Vanumai, about ten miles inland from Yule Island	
Delena, opposite Yule Island	

Mr. R. H. Beck collected a few specimens at Samarai and on the coast opposite, February 15–27, 1928.

The itinerary of the 1933–1934 Expedition has already been published with a map of the collecting area in southeast New Guinea (1935, Bull.

[1] Some of the Samarai specimens were collected on the opposite mainland of New Guinea.

Amer. Mus.) and it is unnecessary to repeat them here. Collections were made chiefly at Rona, near Port Moresby, and on the trip from Yule Island to Mt. Albert Edward by way of Mafulu and Ononge.

South New Guinea is still imperfectly known; since D'Albertis collected on the Fly River sixty years ago, no collecting had been done in the British territory in south New Guinea until the 1933–1934 Expedition undertook this field work there. This itinerary has also been published (*loc. cit.*) and will not be repeated here. The most important collections were made at Daru Island, and at Wuroi and Dogwa, on the Oriomo River opposite.

A preliminary classification of the distributional limits of birds showing a restricted altitudinal range based on the present material has been proposed (1935, Bull. Amer. Mus. Nat. Hist., LXVIII, p. 542) and as altitudinal distribution and variation in New Guinea is to be the subject of a further paper, it is not discussed here.

In this connection it should be noted that during Mr. Hamlin's short stay in the mountains he employed native collectors who evidently ranged far up and down the steep slopes of the rugged foothill country so that specimens of quite different altitudinal levels are recorded from the same camp. This has led us to question his altitude records except where they are supported by the findings of the 1933–1934 Expedition during its much longer stay in the mountain area.

From the collections from southeast New Guinea one new subspecies was described from Mr. Zimmer's collection, two new subspecies from Mr. Hamlin's collection, and nine new subspecies and one new species from the collections of the 1933–1934 Expedition, making twelve new subspecies and one new species; from the collections made in south New Guinea by the 1933–1934 Expedition fourteen new subspecies were described. This makes twenty-six new subspecies and one species in all from south and southeast New Guinea. Five species were recorded from New Guinea for the first time.[1]

The paper was prepared under the joint authorship of Ernst Mayr and A. L. Rand; the appended field notes are by A. L. Rand.

Casuarius casuarius sclateri Salvadori

Wuroi: 1 ♀ ad., 2 ♂ imm.; January 23–February 10.

The adult female has the colors of the soft parts much as in Salvadori's plate (Mem. P. Ac. Sc., Torino, (2) XXXIV, p. 179, Pl. 1, fig. 5) except that the orange-red is confined to the lower part of the hind neck,

[1] 1936, Ornith. Monatsber., XLIV, pp. 41–44.

extending down into the scantily feathered area just below it. This orange-red in this specimen is separated from the pale blue of the nape by the same dark blue, variegated with light blue which colors the sides of the neck.[1] The tip of the bill is whitish; the wattle is 120 mm. long measured from its posterior junction with the neck to the tip. The immature male taken on February 5 shows the whitish tip to the bill; the head and neck are still feathered but the skin is beginning to color, that back of the eye is tinged blue as it is below the gape and just above the very small wattle. The wattle is fleshy white, with a tongue of color running down the undivided section tinged bluish. The skin of the neck is fleshy white; a yellowish-white area nearly surrounds the eye.

The immature bird of January 23 is somewhat more advanced in the coloring of the soft parts; the fore neck is becoming bluish, with a whitish streak on each side of the throat; the mantle is tinged purplish, apparently going toward pink, and a purplish area on the lower side of the neck indicates the future orange-red color.

This was a fairly common bird about Wuroi in both the savanna and in the numerous small areas and fringes of rain forest. Cassowary droppings were often seen, sometimes containing the fruit of pandanus as well as other large seeded fruits. Once I found what evidently had been a sleeping place of a cassowary. It was in a densely grassed savanna, the grass had been pressed down by the body of the bird and there were numbers of droppings, though apparently the place had been used only the one night. About ten cassowaries were seen by our party at this camp. Occasionally in the afternoon while working in camp, one or a pair of cassowaries called a deep "chug–chug–chug– – – –" in the forest across the river.

Casuarius bennetti picticollis P. L Sclater

Mafulu: 1 ad. sex (?); November 17.—Murray Pass: 1 ♀ imm.; July 22.

Found at 1300 and 2800 meters.

In the bird from Mafulu which is obviously fully adult, with silky black plumage, the color of the soft spots, as recorded in a pencil sketch at the time, correspond fairly well with those of a young stage of *C. b. picticollis* (as given by plate XVII in P. Z. S., 1875, p. 84; also see plate XXXVI, Trans. Zool. Soc. London, XV) except that I did not record the nape as light-colored. The description of the soft parts is as follows:

[1] For colors of the soft parts of Merauke specimens see 1935, Mitt. Zool. Mus. Berlin, XX, pp. 450, 451.

lower hind neck bright blue, changing to dark blue on upper hind neck; upper sides of neck dark blue with a large reddish-pink area on lower sides of neck. On the fore neck there was a small reddish-pink area in the center, with a large area above that to base of lower mandible, and spreading out on the sides dark blue mixed with reddish pink. Below the central reddish patch the neck was blue. These notes were made about two hours after death and I noted at the time that there had been a certain change in the intensity of the colors after the bird's death.

This coloring of an adult most closely approaches that of *picticollis*, retaining some of the reddish color on the upper fore neck, characteristic of a younger bird. The casque is rather high in this specimen, again like *picticollis* rather than *loriae*.

This gives a record of *picticollis* in the area from which *loriae* was described (Aroa River). In view of the pictures and specimens of cassowaries that Keysser, in the Huon Peninsula, has gathered and are now in Tring, and the great variation in the colors of the soft parts which is not clearly understood, it is inadvisable to recognize two species from the same locality, these species being based largely on the colors of the soft parts. *C. loriae* should be considered as a synonym of *picticollis*.

Cassowary signs were very scarce about Mafulu, possibly due to the intensive hunting of the mission shooting-boys. In Murray Pass, droppings of this bird were fairly common, but were scarce on Mt. Tafa where no birds were seen.

In the droppings found at Murray Pass were seeds of No. 4741 and 4712—the seed of the latter being about 2″ × 1″; it was surprising to find such large fruit so high.

Podiceps ruficollis novaehollandiae Stephens

Hisiu: 2 ♂; September 2 (Zimmer).

Wing: 102, 104.

Both the specimens are in non-breeding dress. The amount of white in the secondaries distinguishes this form from *tricolor*.

This form has been considered only a migrant from Australia, but Bangs and Peters (1926, Bull. Mus. Comp. Zoöl., LXVII, p. 424) record three from south New Guinea in January, when the species is breeding in Australia.

Pelecanus conspicillatus (Temminck)

No specimens were secured. On January 6, 1934, at the mouth of the Kikori River, I saw four resting on a mud bar and later saw three

others flying across the water toward them. On March 8 a single bird was seen flying over the island of Daru.

Phalacrocorax sulcirostris (Brandt)

Mainland opposite Daru: 1 ♀; March 10.

Wing: 240.

This bird was molting out of a faded, brownish, immature plumage.

This was our only record of this species. It was shot on the swampy lagoon just back of the beach, near Daru.

Phalacrocorax m. melanoleucus (Vieillot)

No specimens of the pied cormorant were secured but one was shot and lost on Bioto Creek on March 31, 1933.

On the Oriomo River, January 13, 1934, we found them from about twenty miles from the mouth to about thirty-five miles up the river. They were fairly common and kept flying on ahead of the powered cutter until there were five or six of them, perching on dead limbs and exposed stubs, always flying before we were within range. Afraid to pass the boat, they at last summoned courage to rise above the trees and, swinging over the forest, regained the river back of us.

Anhinga novaehollandiae (Gould)

No specimens secured, but on April 22, 1933, at Bioto, I saw four circling about high over Bioto Creek and a nearby swamp.

Notophoyx novaehollandiae Latham

Daru: 1 ♂ ad.; March 5.

Wing: ♂ 332.

Known to occur on the islands about New Guinea but apparently not definitely recorded from New Guinea.[1]

This specimen showed no wing molt, but its gonads were not enlarged.

Butorides striatus moluccarum Hartert

Delena: 1 ♂ ad.; June 16 (Hamlin).—Daru: 2 ♀ ad.; January 10, March 9.

Wing: ♀ ad. 174, 177.

In size and color these specimens are very similar to the Buru birds.

The male was molting, the January female was in fresh plumage with its ovary somewhat enlarged; the March female had an enlarged ovary.

The green heron was not common at Daru where it was found along

[1] Since recorded from South New Guinea by Stresemann and Paludan, 1935, Mitt. Zool. Mus. Berlin, XX, p. 454.

the seaward edge of the mangroves. One other was seen elsewhere. It was some distance up the Oriomo River, standing on a floating log in midstream until our approach startled it into flight toward the nearest shelter.

The condition of the gonads of the female taken in January and of that in March indicates breeding in those months, while Hamlin has indicated that the June male had testes enlarged, suggesting that these birds may not have a definite breeding season.

One stomach from Daru contained a crayfish.

Casmerodius albus modestus (Gray)

Delena: 1 ♀; June 19 (Hamlin).

This specimen was molting.

Egretta garzetta nigripes (Temminck)

Ethel River: 1 ♂; June 6 (Zimmer).—Delena: 1 ♂, 1 ♀; June 19, 21 (Hamlin).

Wing: ♂ 268, 268; ♀ 251.

Though all are molting, they still retain the worn ornamental plumes of the back.

Demigretta sacra (Gmelin)

Daru: 1 ♂; March 9.

Wing: 261.

This specimen was in the white phase. It was molting and showed no enlargement of the testes.

The reef heron was not common on Daru, where only an occasional solitary bird in the white or in the slaty garb was seen along the muddy shore.

Zonerodius heliosylus (Lesson)

Wuroi: 1 ♂; January 25.—Vanumai: 1 ♀; June 6 (Hamlin).

Wing: ♂ 318; ♀ 312.

Both specimens are molting.

Brass flushed the Wuroi specimen from the edge of the Oriomo River. It flew into a tree extending out over the water where it was shot. Apparently it was feeding on the tree-shaded muddy beach left by the falling tide. In its stomach were the remains of crayfish and a beetle.

Dupetor flavicollis gouldi (Bonaparte)

Dogwa: 1 ♂; February 18.—Wuroi: 1 ♂; January 22.—Kubuna: 1 ♂; December 5.—Hisiu: 1 ♂ imm.; September 1 (Zimmer).—Delena: 1 ♀; June 19 (Hamlin).—Doini Island: 1 ♂; December 3 (Zimmer).

Found up to 100 meters.

Wing: ♂ 193, 203, 212 (imm. ♂ 218); ♀ 222.

The darkest bird, a male, is slaty black without yellow markings and with only a few dark brown feathers in center of throat and abdomen and in the wing-coverts. The immature bird is rather dark-colored, with buffy edges to the feathers.

The June specimen was molting. The only indication of breeding, besides the full-grown immature September bird, was the February male with testes somewhat enlarged.

The heron from Dogwa flushed from a little sedge-grown pond in the savanna, flying to a perch in a clump of nearby trees; in its stomach were six fish from one to four inches long, of a species very common in the little grass-choked waterways here, and one medium-sized frog. At Wuroi, Brass found one in a little pond overgrown with tall sedge. Disturbed, it flew to a perch in a low savanna tree and later its stomach was found to contain insects. The Kubuna specimen was found in a heavily wooded little island in the river. It flushed from the scantily fern-covered forest floor and in its stomach were found four lizards about seven inches long. These were the only birds we saw. Zimmer records the stomach contents of one specimen as fish.

Threskiornis moluccus moluccus (Cuvier)

Delena: 4 ♂ imm.; June 16, 21 (Hamlin).

Wing: 363, 366, 367, 374.

All these birds have the head and neck feathered with worn, streaked feathers and retain the immature type of tertials.

In size they are somewhat intermediate between *moluccus* and *strictipennis*.

On March 31, 1933, I saw one of these ibis near the mouth of the Ethel River; on January 13, 1934, going up the Oriomo River, we were about nine miles from its mouth, at dusk. Here we saw a flight of ibis. In the half hour before dark we saw about 150 birds, in flocks of 10 to 20. The flocks, in V formation, were about 100 yards up and with direct flight were passing from east to west as though on migration.

Anseranas semipalmata (Latham)

Mainland opposite Daru: 1 ♂ sub-ad.; March 10.

Wing: 420.

This specimen is molting out of a very worn, stained juvenile plumage.

March 10 was the only day we visited the haunts of this bird. A flock of from twenty-five to thirty was resting in the watery swamp near the coast, and during the afternoon, as we hunted other birds, they flew low, up and down the narrow swamp, sometimes perching in trees until disturbed by a gunshot.

Dendrocygna arcuata (Horsfield)

Mainland opposite Daru: 1 ♀ ad.; March 10.

Wing: 212.

This specimen was in breeding condition. On our visit to the swamp opposite Daru we found this duck common, though less so than *D. guttata*. This was the only occasion on which we encountered this bird.

Dendrocygna guttata Schlegel

Wuroi: 1 ♀ ad.; January 25.

Wing: 219.

This specimen showed no wing molt, but there was a slight molt in progress on the breast.

A few birds were seen in pairs along the Oriomo River near Wuroi. Brass shot this specimen, which was one of a pair, and the other flew up and perched in the top of a tree growing on the river bank. *D. guttata* was very common in the swamp on the mainland opposite Daru, where it was the commonest duck.

Anas querquedula Linnaeus

Mainland opposite Daru: 1 ♂; March 10.

Wing: 188.

This bird is molting into full plumage; another taken the same day, a very fat male, not saved, was in nearly full dress.

The only time this Palaearctic migrant was seen was the visit to the swamp opposite Daru where two dozen birds were observed. Disturbed by the gunshots, they were flying swiftly, and usually singly or in two's or three's, up and down the narrow swamp.

Salvadorina waigiuensis Rothschild and Hartert

Mt. Albert Edward: 3 ♂ ad., 4 ♀ ad.; June 16–July 12.—Murray Pass: 1 ♀ ad.; August 6.—Mt. Tafa, west slope: 1 ♀ ad., 1 ♂ imm., 1 ♀ imm.; August 27.

Common about 3700 meters, one seen at 2800 meters, three seen at 2400 meters.

Wing: ♂ ad. 191, 195, 207; ♀ ad. 179, 185, 187, 190, 196; Tail: ♂ ad. 99, 106, .., 105; ♀ ad. 89, 89, .., .., . . .

Color of soft parts: ♂ ad. iris brown, bill orange-yellow or yellow, upper half heavily tinged or marked with blackish on the upper half, feet yellow or brownish yellow, more or less marked with dusky, especially behind; webs yellow and blackish; ♀ ad. iris brown, bill yellow, upper half dusky, feet yellow in front, dusky behind, webs dusky; ♀ imm., one-third grown, iris brown, bill dark gray, shading to olive on the sides, nail light gray, mandible light flesh, feet pinkish gray in front with a dusky streak in center, blackish behind.

The young female, about one-third grown, has the upper parts still largely clothed in down, though on the under parts of the body this has been replaced largely by the feathers which are growing in. The tail is 60 mm. long. The remains of the down plumage corresponds in part to the description of De Vis (1897, Ibis, p. 392) for the downy young, but the outer part of the anterior edge of the wing as well as its under surface is white; there is a small white area on each side of the back just behind the wings, and another pair on each side of the rump; the dark stripe extending from the back of the eye but not meeting the dark of the occiput is dark brown not black, and below it there is a dark brown patch in the auricular region. The under parts are white; thighs brown on the outer side, white on the inner.

On the half-grown male the down has been largely lost except on the throat and back; the tail is 68 mm. long. The first-year plumage showing appears similar to that of the adult male but the tail-feathers are distinctly barred and there are fewer spots on the abdomen; the feathers of the cheeks have more conspicuous light edges and light central subterminal marks, giving a spotted appearance to the cheeks. This spotting with white also shows on a female, No. 419281, on the cheeks and lower side of neck. This bird is apparently molting out of the first-year plumage into the darker, typically adult plumage.

The adult males in our series show no barring on the rectrices or only a tendency toward it, while the females, with complete tails, have at least the central rectrices barred, and in some the barring on all the tail-feathers is pronounced. This difference between the sexes was first pointed out by De Vis (1897, Ibis, p. 392). The immature male also has barred tail-feathers.

The amount of pinkish color on the under parts shows considerable individual variation. In one female it is present over practically the whole under parts, being most intensely colored on the fore breast.

Another female has the pinkish tinge present only on the fore breast. The males show the same variation of the pinkish tinge though to a lesser extent, and it is present in the first-year plumage. This color looks like a staining from some substance in the water, but this is not so, as proved by its presence on growing feathers just breaking from their sheaths.

All the specimens except the August male from Murray Pass showed some signs of molt. None was in breeding condition but, on Mt. Tafa, eggs were evidently laid about June, judging by the young collected there on August 27.

Salvadorina has been recorded as a torrent duck, or a bird of the streams, but in the country we visited we found its favorite habitat to be the little alpine lakes on top of the Wharton Range. We saw about twenty of these ducks; only one was on a stream, and that was in a quiet pool, the Ero Creek in Murray Pass. C. J. Adamson, who has prospected for gold on the slopes of Mt. Chapman, said that there he found these ducks not uncommon in the quiet pools of the mountain streams of the high country, at about 2500 meters. No other species of duck was found at these altitudes. Though the lakes in the alpine grassland appeared to be its optimum habitat, I also found a female with two partly grown young on the little pond on Mt. Tafa. This pond had a narrow fringe of grasses and other herbaceous plants about it, but was hemmed in with forest. No stream flowed into this pond and only the merest trickle flowed from it through the forest. Apparently the young had been raised not far from the pond. The specimens recorded from the Upper Aroa River at 4000 ft. (1907, Nov. Zool., XIV, p. 452) indicate that this duck sometimes ranges down to lower altitudes.

Salvadorina was found singly or in pairs; on two occasions when I collected both of a couple they proved to be male and female, showing no enlargement of their gonads. Usually undisturbed at these altitudes, much of their time was spent sitting on the shores of the lakes, preening their feathersor sleeping. On June 16, I discovered a pairof ducks sleeping on a rock projecting up out of the lake. At my approach they walked down to the water and swam away. I hid in the grass near the lake shore to watch them and this evidently aroused their curiosity, for in a very short time they came swimming toward me, tacking back and forth, until they were close enough for me to collect. On July 7, on the same lake, I surprised one under a small bank close to me. It flushed, not with an upward spring like a member of the genus *Anas*, but with a little run over the surface and then rising slowly. When we were climbing Mt. Albert Edward before dawn on July 12, to see the sunrise from

the summit, we passed the highest lake on the south slopes in the darkness. One of these ducks jumped into the water with a splash from its resting place on the bank where it had apparently been sleeping. It swam a short distance, then flushed slowly and flew out into the middle of the lake. Later in the day, from the summit of Mt. Albert Edward, I saw a pair of these birds swimming about on one of the highest lakes to the north (alt. 3850 meters). Sheltered from the ducks' view by a low ridge, I approached the lake to within one hundred and fifty yards. The two ducks were sitting on the lake shore about a foot above the water, but I did not see them until one, then the other, jumped into the water from their resting place. I approached them slowly, taking advantage of the scanty cover. The birds paid little attention to me, swimming about along the shore and dabbling their bills in the water as though feeding. One climbed out on the bank and stood there preening its feathers. The other was about twenty yards off shore and started to dive as though feeding. I later estimated the water to be more than six feet deep at this point, as I could not see bottom at that depth. The *Salvadorina* dived with a forward spring, throwing up water with its feet. The other bird soon joined it and both swam away around a point. I reached this point of land and found the ducks a hundred yards beyond. Hidden behind a tussock of grass I waved a handkerchief at arms length above my hiding place, a method formerly employed on the North American coast for decoying water fowl within gun range. Immediately they saw my lure the two *Salvadorina* came swimming up to within twenty-five yards of me. I shot both of them, but one, crippled, dived and swam some distance under water before it came to the surface and was secured.

The bird collected on Ero Creek had been sitting on the bank of the stream on a flattened bunch of dead grass where there were many old duck feathers and droppings, as though it was often used as a perch. Though I appeared within 30 yards of this bird it did not fly but jumped into the water to swim away.

Most of the stomachs examined contained little but quartz sand, but one contained, in addition, a few small insects and a little green vegetable matter.

Aviceda subcristata megala Stresemann

Dogwa: 1 ♂ ad.; February 19.—Kubuna: 1 ♂ imm., 2 ♀ ad.; December 2–11.—Hisiu: 1 ♂ ad.; September 5 (Zimmer).

Found up to 100 meters.

Wing: ♂ ad. 299; ♀ ad. 319, 332.

A February male, a December male, and a December female were molting. The molting female was laying.

At Kubuna, during December, one or two of these birds were occasionally seen circling over the gardens or second growth or perched on the top of a tree. On January 13th, while going up the Oriomo River, I shot one of two from a dead stub on the river (not saved). While at Dogwa the only two recorded were two collected (one not saved).

Of six stomachs examined all contained large insects, including two large hairless green caterpillars and a locust. Zimmer records the stomach of one as containing one locust.

Henicopernis longicauda longicauda (Garnot)

Mafulu: 1 ♂ ad.; October 10.

Wing: ♂ 423.

At Mafulu, the only locality at which we recorded this hawk, it was not uncommon, but was always seen soaring about singly over the forest.

Haliastur indus girrenera (Vieillot)

Mafulu: 1 ♂ ad.; October 1.—Baroka: 1 ♂ ad., 1 ♀ ad.; April 6. Also seen at Dogwa, Oriomo, and Kikori Rivers, and at Bella Vista, 1450 meters.

Recorded from sea level to 1450 meters.

Wing: ♂ 360, 354; ♀ 352.

The April male was molting; none had enlarged gonads.

This kite was not common at Dogwa in the savanna; several were seen along the Oriomo River; on the Kikori River it was common, perched in the trees along the banks; one was seen along the trail at Madiu; at Mafulu it was occasionally seen, usually in pairs, though once four were seen soaring above over the edge of the forest and second growth; and a single example was seen over the open country about Bella Vista.

At Baroka an occasional pair were seen sailing along the edge of the swamp, and the couple collected there were together, apparently catching and eating on the wing a large wasp-like insect, with which their stomachs were filled. One other specimen contained one large caterpillar, one grasshopper, and other insect matter.

Haliastur sphenurus sphenurus (Vieillot)

Wuroi: 2 ♀ ad., 1 ♀ imm.; January 27–February 4.—Baroka: 1 ♀ ad.; April 12.

Found only near sea level.

Wing: ♀ ad. 437, 414; ♀ imm. 384.

One January female was molting its wings; none of the specimens had enlarged gonads.

The bird collected at Baroka was the only one seen then. The whistling hawk was not met with again until we moved into the savanna of the Oriomo River. At Wuroi it was only fairly common in the savannas adjoining the rain forest, but going toward Dogwa, six miles away in the more open savanna, it soon became very common. From our camp at Dogwa several could be seen sailing over the country, kite (*Milvus*) fashion, almost any time during the day, and sometimes 20 or 30 were in sight at one time.

Their chief food appeared to be the wallabies (*Macropus agilis*) that abounded there. Dead wallabies were located almost daily, some quite fresh, but apparently the hawks waited until decomposition had softened the abdominal wall before they tore it open and commenced their feast. Sometimes the birds were feeding on putrid meat, riddled with maggots. Ten to twenty birds were often in the trees near such a kill, several being on the ground at once about the carcass.

This bird does not seem sufficiently strong to kill these large wallabies, and the fact that the hawks do not feed on fresh carcass but wait until it is putrid seems to indicate that they do not kill this prey. But on the other hand, Mr. Brass flushed a whistling hawk from a fresh wallaby carcass which had had its eye removed and the hawk's talons were bloody. When the wallaby was skinned, however, I could find no mark on it; it was in good flesh and the internal organs appeared perfectly healthy. If the hawks do not kill wallabies, how are there enough carcasses to supply them with food?

Accipiter melanochlamys schistacinus (Rothschild and Hartert)

Murray Pass: 1 ♀ ad.; July 30.

Secured at 2840 meters.

Wing: 247.

Color of soft parts: iris orange yellow, as is the fleshy ring about the eye, bill black, cere orange-yellow, gape and base of mandible yellow, changing to gray then black, feet yellow, nails black.

This bird was in beautiful fresh plumage; its ovary was slightly enlarged.

Comparing the following material of *schistacinus* (1 ♂ Mt. Goliath (type), 2 ♀ southeast New Guinea, 1 ♀ south of Geelvink Bay) with a

male of *melanochlamys* from Arfak, they differ from the latter chiefly in having the under parts and the neck band considerably lighter in color. The grayer color of the upper parts does not appear to be a very good character.

Accipiter poliocephalus Gray

Orangerie Bay: 1 ♂ ad.; December 15 (Zimmer).

Wing: ♂ 198.

Zimmer has noted the food of this specimen as insects.

Accipiter novaehollandiae leucosomus (Sharpe)

Dogwa: 1 ♀ ad.; February 12.—Yule Island: 1 ♂ ad.; June 22 (Hamlin).—Fane: 1 ♂ imm.; June 9 (Hamlin).—Veimauri: 1 ♂ ad., 1 ♀ ad.; August 13 (Zimmer).

Found up to 1400 meters.

Wing: ♂ ad. 224, 225; ♂ imm. 226; ♀ ad. 252, 262.

None of these specimens is molting.

Three adults are in what Hartert calls the *etorques* garb, i.e., brownish slate above, cinnamon brown below; one has some irregular barring in the under parts. The specimen from Yule Island is in the white phase.

Zimmer gives the food of each of his two specimens as a mouse. The Dogwa specimen was taken in open savanna country.

Accipiter cirrhocephalus papuanus (Rothschild and Hartert)

Baroka: 1 ♂ ad.; April 15.

Taken at 30 meters.

Wing: ♂ 184.

This bird is in fresh plumage with wings and tail completing molt.

This hawk was sitting in a tree in the savanna, and in its stomach were the remains of a small bird.

Accipiter fasciatus polycryptus Rothschild and Hartert

Dogwa: 2 ♂ ad., 1 ♂ sub-ad., 3 ♀ imm.; February 14–28.—Daru: 1 ♀ ad., 1 ♂ imm.; March 6–9.—Kubuna: 1 ♀ sub-ad.; December 16.—Bella Vista: 1 ♂ ad.; November 7.—Port Moresby: 2 ♂ ad.; September 19, October 17 (Zimmer).

Wing: ♂ ad. 227, 231, 232, 233; ♀ ad. 256.

The February and March adult are molting; the three adult males from southeast New Guinea are in worn plumage.

This bird was not uncommon at Dogwa and Daru. It was usually

found perched in an inconspicuous place in a savanna tree and was usually somewhat shy, flushing by dropping nearly to the ground, flying off low through the savanna with typical *Astur* flight, flapping and sailing and rising abruptly to another perch. The natives at Dogwa burned the accumulation of dead pandanus leaves about the trunks of these trees to secure the rats that inhabit them; and visiting one of these pandanus just as the natives were leaving, I found one of these hawks perched nearby, apparently watching for prey that might have been disturbed by the fire.

Harpyopsis novaeguineae Salvadori

Wuroi: ♀ ad.; February 5.—Dogwa: ♀ ad.; February 27.—Yule Island: ♀ ad.; June 13 (Hamlin).

Wing: 3 ♀ 440, 440, 473.

Color of soft parts: ♀ ad., iris light brown, skin about eye gray, bill brownish black, tip and mandible bluish white, feet yellow, nails black.

All these specimens show wing molt; none had enlarged gonads.

The specimen from Wuroi was shot in the upper part of a forest tree in the rain forest bordering a stream through the savanna. It was being scolded by several white cockatoos. In its stomach were parts of a small wallaby, apparently fresh. The Dogwa bird was brought in by a native.

Haliaeetus leucogaster (Gmelin)

No specimens were secured but the sea eagle was seen frequently at Dogwa in March. This was about twenty miles in a straight line from the sea. It was most often seen soaring over the savanna or sitting on some conspicuous perch, but was always very wary.

Circus species ?

Mt. Albert Edward: 1 ♂ ad.; June 22.

Wing: 441.

We are engaged in a revision of the *Circus* from this area and until it is completed we do not venture to state our opinion on the taxonomic status of this bird.

The marsh hawk was not uncommon over the open ground and about the little marshes and lakes near Mt. Albert Edward, and occasionally one was seen over the forest. Three were seen one day flying about low over the open country. They were always very wary. None was seen below 3600 meters.

The stomach of the specimen I collected contained four lizards about six inches long.

Falco peregrinus subspecies

No specimens secured, but on two occasions, February 17 and 26, a single bird was seen on the open savanna at Dogwa.

Ieracidea berigora novaeguineae Meyer

Dogwa: 1 ♂ ad., 2 ♀ ad.; February 14–25.—Kubuna: 1 ♀ ad.; December 13.—Madiu: 1 ♂ ad.; April 29.—Mafulu: 1 ♂ ad., 1 ♀ ad., 1 ♂ juv., 1 ♀ juv.; Oct. 18–Nov. 6.—Bella Vista: 1 ♀ ad.(?); November 6.—Mt. Tafa, west slope: 1 ♂ ad., 1 ♀ ad.; August 29–September 8.—Mt. Tafa, east slope: 1 ♂ ad., 1 ♀ ad.; May 22, 23.—Ononge: 1 ♂ ad.; May 8.

Collected from 100 to 2400 meters; also seen regularly in Murray Pass, altitude 2800 feet, July and August.

Color of soft parts: nestlings, iris dark brown, skin about eye blue-gray, bill blue-gray, tip and culmen dusky, feet blue-gray, nails gray-black.

Wing: ♂ (5) 324–340 (336); ♀ (6) 350–380 (367).

The two nestlings, brought by natives, were said to be from the same nest. One is considerably larger than the other; the younger shows that it must originally have been completely clad in white down, though many feathers are now appearing. The other is fairly well-feathered with a tail 80 mm. long. Both are coming into the very dark plumage, brownish black in color, very similar to one adult? (No. 2083), but the plumage is fresher and darker and the rufous edges to the feathers are brighter and more extensive.

Of the fifteen specimens six are in the light phase, two being almost white below, four are intermediate, and five are in the dark phase, two of the last being nestlings. Hartert (1930, Nov. Zool., XXXVII, p. 111) says that the characters of the subspecies *novaeguineae* are still doubtful, as the color is so variable, but it seems to be smaller; he then points out that while specimens from certain areas in New Guinea belong to the dark phase and those from others to the light phase, both phases have been taken in the same area. From a study of the present material, including dark and light specimens from between the Aroa and Angabunga Rivers, from which Hartert had only light birds, it seems that this color variation is a case of dimorphism. It correlates with neither altitude nor locality, for dark and light birds were taken at both high and low camps,

and of the three from south New Guinea, two are the lightest we have and the third is as dark as any. The two nestlings in dark plumage suggested it might be an age character and one of the very dark individuals may be immature, but one of the very dark individuals is molting into another plumage that is even darker than its present one, and there are several intermediate plumaged birds molting into a darker garb and light-colored birds molting into a light dress. The plumage of these birds fades greatly, possibly accounting for the darker new plumage. Of the six males, three belong to the light phase and two are intermediate and one (the nestling) is dark; of the nine females, three belong to the light phase, two are intermediate, and four are dark.

Beck collected four specimens in the Territory of New Guinea (Sevia, Hompua, and Keku); these include one light male and female, one dark male and one intermediate female. All are molting back into the same type of plumage.

This dimorphism seems to be correlated with neither age, sex, nor locality.

The three May specimens are in fresh plumage but show no enlargement of the gonads. All the other adults are in worn plumage or are molting. None of the specimens had enlarged gonads; nesting probably occurred at Mafulu about the end of August, judging by the two nestlings taken on November 6.

In south New Guinea but four of these hawks were seen, perched on the tops of trees or tall dead stubs above the savanna. A single bird was seen during our stay at Kubuna, perched on a dead stub in a garden clearing. The bird from Madiu was perched on a dead tree in the clearing.

In the mountains of New Guinea we found all hawks scarce, but this was the commonest species.

About Mafulu one or two were seen fairly often flying about over the grass and second-growth country; the bird from Bella Vista was on a dead tree on the forest edge. At our two Tafa camps these hawks were occasionally seen along the trail or garden clearings, usually perched on dead stubs; at Ononge one or two were seen flying about over the open country about the Mission station. In Murray Pass none was collected but one, or more often a pair, was seen in or flying over the grass and tree-fern country, often playing about high in the air, sometimes giving a call, a broken whistle. A large part of their food seems to be the little lizards that frequent the clearings and trails.

Of eleven stomachs examined, nine contained reptiles (7 small lizards and 3 snakes twelve to fifteen inches long) and 6 large insects.

The Fuyuge people call the hawk "Kalababa."

Uroaetus audax audax (Latham)

Dogwa: 1 ♀; February 25.

Wing, 577; tail, 346.

This bird apparently has not the fully adult plumage of this species, there being a few rufous-brown feathers in the under parts and rump, and many of the wing-coverts, scapulars, and tertials being more or less edged with rufous brown. It is molting. This is the first record of the species for New Guinea. The specimen compares fairly well with adults from New South Wales.

Dogwa was the only camp at which this magnificent eagle was recorded and they were observed almost daily, sometimes five or six, distinguishable by their different plumages.

Sometimes one or two birds would be seen perched for hours in the top of a tall tree on a ridge crest opposite and a mile or so away from camp; at other times the birds were seen sailing and soaring high above the savanna. Usually wary, they seldom allowed a close approach, the single bird secured being one of three in the top of a dead tree in rather dense savanna.

Megapodius reinwardt reinwardt Dumont

Daru: 1 ♂; March 7.—Hall Sound: 3 ♂, 1 ♀; June 11 (Hamlin).—Yule Island: 2 ♂; June 14, 16 (Hamlin).—Delena: 2 ♂; May 24, June 16 (Hamlin).—Baroka: 1 ♂, 1 ♀; April 17, 18.—Kubuna: 1 ♂; December 6.—Orangerie Bay: 1 ♂; December 10 (Zimmer).

Found up to 100 meters but apparently rare away from the vicinity of the coast.

Wing: ♂ 228, 228, 232, 232, 233, 235, 236, 241, 242; ♀ 243, 245.

All these birds have orange-yellow legs, the color being still evident in the dried skins.

Two specimens taken in June and two in December show no wing molt.

The single bird from Kubuna was the only one recorded there, though nearer the coast in the small areas of forest about the swamp at Baroka it was more common. The specimen from Daru was taken close to the sea in a rather broad belt of mangroves. When startled, this bird, which was walking about on a ridge of sand thrown up by the waves, flew up

into a tree and stayed there, looking about, until I shot it. One at Baroka behaved the same way.

On April 17 at Baroka I found a pair of these mound builders at a mound and shot the female. The next day the male was there alone and I collected it. Both birds had their gonads somewhat enlarged but not in breeding condition. However, they apparently had been working on the mound, for fresh material had been recently added.

Talegalla fuscirostris Salvadori

Wuroi: 1 ♂ ad., 1 ♂ half grown, 2 ♂ chicks, 1 ♀ half grown; January 23–February 6.—Yule Island: 1 ♂ ad.; June 12 (Hamlin).—Kubuna: 1 ♂ ad., 1 ♂ imm., 2 ♀ ad.; November 27–December 2.—Rorona, Galley Reach: 1 ♀ ad.; August 10 (Zimmer).

Found up to 100 meters.

Wing: ♂ ad. 292; ♀ ad. 274, 275, 277.

One of the adults has the bill recorded as yellow-brown, another as blackish brown, tip and mandible horn color, iris from dark brown to reddish brown, feet pale yellow. One of the chicks had the soft parts as follows: iris brown, bill blackish brown, mandible pinkish gray at base, feet pale salmon.

Only one adult, taken in August, was not molting. A January male had enlarged testes; three downy chicks were taken in February, and a half-grown bird was recorded in June.

We found this bird common at Kubuna, often flushing it in the forest and hearing its calls; large flat nests, probably of this species, were often seen. These nests differ from those of *Megapodius* in being broader and not as high. Though common in the continuous forest where but a single *Megapodius* was found, none was taken in the small areas of forest at Baroka where *Megapodius* was more common. At Wuroi it was fairly common in the areas of forest along the streams and its loud calls were often heard.

Aepypodius arfakianus (Salvadori)

Mafulu: 1 ♀ ad.; October 27.—Mt. Tafa, east slope: 1 ♀ imm.; May 22.

Specimens from 1250 and 2000 meters; also recorded at 2400 meters.

Wing: ♀ ad. 268.

Compared with three northwest New Guinea birds, with wing measurements as follows, ♂ 271, 272; ♀ 270, there are no apparent differences.

The immature female from Mt. Tafa has the neck fold and wattle only slightly developed; there are some small yellowish-white feathers on the neck, and some of the breast feathers are mixed with chestnut.

The October bird was laying.

The bush turkey was not common at Mafulu; on Mt. Tafa we found many places where these birds had been scratching over the surface soil in the forest, but found no nest mounds. Our highest record, at 2400 meters on Mt. Tafa, is based on a number of feathers which Mr. Archbold found scattered about a steel trap he had set in a forest trail. The bird had evidently been caught in the trap and escaped, but in its struggles had lost a number of feathers, including some of the unmistakable rufous upper tail-coverts.

Synoicus ypsilophorus plumbeus Salvadori

Yule Island: 1 ♂ imm., 2 ♀; June 7, 26 (Hamlin).—Baroka: 1 ♂; April 7.—Hisiu: 1 ♀; September 1 (Zimmer).—Rona: 1 ♂ imm.; March 13.—Orangerie Bay: 1 ♂ ad., 1 ♀ ad.; December 11 (Zimmer).

Found from sea level to 450 meters.

Wing: ♂ ad. 89, 90; ♀ ad. 88, 94, 97.

The Orangerie Bay bird is in the gray unbarred phase; the Baroka male is in the barred phase.

Both the immature males are molting from the juvenile into a barred type of plumage, one being considerably darker than the other. It seems improbable that the differences in the adult males of this race and of *dogwa* are due to age, but rather are the result of extreme variability, resulting in two extreme types of plumage. (An examination of more material in the Rothschild collection of both this and related races bears out this conclusion.)

Synoicus ypsilophorus mafulu Mayr and Rand

1935, American Museum Novitates, No. 814, p. 1 (Mafulu).

Mafulu: 3 ♂ ad., 4 ♀ ad.; October 19–November 4.—Bella Vista: 4 ♂ ad., 1 ♀ ad.; November 7–9.

Found from 1200 to 2000 meters.

Wing: ♂ ad. 90, 90, 91, 95, 95, 96, 97; ♀ ad. 89, 90, 91, 91.5, 93.

Four November males had enlarged testes.

Several birds seen about Ononge probably belonged to this race though none were collected in the Vanapa Valley. In the Auga Valley about Mafulu and Bella Vista it was common in the grassy areas, often flying to the shelter of the low dense bush when flushed, though the small

size of most of the grassy areas left them little else to do. Often found in pairs, coveys of three to six were common; they flush very close. An introduced goat weed from South America, *Ageretum conyzoides*, which flourished, forming clear stands on old garden land along the trail, was strangely enough the favorite food of these birds.

The population of quail in these grassy valleys are as completely isolated from each other and from the coastal birds as well as the high mountain forms as though they were on islands. Broad belts of forest completely separate these "islands" of grassy habitat.

Synoicus ypsilophorus dogwa Mayr and Rand

1935, American Museum Novitates, No. 814, p. 3 (Dogwa).

Dogwa: 6 ♂ ad., 4 ♀ ad.; February 15–25.—Wuroi: 1 ♂ ad., 1 ♀ ad.; January 20.

Wing: ♂ ad. 84, 85, 87, 88, 89, 91; ♀ ad. 83, 85, 86, 90, 91.

Five males are in the gray unbarred phase, two are in the brownish barred phase. As with *plumbeus* this appears not to be connected with age.

None of these birds was in breeding condition; they were all in complete fresh plumage or were just finishing their molt.

The gray quail was fairly common in the shorter grassed areas of the more open savanna, sometimes in coveys of as many as six.

Synoicus ypsilophorus monticola Mayr and Rand

1935, American Museum Novitates, No. 814, p. 2 (Mt. Albert Edward, southwest slope, alt. 3680 meters).

Mt. Albert Edward, southwest slope; 3 ♂ ad., 1 ♀ ad.; June 20–23.—Murray Pass: 1 ♂ ad., 1 ♀ ad.; August 7.

Wing: ♂ ad. 104, 109, 109; ♀ ad. 102, 103.

None of these birds was in breeding condition.

In the grass country near Mt. Albert Edward this quail was not uncommon. Singly or in pairs it frequented the dense grassy areas along the streams, flushed very close with a little cackling call, usually flew 40–100 meters before lighting, and was often very difficult to flush a second time.

It was much less common in Murray Pass, though the cover seemed suitable; only three were seen there.

An examination of their crops and stomachs showed they feed on small seeds of grass and other herbaceous plants, on quantities of green leaves of the latter, and the Murray Pass birds had also fed extensively

on the yellow seeds of a common sedge; grit, chiefly white quartz, was also taken.

Excalfactoria chinensis papuensis Mayr and Rand

1936, American Museum Novitates, No. 868, pp. 1–3.

Dogwa: 2 ♂ ad., 4 ♀ ad.; February 15–26.—Baroka: 1 ♀ juv.; April 11.—Mafulu: 2 ♂ ad., 1 ♀ juv., 2 ♀ ad., 1 ♀ imm.; November 2–16.

Found near sea level and at 1250 meters.

Wing: ♂ 67, 67, 70; ♀ (6) 67–71 (69).

Soft parts: immature female, iris grayish hazel, bill light brownish, base of mandible gray, feet whitish brown; adult male, iris deep red, bill black, base of mandible blue-gray, feet yellow, nails gray; adult female similar but iris reddish brown.

Only one bird, a February female, was renewing its wing. This quail probably breeds in February at Baroka, judging by the partly grown young collected there, but February females from Dogwa were not breeding; one November male had enlarged testes.

In the steep grass slopes at Mafulu this bird was not uncommon, singly or in two's and three's. Below our savanna camp at Dogwa was a gently grassy slope adjoining a small sedge-grown swamp. Horses had grazed over this slope so that it was close-cropped in places, with tussocks of tall rank grass left in places. Here these quail were common. They appeared to prefer the short grass and the edge of the heavy grass where they were found singly or occasionally in pairs. They lie close, flush singly with a little call, and fly but a short distance—20 to 40 yards—and then drop into cover. If in open or short cover, they usually fly to the nearest dense cover and drop into safety, sometimes no more than ten yards away. Once settled it is very difficult to flush them a second time. One that I started in the dense short grass almost under foot fluttered through the grass for a short distance so that I thought it a frog until it took wing. At Dogwa occasional birds were seen elsewhere, and the top of a nearby ridge, where areas of very short open grass and patches of dense grassy cover intermingled, was another favorite haunt of these birds. Seeds of grass and small herbaceous plants comprised part of its food; in one bird's gullet were also seeds of a big swamp sedge.

Turnix sylvatica horsbrughi Ingram

Dogwa: 1 ♂; February 25.

Wing, 72.

This form is quite distinct from *maculosa*. It may be distinguished from that form by the great reduction of the rufous color in the back, and the greater amount of black, lesser extent of the gray, in the upper parts, resulting in a darker back.

Grus rubicunda (Perry)

No specimens secured. On the afternoon of February 23rd at Dogwa three "native companions" flew over our camp in the open savanna, only 100 yards up, and with frequent changes of course as though looking for a resting place. The next day about noon three birds, possibly the same three, were seen flying about together but much higher. This appears to be near the southeastern limit of the bird's range in Papua. Mr. Beach of Daru, of whom I have spoken, told me that the "brolga" is common on the upper Fly River, about Everril Junction, and near the coast on the Morehead River to the west, but he had never found it in the Oriomo River country. There was a tame "brolga" about Daru that had been brought from the Morehead River.

This species was recorded from the Fly River by De Vis in 1890 (Ann. Rept. Brit. New Guinea, 1888–1889, p. 108).

Rallus pectoralis alberti (Rothschild and Hartert)

Mafulu: 1 ♀; November 5.

Found at 1250 meters.

Wing, 97.

This, our only record, was snared in a grassy field; the specimen was laying.

Rallicula forbesi forbesi Sharpe

Deva Deva: 2 ♀ ad.; May 25–June 5 (Hamlin).—Mafulu: 2 ♂ ad.; October 7, 18.—Mt. Tafa, west slope: 4 ♂ ad., 1 ♀ ad.; September 11–23.—Murray Pass: 7 ♂ ad., 1 ♂ imm., 2 ♀ ad., 1 ♀ imm.; July 11–Aug. 15.

We collected this bird from 1250 to 2800 meters; it was much commoner at the highest altitude. Hamlin's specimens are recorded from 770 meters.

Wing: ♂ ad. (13) 105–117 (113); ♀ ad. (5) 108–116 (112).

Hartert (1930, Nov. Zool., XXXVI, p. 124) says that in this form the males lack bars on the rectrices but the males in this series usually have one or two subterminal black bars. In the females the tail may be heavily barred or have only a subterminal bar. The amount of barring on the abdomen of the female also varies; some are boldly barred while

others are indistinctly marked. The males show a similar, though less pronounced variation of the barring.

Molting specimens were secured in May (1), July (4), and September (4).

The woodland rail prefers the forest where ground cover is plentiful and it can move about unseen. Very shy, they travel in little parties. Sometimes they call a "ko ko ko – – –" from which the native name "go go" (Fuyuge tribe name) is probably derived. A loud harsh cry is also given, and low clucking notes when disturbed. By listening for their complaining notes I have followed a party some distance in the forest often without catching more than a glimpse of them.

Of twelve stomachs examined all contained insect remains or other animal matter; in addition one contained a few seeds of a sedge, one a few unidentified seeds, and half the contents of the stomach of another was small hard seeds; two stomachs contained a few grains of quartz.

Amaurornis olivaceus frankii (Schlegel)

Dogwa: 1 ♀ imm.; February 25.—Wuroi: 1 sex(?) ad.; February.—Baroka: 1 ♂ ad.; April 3.

Wing: ♂ ad. 157.

The specimen from Baroka was taken in an area of rain forest between the savanna and an extensive swamp; the Dogwa specimen was found in a little patch of forest about a small pond on an open savanna ridge. These and the native skin from Wuroi are our only records.

Porphyrio albus subspecies ?

Lolorua, Galley Reach: 1 ♂ ad.; August 24 (Zimmer).

Wing: 256.

This specimen showed no wing molt.

The species needs revising, and until this is done it is useless to try to assign single specimens to subspecies.

Choriotis australis (Gray)

The occurrence of a bustard in New Guinea must be considered hypothetical but the following is interesting as indicating the probability of its occurrence.

Mr. H. P. Beach, an Australian now living in Daru, who has had a more or less continuous residence of about thirty years chiefly in that part of New Guinea and used to hunt birds of paradise before the practice was illegal, told me that he once shot a large bustard on the savanna near Wuroi, mistaking it in life for a small cassowary. He knew the

Australian bird and it would be quite impossible to confuse it with anything else.

Irediparra gallinacea novaehollandiae (Salvadori)

Mainland opposite Daru: 1 ♂, 1 ♀; March 10.

Wing: ♂ 125, ♀ 149.

These birds are the pale Australian race. This is the first record for New Guinea. For a discussion of races see Hartert, 1930, Nov. Zool., XXXVI, p. 119.

Both these birds are in fresh plumage and had enlarged gonads.

Irediparra gallinacea novaeguineae (Ramsay)

Hisiu: 1 ♂ ad., 1 ♂ sub-ad.; September 9 (Zimmer).

Wing: ♂ ad. 126; ♂ sub-ad. 124.

The crest is crimson in life; at death it fades immediately to yellow.

These birds are plainly *novaeguineae*, with the black upper wing-coverts; the adult has the secondaries and scapulars very dark oil-green, almost black, as in the rest of the upper parts. The immature bird, still retaining some of the immature plumage, has black upper wing-coverts.

The adult is not molting.

Mr. Zimmer recorded the stomach contents of one bird as seeds; of the other, as seeds and vegetable matter.

Lobibyx miles miles (Boddaert)

Daru: 1 ♂ ad.; January 9.—Hall Sound: 2 ♂ ad.; June 13 (Hamlin).—Hisiu: 1 ♀ ad.; September 1 (Zimmer).

Wing: ♂ ad. 94, 94, 92.

The three males are in slightly worn plumage, the female is molting wings and tail.

The wattled plover was common on the island of Daru. Parties of 6–12 spent much of their time in the cultivated fields and on the lawns about the government stations where they were very tame. They also frequented the beach though less so than the fields, and were often seen flying to and from the fields uttering their loud, not unmusical notes.

About January 25 two lit in the clearing in the savanna about camp at Wuroi, which was the only other locality in which I saw them. Mr. Zimmer recorded the stomach contents of one bird as insects and pebbles.

Pluvialis dominica fulva (Gmelin)

Daru: 1 ♀; March 5.

Wing, 170.

I saw the golden plover only on the muddy beaches at Daru, where it was not uncommon, rather tame, and always seen singly.

Charadrius dubius jerdoni (Legge)

Lolorua: 1 ♂ ad.; August 27 (Zimmer).—Orangerie Bay: 1 ♂ ad.; December 18 (Zimmer).

Wing: ♂ 107, 107.

Both birds are in rather bright dress. The yellow base to the lower mandible is evident in the skins.

Charadrius mongolus mongolus (Pallas)

Daru: 1 ♀ ad., 1 ♀ imm.; March 5, 10.

Wing: ♀ 128 (ad.), 134 (imm.).

The immature female has the bright rufous breast band.

A migrant from the Palaearctic.

A common bird on the muddy shore at Daru, at high tide taking refuge on the mangrove stumps.

Charadrius leschenaultii Lesson

Daru: 1 ♀ ad.; March 5.—Yule Island: 1 ♀ ad.; December 12.

Wing: ♀ 137, 140.

Both are in adult winter dress, though one is commencing to molt.

A migrant from Asia.

This plover was also common on the beach at Daru; about four hundred of this and the preceding species were seen during a morning. It was difficult to estimate how many of each were present, but they appeared about equal in numbers. They were by far the commonest shore birds there.

Numenius madagascariensis Linnaeus

Delema [= Delena]: 1 ♂; May 25 (Hamlin).

This bird is in very worn plumage.

A migrant from eastern Siberia.

Numenius phaeopus variegatus (Scopoli)

Daru: 1 ♂, 1 ♀; March 5, 12.

Wing: ♂ 225, ♀ 252.

A migrant from East Siberia; fairly common at Daru.

Limosa lapponica baueri Naumann

Daru: sex (?); March 5.

Wing, 222.

This specimen was molting into spring plumage.

A migrant from the Palaearctic.

This specimen was one of a party of about eight godwits perched on a fallen mangrove waiting for the tide to fall and uncover their feeding grounds. Most of them were in gray winter dress. A few other single birds were seen during the few days spent at Daru in March.

Tringa nebularia (Gunnerus)

Daru: 1 ♀; March 9.

Wing: ♀ 195.

A migrant from the Palaearctic.

Only three others were seen, also on Daru Island.

Xenus cinereus (Guldenstaedt)

Daru: 1 ♀; March 5.

Wing: 129.

A migrant from the Palaearctic.

The orange-legged sandpiper was not very common at Daru, six to twelve being seen in a morning. They were usually seen in little flocks mixed with the abundant plover (*Charadrius*) on the mangrove stumps at high tide.

Actitis hypoleucos (Linnaeus)

Daru: 1 ♂, 1 ♀, 1 sex (?); January 13–March 6.—Kubuna: 1 ♂; December 11.—Hisiu: 1 ♂, 1 ♀; September 5 (Zimmer).

Wing: ♂ 107, 109, 110; ♀ 112, 107; 1 sex (?) 113.

A migrant from the Palaearctic.

This sandpiper was only occasionally seen along the river at Kubuna, but was fairly common on the beaches of Daru Island.

Heteroscelus brevipes (Vieillot)

Hisiu: 1 ♂; September 6 (Zimmer).—Port Moresby: 1 ♀; October 24 (Zimmer).

Wing: ♂ 164; ♀ 157.

One is in summer plumage, and one in immature plumage.

A migrant from the Palaearctic.

On March 31, 1934, when our steamer touched at Samarai, one of these birds was seen perched on a pile by the public bath.

Arenaria interpres interpres (Linnaeus)

On March 31, on our way to Australia, the steamer stopped at Samarai. During a walk around the island I saw a flock of about eight

turnstones on the rock retaining wall of the path by the sea. Later there was a flock of twelve sitting on the piles of the shark guard about the public bath. These were the only turnstones I saw in Papua and no specimens were collected.

A migrant from the Palaearctic.

Erolia ruficollis (Pallas)

Daru: ♂; March 10.

Wing: ♂ 97.

A migrant from northeastern Siberia and Alaska.

Only three or four were seen at Daru.

Erolia acuminata (Horsfield)

Daru: 1 ♀; March 10.

Wing: ♀ 128.

A migrant from Asia.

The female is molting into spring plumage.

It was scarce at Daru, the only locality at which I found the species.

Scolopax saturata rosenbergii Schlegel

Mt. Tafa, west slope: 2 ♂ ad.; August 30, September 10.—Mt. Albert Edward: 3 ♂ ad.; June 20–July 10.

Found at 2400 and 3680 meters.

Wing: ♂ ad. 154, 155, 155, 159, 164.

None of these specimens was in breeding condition, though all but one showed some enlargement of the gonads.

This woodcock was one of the first high mountain birds I encountered. On the way to our highest camp on Mt. Albert Edward I had to spend the night of June 14 two hours short of the permanent camp. Camp was made at the edge of the timber by a broad marshy depression. Before dawn a woodcock began to give its flight song, passing over the marsh and close by the tent, not more than twenty yards above the ground. At our 3680 meter camp on Mt. Albert Edward from June 16 to July 12 the woodcock's flight song was heard on only two or three evenings. Of the three specimens secured there, one was brought in by the natives, one was taken by a shooting boy who said he found it on the forest floor, and the third was caught in a snare set for mammals on the edge of the forest.

The bird was not encountered again until we established our camp on Mt. Tafa at 2400 meters. Here in the heavy forest, with only very small open areas, the woodcock was heard daily. Every morning and evening

one performed about the camp clearing. As soon as it began to grow light the song commenced, always stopping before full daylight, to commence again as dusk fell, and cease at dark. This performance lasted from half to three-quarters of an hour each time. The bird about camp covered a wide beat about the camp clearing and low over the surrounding forest, sometimes within a few yards of the ground as it crossed the camp clearing in the saddle between the hills. Every now and then in its horizontal flight it gave its song, usually introduced by a loud nasal "queeet" followed by a number of "quo's" and usually ended with a "queeet." Sometimes the same song was continued for longer, punctuated at intervals with the louder, more nasal "queeet."

Mr. Archbold collected one woodcock during the day, at this camp. It was on the ground in the forest several hundred yards from any clearing. Later, the bird that sang over camp was added to our collection and proved to be a male, shot in full breeding condition. No bird regularly performed over our clearing, but a bird heard regularly farther west occasionally visited us.

The stomach of one bird contained three caterpillars in addition to other material.

Himantopus himantopus leucocephalus Gould

Delena: 1 ♂ ad.; May 27 (Hamlin).

Wing: 212.

I did not see this bird in 1933 or 1934.

Larus novaehollandiae forsteri (Mathews)

Daru: 1 ♂; January 10.

Wing: 296.

Some of the brown, immature wing-coverts are retained.

This is apparently the nearest record to the mainland of New Guinea that has been made. Only one bird was seen.

Sterna hirundo longipennis Nordmann

Daru: 3 ♂, 1 ♀, 1 sex (?); January 12–March 9.—Delena: 1 ♂; May 28 (Hamlin).

All are molting their wings.

A migrant from the Palaearctic.

Sterna albifrons sinensis Gmelin

Daru: 1 sex (?); March 5.

This specimen is in winter dress; the primaries are very worn.

The least tern was fairly common at Daru where a hundred or more were often seen resting on an exposed reef.

Thalasseus bergii cristatus (Stephens)

Daru: 1 ♂ ad.; March 5.

Wing: 321.

This bird is in winter plumage. This tern was not uncommon along the coast.

Anous stolidus pileatus (Scopoli)

Daru: 1 ♀; March 7.

This is molting out of the immature plumage. Mr. Archbold shot this bird about a reef twelve miles southwest of Daru.

Ptilinopus superbus superbus (Temminck)

Dogwa: 1 ♂; February 25.—Wuroi: 2 ♂; 1 ♀ imm.; January 21–28.—Mafulu: 3 ♂, 2 ♀; October 12–November 13.

Found from sea level to 1250 meters.

Wing: ♂ (6) 126–135 (131); ♀ 123, 126; ♀ imm. 120.

Rothschild (1931, Nov. Zool., XXXVI, pp. 273, 274) and others have mentioned the individual variation in this species.

The immature female, easily distinguished as such by the narrower, more pointed tail-feathers and the fact that the emargination of the outer primary is not marked (also true for most of this group), has brownish primaries and no blue occipital patch. The feathers of the breast are grayish green, narrowly tipped with whitish, but it is otherwise similar to the adult female except that the white terminal tail-band is washed with yellowish green on its distal portion.

Birds taken in October and November at Mafulu and the males taken in January at Wuroi were breeding.

The superb fruit pigeon was occasionally seen in the huge fig trees in the forest at Mafulu, where many other birds besides pigeons of this genus were feeding, but the height of the trees and the density of the forest usually made it very difficult to tell just what was in the trees. This pigeon was also seen in the secondary brush and at Wuroi, where it was not uncommon; it was also found singly in the denser savanna forest feeding on the small fruits of low trees and shrubs, as well as in the rain forest.

Stresemann (1923, Arch. f. Naturges., p. 72) says that this species inhabits especially the shores and river regions as well as islands, but I did not notice this type of ecological distribution.

Ptilinopus pulchellus pulchellus (Temminck)

Kubuna: 2 ♂; November 28–December 8.—Deva Deva: 3 ♀; June 3–12 (Hamlin).—Mafulu: 1 ♂, 3 ♀; October 10–November 4.—Cloudy Bay: ♂; December 30 (Zimmer).—Milne Bay: 3 ♂; April 3 (Hamlin).

Ranges up to 1250 meters.

Wing: ♂ (7) 104–112 (108); ♀ (5) 102–107 (105); ♀ imm. 99.

A bird from Mafulu, October 10, is immature with only a few red feathers coming in on forehead, and the gray breast is heavily washed green. The attenuation or emargination of the outer primary, of course, is little pronounced in the immature bird.

At Mafulu these birds were found feeding in the fig trees along with many other very different birds. At Kubuna, however, I found one in a low sapling in the forest. These little pigeons are rather active, jumping quickly from branch to branch.

Breeding females were taken at Mafulu (October, November) and the Milne Bay males (April) are marked as having enlarged testes.

Ptilinopus coronulatus coronulatus Gray

Dogwa: ♀ imm.; February 26.—Wuroi: 1 ♂, 3 ♀; January 21–February 8.—Baroka: ♂; April 5.—Kubuna: ♂; December 4.—Vanumai: ♂ imm.; June 7 (Hamlin).—Rigo: 2 ♂; June 30 (Hamlin).—Orangerie Bay: ♀; December 19 (Zimmer).—Annie Inlet (Milne Bay): 2 ♂; January 29 (Hamlin).—Milne Bay: ♂; April 4 (Hamlin).

Found from sea level to 100 meters.

Wing: ♂ (7) 111–116 (114); ♀ (4) 112–117 (115).

In this series the males from the eastern end of Papua (Milne Bay to Rigo) have a slightly larger wing (115–116 in 5 ♂). The size of the purple stomach patch is about the same and there is little variation in color of crown. In the color of the abdomen and under tail-coverts the birds from Orangerie Bay and Milne Bay are somewhat darker yellow, No. 329304 in particular approaching *huonensis* in this respect, with darker tips to largest under tail-coverts, but it is still *P. c. coronulatus.*

Two specimens of *huonensis* from Tufi and Baniara on the north coast are somewhat larger (wing 118, 118) than our *coronulatus,* have the larger stomach patch which is slightly deeper in color, the orange-yellow abdomen and under tail-coverts, but the color of the crown is but little deeper than that of *coronulatus.*

The female closely resembles the male, and in our series is larger than males from the same locality.

The two young have the top of the head green, with lilac feathers coming in on the forehead and the attenuation of the first primary not as prominent as in the adult.

At Kubuna this little pigeon was fairly common in the tree tops of the forest and also often came into the low trees and tall shrubs of the second growth about camp to feed on the small fruits. At Baroka it was fairly common in the scattered areas of rain forest and numbers came to feed in a large fig tree along with many other birds. The rain forest and savanna intermingle at Wuroi and this was the commonest pigeon there. Sometimes singly, it was more often seen in small parties of three to six or so. It fed commonly in the upper parts of fruit trees in both the savanna and rain forest; though somewhat wary, sometimes flushing quickly and flying to a distance, at other times sitting quietly concealed by the foliage, it was often seen in swift flight over the savanna or perched in the top of a savanna tree.

Besides figs and a very small nutmeg, a variety of other small fruits was found in their gullets.

Males taken in January, April, and June had enlarged gonads while females taken in January and February were not breeding.

Ptilinopus iozonus finschi Mayr

Baroka: 1 ♂, 2 ♀; April 4–19.—Lolorua: 1 ♂; August 27 (Zimmer).—Rigo: 1 ♂; June 30 (Hamlin).

Found only near sea level.

Wing: ♂ 118, 120, 120; ♀ 115, 118.

Iris: ♂ white; ♀ yellowish white.

The three April specimens were molting. An April male and a June male had enlarged testes; two April females had enlarged gonads.

Fairly common in the scattered bits of rain forest about Baroka, where it was often seen in pairs flying swiftly over the rain forest and savanna, occasionally perched in some conspicuous perch on the top of a tall tree on the edge of the rain forest, and numbers came to feed in a large fig tree. Other fruits were also eaten as we found by examining the contents of their gullets.

Ptilinopus aurantiifrons aurantiifrons Gray

Dogwa: ♂ ad.; February 16.

Wing: 133.

Iris: orange with an inner ring of yellow.

This bird, sitting in a dead tree in the savanna, was the only one seen.

Ptilinopus ornatus gestroi Salvadori

Mafulu: 3 ♂ ad.; October 9–18.

Collected at 1250 meters.

Wing: 152, 153, 154.

These specimens showed no wing molt, nor were they in breeding condition.

Iris with an inner ring of yellow and an outer of orange.

This pigeon fed commonly in the fig trees along with others of the genus and was perhaps the commonest forest pigeon at Mafulu.

Ptilinopus rivolii bellus Sclater

Mafulu: 6 ♂, 2 ♀; September 30–November 4.—Fane: 2 ♂; June 7–17 (Hamlin).—Mt. Tafa, west slope: 4 ♂, 2 ♀; August 31–September 4.—Urunu: 1 ♀; August 15.—Murray Pass: 3 ♂; July 16–26.

Ranging commonly from 1250 to 2800 meters.

Wing: ♂ (15) 135–145 (141); ♀ (5) 129–142 (139).

These birds are identical with birds from west New Guinea.

Molting birds were taken in June (2) and September (2); specimens with gonads enlarged were collected in June (2 ♂), July (1 ♂), August (1 ♀), September (2 ♂, 2 ♀), October (1 ♂), and November (1 ♀); a nest with eggs was found in October.

Megaloprepia magnifica poliura Salvadori

Wuroi: ♀; January 21.—Kubuna: 2 ♂; December 3–5.—Vanumai: ♂; June 10 (Hamlin).—Delena: 2 ♂; May 27, 28 (Hamlin).—Orangerie Bay: 1 ♂, 1 ♀; December 10–12 (Zimmer).—Milne Bay: 2 ♂; 1 ♀; April 1–3 (Hamlin).

Found up to 100 meters.

Wing: ♂ (7) 161–176 (170); ♀ (3) 165–170 (168).

The single bird from south New Guinea differs somewhat from typical *poliura* in being yellower on the vent and under tail-coverts.

Molting birds were taken in January (1), April (2), May (2), and December (1). The January female had an enlarged ovary.

This richly colored fruit pigeon was not uncommon in the forest at Kubuna, and fairly common at Wuroi in the rain forest. It was solitary in habits and usually found in the upper part of the forest substage and the lower forest trees, where it fed on fruits.

Ducula zoeae (Desmarest)

Wuroi: 1 ♂ juv.; January 25.—Delta Saw Mills: 1 ♂; March 16.—Mafulu: 1 ♂, 1 sex (?); October 3–November 15.—Milne Bay: 2 ♂; April 1–4 (Hamlin).

Found from sea level to 1250 meters.

Wing: ♂ 211, 217, 220, 224, 231.

There is considerable variation in the color of the reflections of lower back, upper tail, and wing secondaries, varying from bronzy green to greenish blue in birds from the same locality (the two from Milne Bay). The plumage of the young is similar to that of the adult, differing in the neck being more vinaceous buffy, the dark breast line being less distinct and duller, the abdomen duller, more whitish gray, the mahogany of the back lighter with no anterior glossy edge, and lower back and rump dull black. Its soft parts are: iris white, bill black, base grayish, feet brown tinged pinkish; while the adult has the iris with an inner ring of white, an outer ring of black, ring about eye pinkish red; bill grayish black, feet rose, nails gray.

Molting birds were taken in March (1), April (1), and November (15); a nestling bird was brought in by a boy on January 25.

Ducula chalconota smaragdina Mayr

Deva Deva: 1 ♂; June 13 (Hamlin).—Mafulu: 1 ♂; November 11. —Fane: 1 ♀; June 8 (Hamlin).—Mt. Tafa, west slope: 1 ♂, 1 ♀; September 9.—Urunu: 1 sex (?); (Father Dubuy).

Found from 770 to 2400 meters.

Wing: ♂ 217, 220, 221; ♀ 211, 215.

These belong to the green-backed form of east New Guinea.

Very few of these birds were seen.

Ducula rufigaster rufigaster (Quoy and Gaimard)

Wuroi: 1 ♀; January 30.—Oibada River: 1 ♀; June 18 (Zimmer). —Cloudy Bay: 1 ♂; January 2 (Zimmer).

Wing: ♂ 199; ♀ 197.

These birds all agree fairly well with Arfak material. The race *uropygialis* Stresemann and Paludan appears to be very slightly differentiated from *rufigaster*.

Ducula pinon pinon Quoy and Gaimard

Wuroi: 3 ♂; January 20–February 17.—Delta Saw Mills: 1 ♂; March 26.—Kubuna: 1 ♂; December 13.

We only collected this pigeon up to 100 meters.

Wing: 3 ♂, Wuroi, 257, 258, 262; 1 ♂, Delta Saw Mills, 261; 1 ♂, Kubuna, 276.

On February 2 at Wuroi I shot a male with testes somewhat enlarged as it left its nest where it had been incubating. The nest was about 35

feet up in a slender tea tree in savanna country but near rain forest. The nest, on horizontal branches near the top of the tree, was a scanty structure of slender sticks through which the single egg could be seen.

Myristicivora spilorrhoa spilorrhoa (Gray)

Dogwa: 1 ♂; February 21.—Wuroi: 1 ♂; January 31.—Grange Island: 1 ♂, 1 ♀; December 20 (Zimmer).

All these specimens are molting their wings.

The two south New Guinea specimens are tinged with gray. Salvadori has mentioned this gray tinge to the plumage in discussing birds from Yule Island (1882, Ornit. Pap., Vol. III, p. 113).[1]

A number of these pigeons were seen in the savanna near the mouth of the Binaturi River on January 12, and occasional single birds were seen at Wuroi in January and February. At Dogwa, in February, these white pigeons were seen commonly, often in irregular or V-shaped flocks of 15 to 30, flying northeast or east over the savanna, a hundred yards or more above the ground, but only occasionally were individuals found in the savanna trees.

Fruits of a gnetum were found in one bird.

Gymnophaps albertisii albertisii Salvadori

Mt. Tafa, west slope: 2 ♂ ad., 1 ♂ imm.; 1 ♀ imm.; August 27–September 18.—Mt. Tafa, east slope: 1 ♂; May 29.—Murray Pass: 2 ♂, 1 ♀ imm.; July 17–August 15.—Mt. Albert Edward: 2 ♂; July 10.—Cloudy Bay: 1 ♂ imm.; January 7 (Zimmer).

Collected from 2000 to 3700 meters, also seen at 100 meters.

Wing: ♂ (7) 198–207 (205).

The iris is sometimes labeled red; in one male I labeled it pinkish red, in another red with a narrow inner ring of yellow. An immature bird nearly full grown had soft parts as follows: iris an inner ring of whitish, then one of blackish, and an outer ring of orange; the bare skin about the eye was grayish flesh, bill pinkish brown, tip of maxilla white, feet pinkish brown, nails blackish.

Birds with enlarged testes were recorded in May (1), July (2), and August (1).

At Kubuna in December occasionally small parties of these light-breasted pigeons were seen flying over the forest but none were collected. On the afternoon of April 30, while camped at Madiu, alt. 740 meters, on our way into the mountains, I saw a flock of about thirty flying

[1] Stresemann and Paludan (1935, Mitt. Zool. Mus. Berlin, XX, p. 452) discuss this same phenomenon in Merauke birds.

high over the country in a manner we were later to find characteristic. None was seen between this locality and Mt. Tafa, where at our camp on the east slope at 2000 meters it was uncommon, but at our camp on the west slope at 2400 meters this pigeon was fairly common. Occasional birds were seen sitting on tops of dead stubs, and each afternoon small parties flew low through the saddle between the hills where our camp was situated, the noise of their wings being plainly heard in the tent. At this camp a flight maneuver given by single birds was commonly seen. One bird had its post on a conspicuous limb in a tall tree across the camp clearing and performed nearly every morning. The bird sat stiffly upright, with neck extended, looking very straight and slim as is their custom. Every now and then it swooped down off its perch, then with swift wing-beats started to fly upwards, until flying nearly vertically, about 50 to 75 meters from the perch and 25 meters above the forest. There it paused, turned, and with partly closed wings plunged down in an arc the way it had come, and then flew back to its perch. These "displaying" birds were apparently alone, no call was given, and as the flight was given time after time it appeared to be for amusement, a form of play. One bird shot while giving this flight was a male with testes somewhat enlarged.

In Murray Pass this pigeon was common. Here flocks of from several to fifteen or twenty were seen each morning flying about over the forest, sometimes one or two hundred meters up. These were not local movements, perhaps they are comparable with the soaring of certain birds. The light-breasted pigeon was also commonly found feeding on the rather larger of tall forest trees; numbers congregated in the same tree and could be found there, day after day.

At 3680 meters on Mt. Albert Edward a small flock of about eight birds were seen on two occasions.

Columba vitiensis halmaheira (Bonaparte)

The only records secured were two badly damaged birds brought in by a native shooting boy on September 30, 1933, at Mafulu (alt. 1250 meters). These were not saved and the species was not seen again.

Macropygia amboinensis cinereiceps Tristram

Wuroi: 1 ♂, 1 ♀; January 20–February 4.—Baroka: 1 ♀; April 11.—Kubuna: 1 ♂; December 16.—Mafulu: 2 ♂, 1 ♂ (?), 1 ♀; September 30–November 1.—Urunu: 1 ♂; August 16.—Veimauri: 1 ♀; August 17 (Zimmer).—Rona: 1 ♂, 1 ♀; March 14–16.

Found from sea level to 1250 meters; also seen at Bella Vista 1450 meters fairly commonly.

Wing: ♂ 168, 170, 171, 172, 174; ♀ 161, 165, 167, 168.

The color of the top and back of the head and the distinctness of the breast markings varies with individuals from the same locality; of three Mafulu birds, the two males and one male (?), one has the top of the head and the nape gray, the other two, apparently adult, have the top and back of head brown, one with a much wider light forehead than the other. These birds with the brown heads also have more rufous on the sides of the heads and in one the throat is washed with deeper rufous, while one has much more distinct breast bars than the others.

Compared with a series of *griseoceps* from the D'Entrecasteaux Archipelago (Hamlin coll.) the gray-headed birds differ only in the slightly lighter colored flanks and under tail-coverts, and in the duller, less chestnut-brown of the upper parts including the upper surface of the tail. Each series from every area in which collections have been made, appears to be slightly different from every other series, but individual variation is so great in this species that it is difficult to find characters of subspecific value. For the present at least, we are considering the southeast New Guinea birds as *cinereiceps*. (See also Mayr, 1931, Mitt. Zool. Mus. Berlin, XVII, p. 707.)

Molting specimens were taken in January (1), March (2), and December (1); birds with enlarged gonads were taken in February (1 ♀), April (1 ♀), and September (1 ♀).

At Rona only the two collected were seen. These were feeding on the fruit of trees in an area of rain forest. In mixed areas of rain forest and savanna, as at Baroka and Wuroi, this bird was most frequently seen darting low with graceful flight from one patch of rain forest to another. At Mafulu and Bella Vista, though occasionally seen in the forest, it was commonest in the regrowth association where it fed on the various small fruits of the trees and shrubs. Stomachs examined always contained quartz sand as well as food. The fruiting shrubs and trees of the little clearing about our Kubuna camp attracted several of these birds daily. It was solitary in habits, only occasionally two being found feeding in the same tree, and at Wuroi a favorite fruit tree in the forest's edge almost always had one or two of these birds and several other pigeons. Its call was a low, soft "cou" repeated a number of times.

A nest was found on October 30 at Mafulu. It was in an extensive area of second growth, about three feet up on a mass of vines and ferns, in a rather shady place. The nest was a neat, rather substantial affair,

possibly because of the débris that had accumulated on the vines, on which the nest was placed. It was ten to twelve inches across, of small dead sticks and pieces of dead fern. The bird stayed on the nest until I was within a few feet of it before flying off into the shrubbery. A single white egg was in the nest. When I returned later to collect it I found the nest deserted and the egg gone.

Macropygia nigrirostris nigrirostris Salvadori

Delena, near sea level: 1 ♀; May 25 (Hamlin).—Mafulu, 1250 meters: 1 ♂, 1 ♀; October 9, 10.—Bella Vista, 1450 meters: 1 ♂, 1 ♀; November 7.—Cloudy Bay: 1 ♂; January 6 (Zimmer).

Found up to 1450 meters.

Wing: ♂ 146, 147, 152; ♀ 142, 142, 149.

Dr. van Oort (Notes Leiden Museum, XXIX, p. 174) described the New Britain bird as *M. n. major* on the basis of its larger size, more slender bill, and the markings of the inner secondaries, blackish brown with a chestnut tinge and very small chestnut edges in *major*, while they were blackish brown barred chestnut in *nigrirostris*.

In comparing a series of New Britain birds collected by Mr. W. Coultas with New Guinea birds, these color differences are not noticeable; faint barring can be seen on the inner secondaries of all four of the New Britain males; in some of the New Guinea birds the barring is pronounced, in others it is obsolete. This is an individual difference.

The following are the measurements of thirteen New Guinea birds and four New Britain birds in the American Museum:

		Wing	Tail	Culmen
Southeast New Guinea	male	146, 147, 152	165, 148, 152	19.5, 19, 19
	female	142, 142, 149	140, 154, 163	20, 18, 18.5
Huon Peninsula	male	153, 155	161, 171	19.5, 21
Astrolabe Bay	male	146, 147, 148	151, 154, 163	19, 18.5, 19.5
Ifaar	male	150	158	18
Bainings (New Britain)	male	145-x, 149	166, 165	19, 19.5
		150, 153	180, 163	18.5, 20

Though one of the New Britain birds has a longer tail than any New Guinea bird, and all are longer than most New Guinea birds, these differences are not decisive. But in the character of the more slender bill there seems to be a constant difference. The New Britain birds have a more slender bill and, in addition, the four New Britain birds average paler below so that the race *major*, though slightly differentiated, must be recognized.

One October female was molting.

This bird was not uncommon about Mafulu where it frequented the second growth, feeding on the small fruit of low trees. It was usually seen singly.

Reinwardtoena reinwardtsi griseotincta Hartert

Kubuna: 2 ♀; December 9–15.—Vanumai: 1 ♂, 1 ♀; June 6, 7 (Hamlin).—Mafulu: 1 ♂ ad., 1 ♂ imm., 2 ♀ ad.; October 5–October 31.—Veimauri: 1 ♀; August 15 (Zimmer).—Orangerie Bay: 1 ♂; December 17 (Zimmer).

Found from sea level to 1250 meters.

Wing: ♂ 237, 238, 239; ♀ (6) 232 (226–239).

The immature bird, in black dress, has a few gray feathers coming in on the under parts.

This series does not differ appreciably from a northwest New Guinea series.

Molting specimens are recorded from June (1), August (1), October (1), and December (3).

This long-tailed pigeon was not uncommon, being a bird of the second growth and forest edge where it fed on small fruits. It was solitary in habits and its flight graceful and airy.

Geopelia humeralis gregalis Bangs and Peters

Daru: 4 ♂; March 6–7.—Dogwa: 1 ♀; February 20.—Yule Island: 2 ♂, 2 ♀; May 17–22 (Hamlin).—Delena: 1 ♂, 1 ♀; May 28 (Hamlin).—Port Moresby: 2 ♂, 1 ♀; March 11, June 28, October 24 (Zimmer).

Only one was seen at Dogwa, it was common at Daru, but not seen elsewhere by the 1933–1934 party.

Wing: ♂ (9) 134–141 (138); both extremes come from Daru; ♀ (4) 134–138 (136).

The birds from south New Guinea are in fresh plumage; those from southeast New Guinea are worn, so that the great difference in color between the two series may be the result of wear and fading.

About the settlement of Daru this bird was common on the fields where stock was pastured, on the lawns, roads, and other scantily or short-grassed areas. It was a familiar bird, coming about the houses and perching on the roofs. One flying by the rest house produced a clapping sound, apparently by its wings meeting above the back.

One day by canoe I explored the outer edge of the extensive mangrove area on the end of the island of Daru. It was high tide and I

floated among the numerous little detached groups of trees, their bases submerged in the water, that straggled seaward, and to my surprise I found considerable numbers of these birds in this outer fringe of mangroves, with no dry land in sight.

Geopelia placida placida Gould

Dogwa: 1 ♂; February 20.—Wuroi: 4 ♂; January 19–30.—Yule Island: 1 ♀; May 20 (Hamlin).—Delena: 2 ♂; May 24 (Hamlin).—Port Moresby: 2 ♀; April 11, October 17 (Zimmer).—Rona: 1 ♂; March 16.

Found from sea level to 450 meters.

Wing: ♂ (7) 100–105 (102); ♀ 99, 100; ♀ imm. 99 +. Tail: ♂ (7) 95–103 (99); ♀ 94, 96, —.

The south New Guinea birds are in fresh plumage, while those from southeast New Guinea are in worn plumage. There is considerable difference between the two series but it may be the result of wear and fading.

Though very common through the low savanna from Port Moresby to Sapphire Creek, this bird was seen only about the single garden at Rona, 450 meters, where six to ten birds gathered daily. The stomach of one bird collected here contained waste rice, a broken grain of corn, small seeds, and a quantity of white quartz. None were collected at Baroka but it was not uncommon in the less densely grassed areas in the savanna. Near Wuroi only a few places were suitable for this bird, but going west toward Dogwa, where the savanna was dryer, with scantily grassed ironstone ridges and burned areas, it became very common. Sometimes twenty or more gathered to feed in the same open place. Alarmed, they flushed by two's and three's with quick flapping of wings and with an erratic, dancing flight went a short distance to light upon some exposed limb. Once under way the flight was rather swift and direct; arriving near its perch the bird glided with partly closed wings, and then with a few quick beats to check its momentum it swept daintily up to its perch. Sometimes as many as twenty gathered in the top of a dead tree. One rainy morning I found about twenty-five in a very large leafed savanna tree, usually they preferred exposed places, but here they were hidden among the foliage to escape the rain.

A male and female examined at Baroka (not saved) were breeding the first part of April, and Hamlin has recorded males taken in May at Delena as having enlarged testes, so apparently they breed at the end of the rainy season.

Chalcophaps indica chrysochlora (Wagler)

Dogwa: 1 ♀; February 25.—Baroka: 1 ♂ imm., 1 ♀ imm.; April 5, 12.—Yule Island: 1 ♀; June 6 (Hamlin).—Delena: 1 sex (?); May 25 (Hamlin).—Kubuna: 1 ♂; December 16.

Found up to 100 meters.

Wing: ♂ ad. 149; ♀ ad. 147, 148.

There is considerable individual variation in this series.

Molting specimens are recorded from April (2) and February (1).

The record from south New Guinea is a westward extension of range of this form in New Guinea.

This is a pigeon of the forest floor, though it occasionally flies up to low perches. It was common at Baroka but we saw only the one specimen at Dogwa, where it was found in a small area of rain forest in the savanna.

Henicophaps albifrons Gray

Vanumai: 1 ♂ ad.; June 6 (Hamlin).—Kubuna: 1 ♂ ad., 1 ♀ ad.; December 11, 14.—Deva Deva: 1 ♂ ad.; June 5 (Hamlin).

Found up to 770 meters (Hamlin locality).

Wing: ♂ ad. 200, 203.

All these specimens show some rufous tinge to the forehead; the bird with the darkest and that with the lightest forehead are males.

Gallicolumba beccarii beccarii (Salvadori)

Yule Island: 1 ♀; June 1 (Hamlin).—Mafulu: 1 ♂, 1 ♀; October 18, November 13.—Bella Vista: 1 ♀ imm.; November 8.

Found from sea level to 1450 meters.

Wing: ♂ 118; ♀ 104, 105; ♀ imm. 101.

The immature bird still has the rufous tips to the primaries and secondaries.

The June adult is molting.

The stomach of one bird contained seeds and small fruits of several sorts, of another mostly white quartz grains.

Gallicolumba jobiensis jobiensis (Meyer)

Orangerie Bay: 1 ♂; December 14 (Zimmer).

Wing: ♂ 141.

This bird is not quite in adult plumage.

Gallicolumba rufigula rufigula Bonaparte

Kubuna: 1 ♂; December 15.

Found at 100 meters.

Wing: ♂ 132.

This bird has the gray area on the side of the head; it is completing its wing molt.

Trugon terrestris leucopareia Meyer

Kubuna: 2 ♂, 1 ♀; December 4–11.—Milne Bay: 1 ♂; April 1 (Hamlin).

Found at 100 meters.

Wing: ♂ 167, 168, 189; ♀ 173.

On December 6 in the heavy forest along the Kubuna River I followed one of these birds about for some time. In the rather dense undergrowth I saw it a number of times but was unable to secure it. The pigeon apparently saw but little, allowing a close approach as it walked slowly along on the ground, continually flitting the slightly raised tail. It flushed with noisy flight and flew from a few to sixty yards, usually to light on the ground, but once I found it perched in a trunk two feet above the ground. One other that was not collected was seen.

Otidiphaps nobilis cervicalis Ramsay

Kubuna: 1 ♀; December 3.—Iola: 1 ♂; June 7 (Hamlin).—Mafulu: 5 ♂, 2 ♀; October 3–November 10.

Found from 100 m., where it was rare, to 1250 meters where the species was common.

Wing: ♂ (6) 181–192 (186); ♀ 182, 183, 186.

Molting specimens were taken in October (1), November (1), and December (1); females with enlarged ovaries were taken in October (1) and November (1).

The rump and upper tail-coverts vary considerably in the amount of bluish or greenish in birds from the same locality.

This is a bird of the forest floor where it apparently feeds, picking up fallen fruits and a small quantity of gravel. It was rather wary and easily took alarm, flushing with a loud clatter of wings and flying out of sight in the forest. Several were taken in steel traps set in little trails for mammals.

Goura cristata scheepmakeri Finsch

Kubuna: 1 ♂, 1 ♀; November 29, December 4.—Cloudy Bay: 1 ♂, 1 ♀; January 3 (Zimmer).

Found up to 100 meters.

Wing: ♂ 364, 374; ♀ 360, 372.

All these specimens were molting.

This species was not common at Kubuna, an area often visited by white men.

Goura cristata sclateri Salvadori

Wuroi: 1 ♂; January 23.

Wing: 1 ♂ 368.

This bird was molting.

The Goura was not uncommon in the rain forest along the Oriomo River, a region little visited by white men at the present time. On January 24 I came upon a pair walking along a woodland trail. I shot one, and the other, with heavy noisy flight, flew but twenty-five yards to light on a big horizontal limb thirty feet above the ground, where it stood with crest fully erect and its long legs looking a little ungainly, moving its head about as though not knowing what to do, and rapidly twitching its tail up and down. It watched me thus for some time before finally flying, with noisy wing-beats, away into the forest. On February 2, I flushed one that flew to a perch about eighty feet up in a huge forest tree.

A young one two-thirds grown seen on February 2 suggests that they may breed in December.

Chalcopsitta scintillatus scintillatus (Temminck)

Wuroi: 3 ♂, 3 ♀; January 19–February 1.

Found near sea level.

Wing: ♂ 168, 169, 172; ♀ 159, 163, 167.

There is considerable variation in this series but all of the series have the deep yellow to orange area in the under wing and the red under wing-coverts of this race. The streakings of the under parts is much more extensive, and the streaks yellower than in the southeast New Guinea series.

Specimens of *chloropterus* have been recorded from the Eilanden River (see van Oort, 1909, Nova Guinea, IX, p. 73).

The Aru Island bird is a distinct form *rubrifrons*, as Ogilvie-Grant has pointed out in Ibis, 1915, Jub. Suppl., p. 222, where he has given the characters. Mayr from a re-examination of the material in the British Museum came to the same conclusion.

All these specimens were molting; none had enlarged gonads.

These birds were typically savanna parrots and were fairly common at both Wuroi and Dogwa. In pairs or small parties up to eight or ten in number they fed on the flowers of the savanna trees. Where the

savanna trees grew commonly in an intermediate damp type of forest, these parrots frequented it commonly and were even found feeding on the flowers of tall trees in the heavy forest along the river, but not far from the savanna. They only occasionally uttered a squeak or squeal, in contrast to the much noisier, more active *Trichoglossus*, and here were much less shy, in contrast to the reverse condition at Baroka. Sometimes I was right under a group of feeding birds before noticing them, and then, if I remained quiet, they continued feeding, only occasionally peering down at me.

Chalcopsitta scintillatus chloropterus Salvadori

Baroka: 3 ♂; April 4–11.—Veimauri: 1 ♀; August 16 (Zimmer).

Found near sea level.

Wing: ♂ 171, 171, 174; ♀ 169.

One male, apparently adult, has no yellow area in the under side of the remiges; the others have well-defined pale yellow areas on the under wing. This series has the greater series of under wing-coverts black, lightly tinged or margined with red; the rest of the under wing-coverts are green, a few with traces of red on them.

There is considerable variation in the plumage of these birds.

The three April specimens were molting; one had enlarged testes.

The streaked lory was not a very common bird of the savanna at Baroka. It was usually seen singly or in pairs, and was usually rather wary.

Eos fuscata incondita Meyer

Mafulu: 6 ♂, 4 ♀; October 9–November 6.

Only found at 1250 meters.

Wing: ♂ 159, 165, 166, 167, 169; ♀ 156, 159, 160, 161.

This series exhibits red, orange, and yellow phases though none are as yellow as some specimens from north New Guinea. Martorelli (Ibis, 1897, pp. 66–73) has pointed out that these variations are independent of age, sex, or locality.

The measurements of this series agree with Rothschild's measurements which show that this race is larger than *fuscata* (1932, Nov. Zool., XXXVIII, p. 238).

This parrot was not common at Mafulu, being found only about one flower tree.

Lorius lory erythrothorax (Salvadori)

Iola: 1 ♂; June 4 (Hamlin).—Kubuna: 2 ♂, 1 ♀; October 2.—Matsika: 1 ♂; November 23.—Rona: 3 ♂; March 8–11.

Specimens from near sea level to 1250 meters; also two seen at Bella Vista 1450 meters.

Wing: ♂ (7) 162–172 (166); ♀ 161.

Molting specimens were taken in March (1), June (1), and December (3).

At Rona only occasional solitary birds were seen; fairly common at Kubuna where small parties of four to six were often seen flying over camp about the height of the tallest trees in which they sometimes lit. A party of six or more was found feeding on the fruit of a tall tree by the river. Their call was a melodious whistle of several notes. Few of these birds were seen in the mountains, and at Bella Vista, the highest locality at which they were recorded, only two birds were seen, which flew close by me on an open grassy ridge.

Lorius lory rubiensis (Meyer)

Wuroi: 1 ♀; February 27.—Port Romily: 1 ♂, 1 ♀; March 16.

Near sea level.

Wing: ♂ 154; ♀ 148 (Wuroi), 157 (Port Romily).

On the basis of smaller size and the lighter blue under tail-coverts these should be referred to this race, which is only slightly differentiated from *erythrothorax*. The two females have only a faint suggestion of the dark band across the hind neck, and in the male the black band across the hind neck is incomplete.

Hartert records birds from the south Snow Mountains (1930, Nov. Zool., XXXVI, p. 103) and the Digul River (1932, Nova Guinea, XV, p. 452) as this form. Dr. van Oort (1909, Nova Guinea, IX, p. 74) lists a series from the North River as *erythrothorax* with wing measurements of 153–165 mm. which are probably also *rubiensis*.

All three specimens were molting.

The lory was not uncommon in the heavy forest along the Oriomo River at Wuroi and was often seen flying over the river, rather high above the tree tops, and occasionally in the top of some tall tree in the savanna near rain forest. It was usually rather shy.

Lorius hypoenochrous devittatus (Hartert)

Oibada River, Orangerie Bay: 1 ♂; June 21 (Zimmer).

Wing: 172.

This species is easily separated from *lory* by the purple instead of the blue belly.

One male and two females collected on Doini Island by Zimmer, No-

vember 29, 1920, belong to this form. The wings measure: ♂ 176, ♀ 171, 173.

The species contains three races, of which the adults can be distinguished by the following key.

1.—Greater under wing-coverts all red..... *devittatus.*
Greater under wing-coverts with black tips.....2.
2.—Breast lighter red than upper abdomen..... *hypoenochrous.*
Breast the same color as upper abdomen..... *rosselianus.*

Trichoglossus ornatus micropteryx Stresemann

Baroka: 1 ♂, 1 ♀; March 5.—Kubuna: 1 ♀; December 4.—Deva Deva: 1 ♂ imm., 2 ♀ imm.; May 31 (Hamlin).—Mafulu: 2 ♂; October 8–13.—Bella Vista: 1 ♂ imm.; November 8.—Vanumai: 1 ♂; June 9 (Hamlin).—Hisiu: 1 ♂, 1 ♀; September 2 (Zimmer).—Aroa River: 1 ♂, 1 ♀; July 5 (Zimmer).—Port Moresby: 1 ♂; October 17 (Zimmer).—Rona: 3 ♂, 1 ♀; March 9–17.

Found from sea level to 1450 meters.

Wing: ♂ (10) 131–145 (138); ♀ 131, 133, 134, 139, 143.

We have for comparison a series of *aberrans* from Bungula Bay, New Britain, collected by Mr. W. F. Coultas in October, 1933 (wing: ♂ 131, 133, 132, 134; ♀ 127, 132, 132), and a series of *micropteryx* from Huon Peninsula (Zakaheme and Sevia) collected by Mr. R. H. Beck in January, February, and March, 1929 (wing: ♂ 138, 139, 139, 140, 140, 141; ♀ 136, 140).

Our series differs from the New Britain birds in having a more pronounced and yellower band on the hind neck, a lesser backward extent of the green of the top of the head, the nape having a larger area of darker brown, and the ear-coverts being usually darker, lacking the olive wash of the New Britain birds. In all these characters the southeast New Guinea birds agree much better with the series of *micropteryx* from the Huon Peninsula.

The New Britain *aberrans* have paler red breasts with narrower black edges than the series of *micropteryx* from Huon Peninsula. Some of the south New Guinea birds resemble the New Britain series in this respect, while others are like the Huon Peninsula birds. It is difficult to be sure of the extent of the red area on the breast as the make-up of each series of skins is different, but taking this into account it seems that the New Guinea birds may have on the average a slightly wider red area on the breast.

From a consideration of these characters it seems that the southeast New Guinea birds must be called *micropteryx*.

Young birds have a green instead of a brown nape and the tail-feathers are more pointed than in the adult.

Molting specimens were taken in March (4), April (2), October (1), and December (1); none was in breeding condition.

At Rona and Baroka this bird was fairly common in the savanna in pairs and small parties and was so typically a bird of the savanna that its presence in the mountains came as a surprise. But even then it favored the second growth rather than the heavy forest. Once at Rona, however, I found a party of these birds scolding a cuscus (*Phalanger maculatus*) that was resting on a limb of a tree in a patch of rain forest. The highest record was at Bella Vista where a party of six was feeding on the flowers of a blooming tree in the second growth.

Though rather nervous birds, always ready to dart away with shrill cries, they were not very shy and could be easily approached.

Trichoglossus ornatus nigrogularis Gray

Wuroi: 5 ♂, 3 ♀; January 19–28.

Found near sea level.

Wing: ♂ 137, 137 + x, 139 + x, 139 + x, 145; ♀ 131, 134, 141.

The black belly and nape distinguish this race from the southeast New Guinea bird.

All these specimens were molting; none had enlarged gonads.

This parrot was very common in the savanna at Wuroi and Dogwa. It was occasionally seen singly but more often in parties up to eight in number. Its activity and noisiness makes it one of the most conspicuous of savanna birds; with swift, direct flight it flies through or over the savanna, lighting in the flowering trees to feed on the blossoms or rarely on an exposed dead limb on the tree tops. When starting into flight it often makes a downward swoop in getting under way. Noisy when perched as well as in flight, their presence is advertised by shrill squeakings and chattering calls as they continually hop and run about the branches and twigs of the trees, not infrequently turning upside down as an individual clings to the end of a twig reaching for blossoms.

Psitteuteles goldiei (Sharpe)

Mt. Tafa, east slope: 1 ♀; May 12.

Taken at 2000 meters.

Wing: 104 mm.

Iris brown, bill black, feet bluish gray.

This specimen, shot in the forest by Archbold, is our only record. It was not molting and the ovary was small.

Charmosynopsis placentis placentis (Temminck)

Dogwa: 8 ♂, 5 ♀; February 14–28.—Wuroi: 1 ♂, 4 ♀; January 19–February 11.

Found only near sea level.

Wing: ♂ (9) 88–92 (90); ♀ (8) 85–91 (87).

These all have the blue area on the rump, characteristic of this race.

Molting specimens were taken in January (2) and February (7). A laying female, taken February 22, was the only bird with enlarged gonads.

This species was not uncommon in the savanna, but it was rather quiet and inconspicuous. It was most often seen in pairs, sometimes in small parties. Their flight through the savanna was swift and direct. On one occasion at Dogwa I saw a pair climbing about over a large termite's nest in a savanna tree. Could they have been searching for insect food? When they saw me they froze into immobility which pose they retained until I withdrew. Occasionally these birds were seen perched on the top of a dead stub.

Charmosynopsis pulchella bella (De Vis)

Matsika: 1 ♂; November 22.—Deva Deva: 1 ♂; June 10 (Hamlin).

Bella Vista: 1 native skin, possibly from a distance.

These specimens probably came from about 770–1000 meters.

Wing: ♂ 90, 92; sex (?) 89.

For the characters of this race see Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 719).

The June specimen was molting.

We did not see this species in the field nor did our shooting boys find it. Our Matsika specimen was brought in alive by natives. The Bella Vista skin was an old skin, evidently used as an ornament. We also saw a native near Mafulu with one of these skins worn in his ear, by having the head of the skin thrust through a hole in the lobe of his ear. The tail-feathers are prized by the Kuni people, a mountain tribe, for incorporation in their head dress.

Charmosynopsis wilhelminae Meyer

Mafulu: 1 ♀; November 31.—Ononge: 1 ♂; June 21 (Father Dubuy).

1250 to 2000 (?) meters.

Wing: ♂ 70; ♀ 70.

Neither specimen is molting.

These two agree with two specimens from Huon Peninsula, collected by Beck in 1929, which have a wing of 71, 72 mm.

Our only records for this bird are the specimen presented to us by Father Dubuy, who had a number of specimens that had been brought in by the natives, and the specimen from Mafulu collected by a shooting boy who said it was one of many feeding in a flowering tree.

Charmosyna papou stellae Meyer

Deva Deva: 1 ♀ ad.; June 21 (Hamlin).—Iola: 1 ♂ imm.; June 9 (Hamlin).—Mafulu: 1 ♂ imm.; November 18 (brought in by native).—Duro: 1 sex (?) ad.; (Zimmer).—Mt. Tafa, west slope: 2 ♂ ad., 1 ♂ imm., 3 ♀ ad., 1 ♀ imm.; August 30–September 19.—Mt. Tafa, east slope: 2 ♂ ad., 1 ♀ ad., 1 ♀ imm.; May 13–19.—Murray Pass: 2 ♂ ad., 1 ♂ imm., 2 ♀ ad.; July 20–August 6.

Fairly common from 2000 to 2800 meters. The species does not commonly range below 2000 meters; the specimens from lower altitudes were probably brought by natives from higher in the mountains.

Wing: ♂ ad. 140, 142, 143, 143, 147, 150; ♂ imm. 131, 135, 136; ♀ ad. 135, 139, 139, 140, 142, 145, 146; ♀ imm. 126, 129. No specimen in the black phase was seen.

In the adult males there is a slight variation in the orange color of the central tail-feathers and two specimens have a little green in the forward edge of the black stomach-patch. The immature male differs from the adult in the shorter central tail-feathers 174, 179 mm. as compared with 239–274 mm. in the adult male, the primaries are not marginated as in the adult, the general red color is paler, the red feathers of the under parts and the back of the neck narrowly tipped with black, the black thighs and belly are tinged bluish, the blue nape feathers have green bases and the blue area of the lower rump is of less extent and sometimes much duller than in the adult. Two immature males have an indistinct yellow bar on the under wing, on the inner web of the secondaries.

The adult females show little variation except in a few specimens which have a few red or partly red feathers in the yellow rump.

The immature female differs from the adult in having the feather of the yellow area of the rump heavily tipped with red in one case, in another specimen with little red but a greenish streak through the center of the yellow area. The stomach-patch and thigh are marked with bluish

green. Otherwise they differ from the adult much as does the immature from the adult male. Both have an indication of the yellow bar found by spots on the inner webs of the secondaries.

Molting specimens were taken in May (1), August (1), and September (1); birds with enlarged gonads were taken in August (1 ♀).

The long-tailed lory was fairly common in Murray Pass, and on Mt. Tafa at 2400 meters, less so on Mt. Tafa at 2000 meters.

These beautiful long-tailed lories are rather conspicuous forest birds, often seen flying about through the tree tops, usually in two's or four's, their squealing notes attracting one's attention. But when perched in the trees they are surprisingly difficult to see. The lories were seen to feed only on the flowers of trees and epiphytic plants in the tree tops, where they associate with other parrots, honey eaters, and flower peckers.

A young bird brought in alive by the natives at Mafulu, November 18, was very tame and we kept it alive for some time. It was very fond of sugar and water which it drank by extending the tongue, which expanded the brush shaped tip. This was saturated in the sugar solution and then the tongue was withdrawn into the mouth and the contents of the brush, apparently squeezed out by the retracting of the tongue, is swallowed. Fruits, such as banana and pawpaw, were eaten in the same way, the softer parts being scooped up in the brush of the tongue. The bill appeared to be very weak and was not used to bite out pieces of the fruit.

Neopsittacus musschenbroekii major Neumann

Mafulu: 1 ♂; October 15.—Fane: 1 ♂ imm.; May 4.—Mt. Tafa, west slope: 1 ♂, 3 ♀; September 1–14.—Mt. Tafa, east slope: 2 ♂, 4 ♀; May 10–29.—Murray Pass: 2 ♂, 1 ♀; July 23–24.

Found from (1250?) 1450 to 2840 meters.

Wing: ♂ (6) 117–123 (121); ♀ (8) 114–120 (118).

Compared with a series (12 specimens) from Huon Peninsula (Beck coll.) with wing of 112 to 125, the southeast New Guinea birds average paler on the cheeks and the brown patch on the neck of the female tends to be lighter, but these differences are small. The lesser extent of the red on the neck and under parts noted by Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 700) is not evident. There is considerable individual variation in these birds.

Molting specimens were taken in May (4); none had enlarged gonads.

The Mafulu specimen (from 1250 meters) was brought in by a native

and may have come from higher up in the mountains; its gullet was filled with seeds. At Fane a lone bird was collected from the low second growth along the trail and another seen later. About our 2000 meter camp on the eastern slopes of Mt. Tafa this bird was common in the tops of the lower trees in the heavy forest, where it was the only *Neopsittacus*. In one big flower tree there about twenty of these parrots had gathered to feed on the flowers, along with *Charmosyna p. stellae*. At our 2400 meter camp on the west slope of Mt. Tafa it was also fairly common, though not as common as *N. pullicauda*, a higher altitude species not found below this. Both species fed in the flower trees and one specimen shot from a flower tree still had part of a blossom in its bill. The shrill squeakings of both species of this genus as they flew in pairs or small parties through the forest was a characteristic sound at the camps. In Murray Pass this species was not very common.

This species is easily distinguished in life from *N. pullicauda* by its yellow (instead of orange) bill and the light yellow (instead of orange and green) tail.

Neopsittacus pullicauda pullicauda Hartert

Mt. Tafa, west slope: 4 ♂ ad., 1 ♀ ad.; September 10–18.—Murray Pass: 4 ♂ ad., 1 ♂ imm., 2 ♀ ad., 1 ♀ imm.; July 20–August 1.—Mt. Albert Edward: 2 ♂ ad., 1 ♀ ad.; June 23–July 3.

From 2400 to 3620 meters.

Wing: ♂ (10) 103–110 (107); ♀ (4) 105–110 (107).

Iris orange-yellow, bill orange-yellow or orange-red, mandible is yellow, tip of maxilla gray, feet grayish black.

There is considerable individual variation in this series.

Molting specimens were taken in July (4), August (2), and September (1); none had enlarged gonads.

At our camp on the west slope of Mt. Tafa this was a common bird, coming into the tops of the flowering trees where it fed on the blossoms, along with other birds. Here it was somewhat more common than *N. musschenbroeki*. In Murray Pass it was common and much more so than *N. musschenbroeki*. Sometimes flocks of 28 to 30 gathered in the top of a pine tree, apparently to feed on the fruit; they came in two's and three's, with much twittering and squeaking as they moved about, and when they left they went in small parties, not as a flock. At the Mt. Albert Edward camp small parties were seen on only a few occasions, feeding on the fruits of the trees. These parrots, as with *N.*

musschenbroeki, are adaptable in feeding habits, eating either small fruits or flowers depending on their availability.

None of the specimens was breeding.

Oreopsittacus arfaki grandis Ogilvie-Grant

Fane: 1 ♂; June 7 (Hamlin).—Mt. Tafa, west slope: 5 ♂; 5 ♀; August 31–September 22.—Mt. Tafa, east slope: 2 ♂; 1 ♀; May 28.—Murray Pass: 9 ♂; 6 ♀; July 18–31.—Mt. Albert Edward: 1 ♂; June 15.

Found from 2400 to 3620 meters; this species probably does not occur much lower.

Wing: ♂ ad. (14) 82–89 (85.3); ♂ imm. 83, 90; ♀ ad. (?) 81–87 (84.2); ♀ imm. 84, 87.

The immature male differs from the adult in having only a narrow band of red on the forehead, in having the green of the upper parts duller, and the narrow black tips to the feathers are rather pronounced, especially in the younger birds. The immature birds also have a soft yellow tip to the ends of the longer tail-feathers, very evident in the fresh plumage, but which soon wears off and is barely retained in one specimen; the tail-feathers are also more pointed than in the adult. The relative amount of blue on the side of the head must be compared with caution as the make-up of the skin can alter its apparent extent. But in the four immature males this blue area is smaller than in the adult, is tinged with red, giving a purplish color, and the white markings are less clearly defined than in the adult. Another character of the young bird is the greater extent of the dark area near the tips of the third pairs of rectrices, which is only slightly indicated in the adult.

The immature female is similar to the immature male, with the narrow red band on the forehead, though the adult female lacks this.

Molting specimens were taken in May (1), July (4), and August (1); males with enlarged testes were taken in May (1), June (2), and July (1).

On Mt. Tafa, at 2400 meters, where the vegetation on the ridges took on an appearance characteristic of the higher altitudes, these birds were common. They were one of the most frequent visitors to the flowering trees, where parties of as many as ten sometimes gathered, in company with other parrots (chiefly *Neopsittacus*), honey eaters, and flower peckers to feed on the blooms. They are active little birds, walking about on the small branches and twigs, reaching out here and there to nibble the center from a flower, swinging about and clinging upside down to slender twigs. One that I shot had part of a flower still in its bill. They are

usually rather quiet, only giving a little squeaking call occasionally, though the rapid beat of their swift, straight flight produced a whistling sound.

In Murray Pass the species was also common, feeding on the blooms of trees. Here I caught a glimpse of a curious set of antics which were probably part of a mating display. The first time a bird, apparently alone, was walking about quickly in the smaller branches of a forest tree, hopping from branch to branch, the while whistling to itself in a very low tone and rapidly bobbing its head and body, occasionally stopping to eat a flower. A few days later, while watching a flower tree, I saw a party of five fly into the tree and I kept them in sight for some time. Two came into a tree overhead, which was laden with small fruit, and I think they ate some of this fruit. But they were continually moving about, one bird following the other. Finally it approached the other with spread wings, showing their bright markings. The first bird fled and of the ensuant pursuit through the branches I could see little. About the Mt. Albert Edward camp this species was not common. A single freshly killed specimen was secured from a native on June 18 and on July 9 a party of six was seen in the forest.

Opopsitta gulelmi-tertii fuscifrons Salvadori

Wuroi: 3 ♂ ad., 3 ♂ imm., 4 ♀ ad., 1 ♀ imm.; January 20–February 11.—Dogwa: 1 ♂ sub-ad., 1 ♂ imm.; February 20.

Wing: ♂ (7) 75–80 (77); ♀ (5) 71–79 (76).

In studying this series we find that in the males, at least, there are three different plumages, correlated with age, an immature plumage, a second-year plumage, and the adult dress.

The second-year plumage resembles that of the adult female except for the lesser extent of the brown on the forehead, which is also paler, and the duller orange-red color of the breast. Ogilvie-Grant apparently had two males in this second-year plumage and considered they must have been females wrongly sexed (1915, Ibis, Jub. Supp., p. 239).

In our series of eight males, two are in adult plumage, one is molting from the second-year to the adult plumage, one had nearly completed its molt from the immature to the second-year plumage, and four are molting from the immature plumage. The first-year plumage of the female is like that of the male; the second-year plumage of the female is very similar to, and may be identical with, the adult plumage, as a female molting from the immature plumage shows.

All our specimens are molting and none shows any enlargement of the gonads.

Opopsitta gulelmi-tertii suavissima (Sclater)

Kubuna: 1 ♂ imm.; November 29.
Taken at 100 meters.
Wing: 79.
This was our only record of this form.

Probosciger aterrimus aterrimus (Gmelin)

Dogwa: 1 ♂; February 28.—Wuroi: 1 ♂; February 7.
Wing: 373, 355.
These two specimens are quite blackish and have a small wing, agreeing in these characters with Cape York birds.
One February bird was molting.
On our trips up and down the Oriomo River these birds were often seen sitting on the tops of dead trees in the clearings along the banks; two or three were often together. At Wuroi they were fairly common in the heavy forest along the river, but rather shy. Their whistled notes were often heard from camp and occasionally a bird perched nearby, but never allowed a close approach. Their flight, usually low among the trees, was very characteristic; they are big-winged birds and the wing beat is slow and heavy with occasional short glides. Beside the sharply whistled call they have more melodious whistles of several notes. In flight the reddish gular patch is rather conspicuous.

Probosciger aterrimus goliath (Kuhl)

Kubuna: 1 ♂; November 27.—Cloudy Bay: 1 ♂, 1 ♀; January (Zimmer).
Collected at 100 meters; one seen at 740 meters.
Wing: ♂ 395, 410; ♀ 388.
On the under parts these are not as gray as a specimen from Arfak but they surely belong to this race, with their large size and with broad ashy crest-feathers.
The November and one January specimen were molting.
The black cockatoo was not common at Kubuna, where only an occasional solitary bird was seen or heard flying low through the tree tops of the forest. A single bird flew low over the camp clearing at Madiu while we were erecting our camp.

Cacatua galerita triton (Temminck)

Wuroi: 2 ♂, 2 ♀; January 25–February 2.—Kubuna: 1 ♀; December 2.—Mafulu: 1 ♂, 1 ♀; October 16, 19.—Cloudy Bay: 1 ♀; January 7 (Zimmer).

Found from sea level to 1250 meters.

Measurements: southeast New Guinea, ♂ 330; ♀ 315, 330; south New Guinea, ♂ 282, 287; ♀ 280, 285.

Various populations in New Guinea differ, apparently only in size, and until these forms are reviewed we are considering all the New Guinea birds as *triton*.

Molting birds were taken in January (5) and December (1); a female taken in October had its ovary enlarged.

The white cockatoo was fairly common at Rona, flying high over the rain forest and across the gorge. At Baroka and Kubuna it was not uncommon over the savanna and the rain forest. In the mountains it was not particularly common, but at Mafulu, near the upper limit of its range, birds were seen fairly frequently. It is a bold, conspicuous species, often in parties of three or four, flying about over the forest and high across the valleys, attracting attention with its loud, harsh cries.

Starting up the Oriomo River for Wuroi I saw four in a mangrove tree in an extensive stand of this sort near the river mouth. At Wuroi and Dogwa the white cockatoo was common, frequenting the heavy forest along the river, but perhaps more common in the savanna, where it often fed on the ground. The bird's under parts were often stained from contact with the soil. Here also their habit of calling as they flew high over the country made them conspicuous. This was one of the few birds in New Guinea that I found to resent the presence of hawks. My attention was attracted to the only *Harpyopsis* I shot by the outcry made by one or more of these birds scolding it, and at Wuroi a number of times small *Asturs* were seen being pursued by these birds. The common, slow flying *Haliastur sphenurus*, however, was rarely bothered by them.

Micropsitta keiensis keiensis (Salvadori)

Wuroi: 1 ♂ imm.; February 1.

Wing: ♂ imm. 61.

According to Ogilvie-Grant (Ibis, 1915, Jub. Supp., p. 244) south New Guinea birds do not differ from those of the Kei Islands, *viridipectus* being a synonym of *keiensis*.

Micropsitta pusio pusilla Ramsay

Kubuna: 10 ♂, 8 ♀; November 30–December 14.—Deva Deva: 1 ♀; May 25 (Hamlin).—Veimauri: 3 ♂; August 15 (Zimmer).—Cloudy Bay: 1 ♂; January 2 (Zimmer).—Milne Bay: 1 ♂; April 4 (Hamlin).

Sea level to 770 meters.

Wing: ♂ (15) 62–65 (63); ♀ (9) 60–63 (62).

Most of the specimens of this parrot were collected by shooting boys, but occasionally I saw a pair creeping along the medium-sized horizontal branches of a tree, almost like a nuthatch. The contents of the gullet was usually an indeterminate white pasty mass, but one bird's gullet contained a few seeds.

It is interesting to find the shaft of the tail-feathers projecting to give a spine tail in the members of this genus, possibly correlated with their habit of creeping along branches of trees.

The May female from Deva Deva had an enlarged ovary; November and December birds from Kubuna were not breeding.

Molting specimens were taken in August (1), November (2), and December (6); no specimens had enlarged gonads.

Micropsitta bruijnii bruijnii (Salvadori)

Iola: 2 ♂, 2 ♀; May 28–June 1 (Hamlin).

From above 770 meters.

Wing: ♂ 66, 68; ♀ 62, 65.

Compared with a female from Wondiwoi in northwest New Guinea these two are darker green on the upper parts. There is little difference in the orange-yellow tips to the outer tail-feathers.

None of these specimens is molting.

Eclectus roratus pectoralis (Müller)

Wuroi: 1 ♂, 2 ♀; January 20–28.—Baroka: 2 ♂; April 11, 18.—Kubuna: 1 ♀; December 10.—Veimauri: 3 ♂, 2 ♀; August 15 (Zimmer).—Rona: 1 ♀; March 10.

Found from sea level to 100 meters.

Wing: ♂ (6) 249–260 (256); ♀ (6) 239–255 (244).

Three females with the soft parts recorded have the iris yellowish white or yellow.

One of the Wuroi females has a slightly darker more purplish tone to the blue, and a darker red breast than any of the southeast New Guinea series, but the other Wuroi female does not show these differences.

The red-sided eclectus was fairly common in the rain forest about Wuroi and along the Oriomo River; elsewhere it was not very common. It is a conspicuous bird, often perching in the tops of tall trees, giving its hoarse, loud calls, or seen flying high over the savanna and forest, often in two's or three's, calling. When traveling along the Oriomo River several of these birds often started from the trees along the banks and flew about rather high overhead screaming. Noisy in flight, they are broad-winged, short-tailed birds with a characteristic flight.

Two of the six females had a small right ovary present.

Molting birds were taken in January (3) and April (1). A male with testes enlarged was taken in April.

Geoffroyus geoffroyi aruensis (Gray)

Dogwa: 2 ♂ ad.; February 27, 28.—Wuroi: 1 ♂, 1 ♀ ad.; January 20, February 8.—Delena: 4 ♂ ad.; May 23–June 6 (Hamlin).—Port Moresby: 3 ♂ ad., 2 ♂ imm., 2 ♀ ad.; July 25, October 10, 23, and April 24 (Zimmer).

Near sea level.

Wing: ♂ ad. (8) 155–165 (161); ♂ imm. 153, 163; ♀ ad. 159, 162, 163.

Molting birds were taken in February (3) and May (1).

This parrot was not very common, being seen only occasionally in the savanna, but a number of tame individuals were seen in the possession of the natives.

One specimen I collected had eaten fruit. Zimmer records the food of two specimens as fruit, one seeds, and one flower buds.

Alisterus callopterus chloropterus Ramsay

Kubuna: 1 ♂, 1 ♀; December 3, 12.—Iola: 1 ♂ ad., 1 ♀; June 6.—Mafulu: 3 ♂ ad., 1 ♂ imm.; October 1–November 16.

Found from 100 to 1250 meters.

Wing: ♂ ad. (5) 185–192 (188); ♀ 177, 193, 195.

Molting specimens were taken in October (1) and November (1).

This parrot was not uncommon at Mafulu where it was a solitary bird of the smaller trees and larger shrubs in the forest. It was a quiet bird and allowed a close approach but was not often seen until it took wing.

Aprosmictus erythropterus papua Mayr and Rand

1936, Mitt. Zool. Mus. Berlin, XXI, p. 241, Wuroi, south New Guinea.

Dogwa: 1 ♂ ad., 1 ♂ imm., 1 ♀; February 19, 23.—Wuroi: 2 ♂ ad., 3 ♂ imm., 2 ♀; January 18–February 3.

Wing: ♂ ad. 183, 186, 187; ♂ imm. 178, 185, 188, 190; ♀ 183, 184, 190.

The crimson-winged lory was not very common but small flocks up to eight or ten individuals were occasionally encountered in the open savanna. They were rather nervous birds, flushing easily and giving a sharp cry. Their strange flight, recalling that of certain shore birds, has been mentioned by Gould. None of the specimens collected was breeding.

Psittacella brehmi pallida Meyer

Mave, Tafa Range: 1 ♀; September 7.—Mt. Tafa, west slope: 3 ♂, 4 ♀; August 23–September 14.

Found only near 2400 meters.

Wing: ♂ 119, 123, 126; ♀ 116, 117, 118, 122.

One molting specimen was taken in September.

In the description of *harterti* Mayr from the Huon Peninsula (1931, Mitt. Zool. Mus. Berlin, XVII, p. 703) *pallida* is said to be much paler than *harterti*. We have a series of *harterti* from the Huon Peninsula (Beck coll.). The wing measurements are: ♂ 120, 121, 122; ♀ 114, 119, 119, 121, 123. This is about the same as *pallida* but the bill is smaller than in *pallida*. In comparing the present series of *harterti* with *pallida* the males differ from *pallida* in the duller green under parts with less of an olive-yellow tinge; the sides of the throat average paler but in some specimens there is little difference in this character; the top of the head is paler and more greenish, the green of the back is duller, less yellowish, and the rump is considerably less yellowish. The females differ from *pallida* in being paler, more greenish, much less yellowish, the throat and sides of the head average paler but this is not apparent in some specimens, the under parts differ considerably in the paler yellow barring of the breast and the much less posterior extent of the barring of the breast, the flanks being almost unbarred.

The following races of this species are known:

1. *brehmi*, Arfak Peninsula
2. *intermixta*, southern Snow Mountains
3. *bürgersi*, the Sepik Mountains
4. *harterti*, Huon Peninsula
5. *ornata*, Herzog Mountains
6. *pallida*, mountains of southeast New Guinea

Psittacella modesta madaraszi Meyer

Mt. Tafa, west slope: 1 ♂, 1 ♀; September 15.—Mt. Tafa, east slope: 1 ♀; May 30.

Found at 2000 and 2400 meters, the three specimens being the only records.

Wing: ♂ 92; ♀ 88, 90.

One female has a small amount of definite pale blackish barring on the sides of the breast, and there are a few orange spots as well as yellowish markings on the hind neck. The other female has only traces of barring on the breast, the black barring of the rump and hind neck is less pronounced, the yellowish orange on the hind neck is little more than indicated and the back is more yellowish green.

None of the specimens shows wing molt; the female taken on September 15 was laying.

Psittacella picta Rothschild

Mt. Tafa, west slope: 1 ♂; September 11.—Murray Pass: 2 ♂, 2 ♀; July 16–August 3.—Mt. Albert Edward, southwest slope: 5 ♂; June 15–July 5.

Found from 2400 to 3680 meters.

Wing: ♂ (8) 108–115 (112); ♀ 111, 112.

In only one male is the top of head wholly rich chestnut brown, in the others it is more or less tinged with lighter brown, and in one it is almost completely light chestnut. In some specimens the yellow marks on the side of the neck are nearly joined and in one specimen are quite joined across the back of the neck. The "cheeks" vary from olive-brown to dark brown, occasionally tinged with rufous. There is more red in the rumps of some birds than in others.

One specimen has a very curious appearance. It is in an extremely bedraggled condition, poorly clothed with feathers, is in heavy molt and many of the developing and new feathers are not normal, but dull loose-textured, lightly pigmented affairs. It is a male, and while some of the new head feathers are chestnut, some are drab-colored, and some of the old feathers are yellow. Some yellow feathers also appear behind the auricular area, in an area properly chestnut, in the upper back, normally green, in the rump, normally green and red, and the upper tail-covert normally red. When collected it was behaving as a normal bird, feeding on fruit in a forest tree.

The male, No. 614, has the pointed, slightly yellow-tufted tail-feathers that indicate a young individual in many parrots but, except

for brownish pinions with slightly wider yellowish margins or distal portion, appears similar to adult specimens and had the testes somewhat enlarged.

One female, No. 799, also has somewhat pointed and tufted tail-feathers, not as much so as the male, No. 614, but these are definitely tipped with yellow and with a very faint yellow edging to outer web for a short distance near the tips. It also has more yellowish edging to the terminal portion of the outer web of the primaries, but is otherwise like an adult female.

Molting specimens were taken in July (2); a male with enlarged testes was taken on June 15.

This psittacella was fairly common at the Mt. Albert Edward camp; besides the specimen collected on Mt. Tafa, but one other was seen there.

This parrot was solitary in habits, frequenting the shrub and substage plants of the forest, feeding on small fruits. It was slow in its movements, inconspicuous, and often was closely approached before it was seen; when but slightly alarmed it flew but a short distance with swift, rather noisy flight to another low perch.

Loriculus aurantiifrons meeki Hartert

Deva Deva: 1 ♂; October 17.

Brought in by a native; probably taken at about 700 meters.

Wing: ♂ 71.

Cuculus optatus Gould

Orangerie Bay: 1 ♂; December 12 (Zimmer).

A migrant from the Palaearctic.

Wing: 208.

The only time I saw birds which were probably this species was descending the Oriomo River, March 4, 1934, when an occasional isolated bird flew across the river ahead of me.

Cacomantis variolosus oreophilus Hartert

Daru: 1 ♂, 2 ♂ imm., 1 ♀; March 6–8.—Dogwa: 1 ♀, 1 ♀ imm.; February 14, 17.—Wuroi: 2 ♀, 1 ♀ imm.; January 29–February 3.—Baroka: 1 ♀ imm.; April 19.—Kubuna: 1 ♂; December 14.—Mafulu: 4 ♂, 2 ♀ imm.; October 23–November 11.—Veimauri: 1 ♂; August 16 (Zimmer).—Port Moresby: 3 ♂; October 3–17 (Zimmer).—Rona: 1 ♂ imm.; March 17.—Orangerie Bay: 1 ♀ imm.; December 19 (Zimmer).

From sea level to 1250 meters.

Wing: ♂ ad. (8) 114–122 (118); ♂ imm. 112, 114, 115; ♀ ad. 115, 116, 119, 119, 123; ♀ imm. 116, 116, 119, 121.

The bill of the south and southeast New Guinea birds is considerably wider and thicker at the base than in *infaustus*, but its length is variable; some specimens have a longer, some a shorter bill than the bills of two specimens of *infaustus* from northwest New Guinea.

Hartert (1925, Nov. Zool., XXXII, p. 167) says that *infaustus* probably ranges as far eastward as Simbang (Huon Gulf) but that more north New Guinea material is needed. Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 697) records a male from Sattelberg (Huon Peninsula) as *infaustus* but says it may be *oreophilus*.

We have four males from the vicinity of Astrolabe Bay (Beck coll.), wings: 114, 115, 118, 119 mm. These have much heavier and (in three cases) longer bills than two specimens of *infaustus* from northwest New Guinea, and they compare well with our series of *oreophilus*.

The range of *oreophilus* is southeast New Guinea, westward on the north coast to Astrolabe Bay, on the south coast to the south of the Snow Mountains (1925, Nov. Zool., XXXII, p. 168). Hartert (*loc. cit.*) has pointed out the considerable variation in color in this species.

The immature plumage is also extremely variable; the present series suggests there may be a sexual difference in the immature plumage, but our material is scanty and it may be individual.

Molting adults were taken in February (1), March (1), October (1), and December (1); birds with enlarged gonads were taken in February (1 ♀) and March (1 ♀).

This was a common bird at Mafulu, where it was more common than *C. castaneiventris;* elsewhere only a few individuals were seen at each camp. It was a solitary bird that often mounted to some conspicuous perch, often a dead tree in a clearing or garden, to sit for long periods giving its whistled call.

Several stomachs contained hairy caterpillars or had the stomach lined with their hairs.

Cacomantis castaneiventris weiskei Reichenow

Kubuna: 2 ♂; December 7.—Deva Deva: 1 ♀; May 30 (Hamlin). —Mafulu: 3 ♂, 1 ♂ imm., 1 ♀; October 12–31.

From 100 to 1250 meters.

Wing: ♂ ad. 112, 114, 115, 110 + x, 115 + x; ♀ ad. 113, 117.

The difference in size between this form and *arfakianus*, which ap-

pears to be the only difference, is slight. Four Arfak adults measure: male 110, 110, 113; female 113. (See also Stresemann and Paludan, 1932, Nov. Zool., XXXVIII, p. 236.)

There is no difference in color between mountain and lowland birds, as Stresemann and Paludan have pointed out already.

An immature male from Mafulu is lighter colored above than an immature female from Arfak, and is almost uniform dull buffy below, except for a dusky tinge on the throat. It does not have the whitish abdomen of the immature Arfak bird. Possibly this is due to geographical variation (see Hartert, 1930, Nov. Zool., XXXVI, p. 100).

Molting specimens were taken in October (1) and December (2).

This cuckoo was fairly common at Mafulu and at Kubuna, both in the forest and the secondary bush. Solitary birds were often seen sitting on some exposed limb or dead branch. Sometimes the same perch was occupied for a considerable time, the bird uttering at frequent intervals a full rich trill that was very distinctive.

Cacomantis pyrrhophanus excitus Rothschild and Hartert

Fane: 1 ♂; June 6 (Hamlin).—Mave: 1 ♂, 1 ♀; September 6.—Mt. Tafa, west slope: 2 ♂; September 17, 18.—Mt. Tafa, east slope: 5 ♂, 4 ♀; May 14–25.—Murray Pass: 2 ♂; July 20, 28.

Found from 2000 to 2840 meters, one from 1450 meters by Hamlin.

Wing: ♂ (9) 136–145 (141); ♀ (5) 132–141 (138).

Two males from Mt. Tafa, east slope, molting into adult plumage have a wing of 135 + x and 138.

Soft parts: male, iris dark brown, fleshy ring about eye yellow, bill black, gape whitish, feet yellow, tinged gray in front, nails blackish. Female, iris brown, bill black, base of mandible horn-color, feet yellow, nails black, inside of mouth orange.

There is considerable variation in the color of the under parts, which are rather deep chestnut in some, more dull brownish in others. The slaty freckling or very fine broken barring of the under parts, giving the dirty clouded effect mentioned by Hartert (1907, Nov. Zool., XIV, p. 433), is more pronounced in some specimens and in these there is a tendency toward very fine lighter bars or freckling. The sheen of the back may be more greenish or more bluish. The females tend to be duller below, with less chestnut, more brownish, and the freckling or broken barring is more pronounced, especially posteriorly, and in some females this is very evident. The bill is slightly shorter than in the male.

The two sub-adult males molting into adult plumage, still retain

part of the juvenile plumage; they are plain brown juvenile feathers in the upper parts and buffy white, black-barred feathers in the underside.

A single male (wing 140 mm.) collected by Mayr in the Arfak Peninsula nearly matches some of the males in our series, though it may be slightly richer chestnut rufous below and has a slightly shorter, more slender bill.

Molting adult specimens were taken in May (2) and September (1); none had enlarged gonads.

This mountain cuckoo was common about our camp at 2000 meters on the east slope of Mount Tafa, where numbers were seen daily. About our 2400 meter camp on the west slope, however, none was seen, the specimens collected there being from several miles east or west of camp, though about at the same altitude. They were unaccountably absent from the immediate vicinity of camp. In Murray Pass but two were seen.

This bird was most often seen along the trail perched upright on the branches of a dead tree or some other conspicuous place. When flushed from the upper branches of a tree where it had been searching for caterpillars it usually flew to some such conspicuous perch. One on the stump of a tree in the clearing at Mave had its tail cocked up as it gave some chirping notes, and another that I watched for some time in a tree top along the trail first flicked its tail a few times, then sang at intervals, its song consisting of a trill of several seconds' duration. The trill was all on the same key but the first few attempts were not as loud as some of the later ones.

Eight specimens had caterpillars, most of them hairy, in their stomachs.

Chalcites lucidus plagosus (Latham)

Delena: 1 ♂; June 18 (Hamlin).—Port Moresby: 1 ♀; October 17 (Zimmer).

Wing: ♂ 107; ♀ 105.

A migrant from southern Australia and Tasmania.

For a revision of this species see Mayr, 1932, Amer. Mus. Novitates, No. 520.

Zimmer records the food of the Port Moresby specimen as hairy caterpillars.

Chalcites malayanus poecilurus (Gray)

Daru: 3 ♂ ad., 1 ♀ sub-ad.; March 8–10.—Lolorua: 1 ♂ ad.; August 27 (Zimmer).—Orangerie Bay: 1 ♂ imm.; December 19 (Zimmer).

Taken only near sea level.

Wing: ♂ 93, 94, 95, 95; ♀ 93; ♂ imm. 83.

We have a large series of comparative material and find considerable variation within this form.

Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 175) have suggested that a specimen from Waigiu differs from New Guinea birds in the more slender bill and in having the second pair (from the outside) of rectrices barred with black. We have examined the Waigiu bird and evidently the bill has been tightly tied shut with a thread by the collector, which has reduced its width. A specimen from Misol (type locality of *poecilurus*) does not have the bill more narrow than New Guinea birds, and has the second pair of rectrices nearly unbarred. Of the south New Guinea birds, two have the second pair of rectrices unbarred, and one has them heavily marked with three bars. This is also true for Fergusson Island birds, one is barred and two are not. The greenness or bronzeness of the upper parts and the barring of the under parts also varies greatly.

None of the present series is breeding and one (March) specimen is molting its wing.

Chalcites ruficollis (Salvadori)

Mt. Tafa, east slope: 1 ♀; May 19.

Found at 2000 meters.

Wing: 100.

Compared with a single Wondiwoi bird there are a number of points of difference, but these may be due to individual variation.

The present specimen showed no wing molt; its ovary was not enlarged.

This rufous breasted cuckoo was not as rare as the one specimen collected would indicate; besides this specimen, at Mt. Tafa, east slope, I shot and lost one from a low tree by the forest trail on May 17; on May 22, I saw two together in the top of a huge forest tree and a single bird in a similar situation on May 25; on June 3, I watched one moving slowly through the forest in the branches of the lower trees, coming within twenty feet of the ground. It was apparently looking for insects among

the smaller branches, sitting for some few moments motionless, then with rather quick movements seizing its prey.

Father Dubuy of Ononge had one skin from Urunu in his possession.

Chalcites meyerii (Salvadori)

Lolorua: 1 ♂; August 27 (Zimmer).—Kubuna: 1 ♂; December 2.—Matsika: 1 ♂; May 24 (Hamlin).—Mafulu: 1 ♂, 3 ♀; October 23–November 4.

From sea level to 1250 meters.

Wing: ♂ 88, 89, 90, 92; ♀ 90, 90, 92.

A molting specimen was taken in December; two October females were laying.

About Mafulu this bird was usually seen in the low second-growth forest and the Kubuna bird was shot in the low brush of the camp clearing. Two stomachs contained hairy caterpillars. The females from Mafulu were breeding (October).

A young bird with tail partly grown, from Bella Vista, November 8, 1933, is probably this species.

Caliechthrus leucolophus (Müller)

Delena: 1 ♂; June 20 (Hamlin).—Deva Deva: 1 ♀; June 15 (Hamlin).—Mafulu: 3 ♂; October 8–November 14.

Found up to 1250 meters.

Wing: ♂ 166, 171, 174, 175; ♀ 177.

The Delena specimen is not fully adult and has much whitish barring on the breast.

The two November specimens were molting.

About Mafulu, the only place I found this bird in 1933–1934, it was fairly common. It was a bird of the tree tops and much more often heard than seen. Its call was a loud, full, somewhat rolling "Ka ha ha ha." It was frequently found in pairs.

Of the stomachs examined, all contained insects, two of them including caterpillars.

Eudynamis scolopacea cyanocephala Latham

Daru: 1 ♂, nearly full plumage, 1 ♀ ad.; March 7, 8.

	Male	Female
Wing	208 + x	210
Tail	203	199
Culmen	32	33
Tarsus	38	36

The male is in nearly all black plumage with a few juvenile buffy whitish, black-barred feathers in the abdomen and upper tail-coverts, dull brown feathers in the shoulder, and a few brown, pale rufous to whitish barred primaries remaining.

The black plumage has a greenish gloss on the upper parts and throat; the lower breast and abdomen are brownish black to bronzy.

The female, apparently in fully adult plumage, has the top of head and upper part of back of neck black, glossed greenish; the throat is black scantily spotted with buffy white. A buffy white line extends from the angle of the mouth back under the eye joining the light color of the under parts back of the lower auricular region. The upper parts, including wings and tail, are blackish brown, with a slight gloss, marked with *white*. The under parts are buffy white, sparingly but rather uniformly marked with blackish bars or slightly harpoon-shaped marks.

Though both this form and *rufiventer* were found on Daru in March, when one would expect *cyanocephala* to be still in Australia if it was migratory (Mathews gives breeding season as October to January or February, Birds Australia, VII, p. 371), it is possible that these are early migrants, and, until it is shown that they do breed in New Guinea, they should be so considered.

Eudynamis scolopacea rufiventer Lesson

Daru: 2 ♂ sub-adult; March 6, 7.

Wing: 187, 176 (this is for the third primary which is still of the immature plumage). Tail: 188 (the central tail-feathers are new of the adult plumage). Bill, 32, 31; tarsus, 34, 34.

These wing measurements are not of adult birds so perhaps are smaller than those of the adult. Both of these individuals are in much the same state of plumage, molting from the immature into the adult plumage.

Van Oort's *minima* is based on two adult males from Noord River (wing 169, 178 mm.), so that size only can be used in comparison. The measurements of the type are so much smaller (wing 169) than the usual measurements of *rufiventer* (wing 185–196 mm., Hartert, Nov. Zool., X, p. 237) that we hesitate to include it in this form. Both Hartert (1932, Nova Guinea, XV, p. 453) and Bangs and Peters (1926, Bull. Mus. Comp. Zoöl., LXVII, p. 429) record *rufiventer* from the Digul River.

Microdynamis parva parva (Salvadori)

Kanosia: 1 ♂; August 22 (Zimmer).—Mafulu: 1 ♂; October 4.

Found up to 1250 meters.

Wing: 107, 110.

For a discussion of the individual and geographical variation of this species see: 1936, Amer. Mus. Novit., No. 868, pp. 1–3.

Scythrops novae-hollandiae Latham

No specimens were collected, but on April 1, 1933, at Yule Island, I saw a shooting boy with two of these birds which I examined.

Centropus menbeki menbeki Lesson and Garnot

Deva Deva: 1 ♂; June 20 (Hamlin).—Mafulu: 1 ♀; October 15.

The Mafulu bird came from considerably below the 1250 altitude at which camp was situated, probably from about 800 meters.

The male is similar to specimens from north New Guinea. It is molting, and the female is molting into the glossy black plumage.

Centropus phasianinus nigricans (Salvadori)

Kubuna: 1 ♀; December 5.—Veimauri: 1 ♂; August 14 (Zimmer).—Rona: 2 ♂, 2 ♀; March 8–16.—Rigo District: 1 ♀; June 30 (Hamlin).—Samarai: 1 ♀, [= ♂]; September 28 (Hamlin).—Mainland near Samarai: 1 ♀; March 24 (Hamlin).—Annie Inlet: 1 ♀, [= ♂]; January 29 (Hamlin).

Found up to 450 meters.

Wing: ♂ 211, 212, 213; ♀ 220, 231, 231, 231, 235.

In birds of this series the yellowish bars on the under surface of the wing are very narrow, usually not nearly as broad as the black areas between them and there is a strong tendency for the yellow (occasionally rufous) bars to become obsolete; in many specimens they are not complete bars and do not reach the shaft of the feathers. On one specimen from Annie Inlet the surface of the under wing is almost completely black, with only a slight indication of barring. In only one specimen does the regular strong barring on the under wing approach that of *thierfelderi*, but the rufous bars being all narrower than the black bars serve to identify it.

Molting specimens were taken in March (3) and September (1); two males with enlarged right testes were taken in March, one breeding female in March, and one in December.

Centropus was fairly common at Rona, in the savanna, and about the

dwellings and pastures where tall and dense areas of grass and weeds offered a safe retreat. But they were not restricted to these thickets. Birds were commonly seen walking about feeding in the open, and to rest or call, or sometimes when alarmed they flew up into the trees. The male at least gives the hollow liquid "gub, gub, gub – – –" call; sometimes two birds call together from the same tree but whether this is male or female I did not ascertain. Both male and female have the harsh hissing note of alarm. A few individuals were seen at Baroka.

At Kubuna this bird was fairly common along the river where there were grassy places and thickets, often mounting into the vine tangled branches of the trees on the edge of the forest.

From the examination of four stomachs the food is insect, including grasshoppers (adults and nymphs), walking-stick insects, and caterpillars.

Two males from Rona (March) had the right testis enlarged and the left absent.

Centropus phasianinus thierfelderi Stresemann

Dogwa: 2 ♂; February 14, 26.—Wuroi: 2 ♂, 2 ♀; January 19–February 1.

Wing: ♂ 204, 206, 211, 216; ♀ 222, 237.

This series belongs to *thierfelderi*. The rufous bars on the under wing are as wide as or wider than the black bars, and in one specimen the black bars are incomplete, not reaching to the shaft. This character is more pronounced on the inner primaries and the secondaries.

Both females are molting their wings. Two males with the right testes enlarged were taken in January and February.

This *Centropus* was fairly common at Wuroi and more so at Dogwa. It frequents the savanna, feeding on the ground in the open or in fairly dense grass. Alarmed, the *Centropus* flushes awkwardly and flies to a perch in a nearby tree, sometimes in the very top of the lower savanna trees.

After a rain at Dogwa these coucals sometimes sat up on an exposed perch with wings spread and drooping, apparently to dry themselves.

Near Benituri I saw a coucal on a garden fence with a small frog in its bill, though the only stomach examined contained insects.

Of two males with right testis enlarged, one had a rudimentary left testis, the other, none; of two others, one with right testis not enlarged, the other with right testis somewhat enlarged, each had a rudimentary left testis.

Tyto tenebricosa arfaki Schlegel

Mafulu: 2 ♂; October 12, 16.

Wing: ♂ 251, 253.

Neither specimen is molting; there was no enlargement of the gonads.

On several occasions the screech of a barn owl was heard from the forest near our Murray Pass Camp. Possibly it was this species.

Ninox theomacha theomacha (Bonaparte)

Deva Deva: 1 ♂ imm.; October 15.—Mafulu: 1 ♂ imm., 1 ♀ ad., 1 ♀ imm.; October 17–23.

Taken at about 770 and 1250 meters.

Wing: ♀ ad. 183.

The adult bird was not molting; its ovary was not enlarged. The immature bird brought in by natives on October 17 had much gray down still clinging to the feathers; the immature on October 15 had a little down left, and that of October 23 had no down left on its fluffy brown immature plumage.

All New Guinea birds belong to *N. th. theomacha*. *Ninox theomacha hoedti* (type examined by Mayr) is restricted to Misol and Waigeu Islands.

Ninox rufa humeralis (Bonaparte)

Baroka: 1 ♀; April 25.

Wing: 306.

This specimen was laying.

Ninox novaeseelandiae pusilla Mayr and Rand

1935, Amer. Mus. Novitates, No. 814, p. 3.

Dogwa: 2 ♂ ad.; February 16, 17.

Wing: 197, 200; tail 103,–.

Neither had enlarged gonads, one was molting its wing.

In the description of this bird we said that this was the first record of the species from New Guinea. Kinghorn (1933, Records Australian Museum, XVIII, p. 453) considers *Ninox albomaculata* Ramsay (Laloki River) a subspecies of *Ninox boobook* [= *novaeseelandiae*]. Its larger size (wing 265, tail 170) clearly distinguish it from *pusilla*.

This was a bird of the savanna; one other specimen was seen but not collected.

Podargus papuensis Quoy and Gaimard

Wuroi: 1 ♂ imm.; February 3.—Dogwa: 2 ♂, 2 ♀; February 20–28.—Baroka: 1 ♂; April 5.—Kubuna: 2 ♀; November 30.—Mafulu:

3 ♂; October 3–November 6.—Bella Vista: 1 ♀; November 6.—Mt. Tafa, east slope: 1 ♂; May 26.—Hisiu: 1 ♀; September 5 (Zimmer).—Port Moresby: 2 ♀; April 11, October 10 (Zimmer).—Rona: 2 ♂, 2 ♀; March 14, 17.

Found from sea level to 2000 meters.

Southeast New Guinea: wing, ♂ 291, 296, 298, 299, 305, 312, 312, 317, 321; ♀ 274, 280, 282, 283, 292, 295.

South New Guinea: wing, ♂ 272, 282; ♀ 264, 267.

The question of races in this species is a difficult problem. South New Guinea birds average considerably smaller than birds from the rest of New Guinea and they also average paler, but many specimens are indistinguishable in color. The Cape York birds are intermediate in size between these two populations, with considerable overlap (wing 262–299, 9 specimens), and though they average paler than most New Guinea specimens, some cannot be separated. Aru, Misol, and Jobi Island birds are as small as the south New Guinea birds; some are very dark, some are very light. Two specimens from Waigeu ("*conigravi* Mathews") are very dark, but considering the variation in color that the large series from other localities show, it is doubtful if this will prove constant.

This species appears to be variable and to have a number of "populations" with certain characters, but these characters are not constant enough to allow the populations to be designated as races.

In southeast New Guinea most of our specimens of this species were secured by native hunters. The few birds we saw were found in the savanna, shot by torch light or disturbed from their roosting place. They probably also occur in the forest. On March 15 near Rona I flushed three almost over my head in a low isolated tree in the savanna. They had evidently been spending the day perched close together in the tree.

This frogmouth was not uncommon in the denser savanna at Dogwa. Singly, or occasionally in couples, they pass the day perched in the lower savanna trees. Before being disturbed they allow a close approach, but once startled into flight they fly strongly, usually to some distance, and light in the upper parts of trees. They see well in bright daylight and after having once been startled into flight are with difficulty again approached within gunshot range. One which I brought down with a broken wing lay on the grass with its bill pointed upwards and eyes nearly closed in the concealing attitude adopted by the bird when perched in the trees.

Of twelve stomachs examined all contained insects, sometimes of considerable size. These insects included beetles (in five stomachs), locusts (in four stomachs), and caterpillars (in one stomach). One specimen had eaten in addition to insects, a small bird, the remains of which we found in its stomach, and another specimen had eaten a medium-sized lizard.

Podargus ocellatus ocellatus Quoy and Gaimard

Wuroi: 1 ♂; February 1.—Matsika: 1 ♂; November 23.—Mafulu: 2 ♂, 1 ♀, 1 ♀ nestling; September 30–November 15.

Found from sea level to 1250 meters.

Wing: ♂ 185, 192, 192, 193; ♀ 190.

One October specimen was molting; none had enlarged gonads; but a nestling bird was brought in by the natives on November 15.

Aegotheles albertisi salvadorii Hartert

Deva Deva: 1 ♀; June 12 (Hamlin).—Mafulu: 1 ♂; November 3.—Mt. Tafa, west slope: 1 ♂, 2 ♀; September 4–15.—Mt. Tafa, east slope: 3 ♂, 1 ♀; May 11–29.—Ononge: 1 ♂; July 16.—Murray Pass: 3 ♂, 1 ♀; July 17–August 1.

Found from (770 meters, Hamlin) 1250 to 2900 meters.

Wing: ♂ 117, 120, 121, 121, 122, 122, 127; ♀ 119, 119, 122, 122, 123.

For the characters of the races of this bird, see 1930, Nov. Zool., XXXVI, p. 94, and 1936, Mitt. Zool. Mus. Berlin, XXI, p. 242.

There is considerable variation in this series, the white spots in the scapulars and wing-coverts are sometimes large and plentiful, sometimes small and few. In one specimen these white spots are so few as to suggest that they may be absent in some cases. Some specimens are very similar to *A. a. bennetti* in general color, but can always be distinguished by the combination of characters given under *bennetti*.

Molting specimens were taken in July (2) and September (1); birds with gonads enlarged were recorded in May (1 ♂) and September (1 ♂).

Aegotheles affinis bennetti Salvadori and D'Albertis

Wuroi: 1 ♂; February 8.—Dogwa: 1 ♀; February 19.—Baroka: 1 ♀; April 4.—Milne Bay: 1 ♂; April 2 (Hamlin).

Found only near sea level.

Wing: ♂ 121, 124; ♀ 116, 116.

This form may be separated from *A. albertisi salvadorii*, which also occurs in southeast New Guinea and some examples of which are very

similar, by the underside being more regularly barred, not blotched with black, the center of the breast not noticeably lighter than the sides, by having no white drop-like markings on scapulars and upper wing-coverts, by having fewer light bars, separated by broader black bands, on the tail-feathers, and by having the white markings in the outer web of the primaries less pronounced.

These two species have different altitudinal ranges, *affinis* being a lowland bird and *albertisi* being only found above 770 meters.

For a discussion of the races of this species see Hartert (1930, Nov. Zool., XXXVI, p. 94). In these specimens the nuchal collar is very narrow. The male from Milne Bay is slightly blacker than the male from Wuroi, and the under parts are slightly more boldly barred, but otherwise they are very similar. The two females are very similar, allowing for the juvenile feathers in the Dogwa specimen.

One February and one April bird were molting their wings.

Aegotheles cristatus major Mayr and Rand

1935, American Museum Novitates, No. 814, p. 4 (Dogwa).

Dogwa: 1 ♀; February 27.

Wing: 149, tail, 127.

This specimen is molting out of immature plumage.

This is another Australian species which apparently reaches New Guinea only on its southern edge, where the 1933–1934 Expedition collected it for the first time.

As we have shown (*loc. cit.*), the discovery of this form in south New Guinea, where *bennetti* also occurs, makes it necessary to consider the New Guinea forms hitherto included in *cristatus* (*bennetti*, *affinis*, and *wiedenfeldi*) a different species which must be called *affinis* Salvadori.

Aegotheles insignis pulcher Hartert

Mafulu: 2 ♂, 2 ♀; November 3–18.—Mt. Tafa, west slope: 1 ♂, 1 ♀; August 30.—Ononge: 1 ♂; August 14.

Found from 1250 to 2400 meters.

Wing: ♂ 162, 170, 171, 176; ♀ 172, 172, 176.

Rothschild and Hartert (1907, Nov. Zool., XIV, p. 456) have described the color variation of this race. In the present series one male and two females are rufous, one male is brown, and two males and one female are intermediate.

Apparently the race *insignis* differs only in its smaller size.

Lyncornis archboldi Mayr and Rand

Plate I

1935, American Museum Novitates, No. 814, p. 4 (Mt. Tafa, west slope, alt. 2400 meters).

Mt. Tafa, west slope: 1 ♂ ad., 2 ♀ ad.; September 18, 23.

Wing: ♂ 212, ♀ 209, 212; tail, ♀ 148, 145.

Found only at the one camp on Mt. Tafa.

None of these specimens showed wing molt, or enlargement of the gonads.

Caprimulgus macrurus yorki Mathews

Wuroi: 2 ♂, 5 ♀; January 20–February 3.—Baroka: 2 ♂; April 8.—Kubuna: 1 ♂, 1 ♀; November 30, December 10.—Lolorua: 1 ♂; August 26 (Zimmer).—Rona: 2 ♂, 1 ♀; March 8–12.

Found from sea level to 450 meters.

Table of Measurements of Males

	Wing	White on Tail[1]	White on Inner Web of Outer Primary: Greatest Length	White on Inner Web of Outer Primary: Distance from Shaft
South New Guinea	181, 182	51, 51	14, 12	1.5, 1
S. E. New Guinea	173, 181, 182, 183, 184, 184 + x	52, 60, 52, 60, 49.5, 50	12, 12.5, 15, 0, 13, 11	3, 4, 3, 0, 2, 4
North New Guinea	182, 183	57.5, 62	13, 14	2, 2
Rook Island	181, 182, 184, 184, 185, 188	.., 60, 60, 54, 53, 56	15, 14, 15, 14, 14, 15	0.5, 3, 2, 2, 2, 1.5
Long Island	170, 172, 173, 174, 175, 175, 176, 180	48, .., 53, 48, 52, 45, 51, 60	14, 13, 9, 10, 12, 11, 13, 13	2.5, 2, 4, 4, 3.5, 3.5, 2.5, 3
New Britain	170, 175, 176, 179, 180, 180, 180, 181, 181, 182, 182, 183, 183, 184, 185	52, .., 60, .., 57, 51, 69, 61, 56, 55, 60, 60, .., 62, 61	10, 15, 10, 14, 12, 14, 13, 14, 10, .., 13, .., .., 17, 15	2, 2.5, 6, 3.5, 2, 2, 1.5, 2, 5, 3, 3, 2.5, .., 1.5, 2
Vulcan Island (type of *albolaxatus*)		64	22	0

The large series of this nightjar in the American Museum collection from New Britain, Rook Island, and Long Island, collected by Coultas, present an opportunity to compare them with south and southeast New Guinea birds, generally accepted as *yorki*, to see if the former are referable to *albolaxatus*. *C. albolaxatus* was described by Rothschild and

[1] Greatest extent of white on outer rectrix (on inner web, not along shaft).

Hartert (1918, Nov. Zool., XXV, pp. 323, 324) from a series from the chain of islands from New Britain to Vulcan, the type from Vulcan Island, and the characters were said to be the greater extent of the white in the tail (64 mm. against 45–56 mm. on the outer rectrix) and the greater extent of the white in the first primary, reaching nearer to the shaft as compared with *yorki* from New Guinea.

Stresemann (1923, Arch. für Naturgesch., Heft 8, pp. 30, 31) gives a series of measurements to show that *albolaxatus* is distinct and is also found in north New Guinea, but Hartert (1930, Nov. Zool., XXXVI, pp. 92, 93) doubts that the characters of *albolaxatus* are constant.

The data from the present material, which show that the extent of white in the wing and tail is not constant, are included in the following tables.

The New Britain birds average slightly darker than New Guinea birds, the Long Island birds slightly darker than New Britain birds, and Rook Island birds average the darkest, though one specimen is indistinguishable from some New Guinea birds. The Vulcan Island bird, type of *albolaxatus*, is similar in general color to the New Guinea birds.

The above measurements show that *albolaxatus* cannot be recognized on the basis of the greater amount of white in the remiges and rectrices. The differences shown by the Rook and Long Islands birds are not great enough to merit subspecific recognition for these populations.

Apus pacificus (Latham)

Dogwa: 1 ♀; February 12.

Wing: 178.

A migrant from the Palaearctic.

On the evening of February 12, there was a party of about ten of these swifts feeding for some time over the Dogwa camp. This was the only time they were seen.

Chaetura caudacuta caudacuta (Latham)

Orangerie Bay: 1 ♂, 2 ♀; December 14–16 (Zimmer).

Wing: ♀ 204, 206.

A migrant from the Palaearctic.

Chaetura novaeguineae novaeguineae D'Albertis and Salvadori

Daru, mainland opposite: 1 ♀; March 10.—Kubuna: 5 ♂, 6 ♀; December 6, 8.—Veimauri: 1 ♂; August 16 (Zimmer).

Found up to 100 meters.

Wing: ♂ 128, 128, 130, 130, 131, 134; ♀ 127, 127, 127, 128, 131.

These agree with a series from south of the Snow Mountains, which measure wing: ♂ 126, 128, 129, 129, 131; ♀ 128, 129.

At Kubuna small parties of this swift were frequently seen but usually they were moving about high over the second growth and gardens so that it was impossible to secure them. However, on December 6, I found a party of forty or more that were continually swooping down to feed over a certain stretch of river and was able to secure a series; two days later I secured one from a small party over the river.

Collocalia lowi whiteheadi Ogilvie-Grant

Baroka: 1 ♀; April 18.

Taken at 30 meters altitude.

Wing: 131.

This bird agrees with a female from Mt. Goliath (wing 139) taken at 5000 ft., and both differ from north Luzon birds in the paler, more grayish throat; in the north Luzon birds the throat is more nearly like the abdomen.

This was one of a party of six that appeared above camp for a moment or so just at dark. This was the only time the species was seen.

Collocalia esculenta esculenta (Linnaeus)

Matsika: 1 sex (?); May 2.—Mafulu: 1 ♂, 2 ♀; October 30, November 16.—Mt. Tafa, west slope: 5 ♂, 3 ♀; August 26–September 21.—Mt. Tafa, east slope: 3 ♂, 2 ♀; May 11–21.—Murray Pass: 2 ♂; July 17, August 8.—Rona: 2 ♂, 3 ♀; March 6–11.

Found from 450 to 2800 meters.

Wing Measurements

	Male	Female
Rona (450 m.)	103	101, 101
Matsika (900 m.)		109
Mafulu (1250 m.)	103	102, 106
Mt. Tafa (2000 m.)	102, 102, 103	103
Mt. Tafa (2400 m.)	104, 104, 105, 106, 107	103, 104, 107
Murray Pass (2800 m.)	104, 106	

The increase in size with increased altitude in this series is not pronounced up to 2800 meters. In specimens from 3600 meters the greater size is sufficient to recognize a distinct race, *erwini*.

We have called these lowland birds *esculenta*, following older authors.

Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 199) were unable to come to any conclusion regarding the status of the New Guinea birds, which need a complete review.

A laying female was taken on Mt. Tafa on August 26.

This was a common bird at all the localities.

Collocalia esculenta erwini Collins and Hartert

Mt. Albert Edward: 5 ♂, 1 ♀; June 27–July 2.

Found at 3600 meters.

Wing: ♂ 109, 110, 110, 110; ♀ 108.

These specimens do not have as long a wing as the type of *erwini* (wing 115), but they differ from the lower level *esculenta* in their larger size, as does *erwini*, and are best included with it.

C. e. erwini thus is known from Mt. Albert Edward at 3600 meters and the Snow Mountains at 8000 feet.

This was a common bird at our 3680 meter camp. It was never seen out over the open country, always keeping near the edge of the forest. In some of the small rock-caves in the forest were single old swifts' nests, possibly of this species.

Collocalia hirundinacea Stresemann

Baroka: 1 ♂; April 20.—Kubuna: 1 ♂; December 14.—Ononge: 3 ♂; August 17, 18.—Mt. Tafa, summit: 1 ♀; June 3.—Murray Pass: 3 ♂, 1 ♀; July 20, August 14.—Mt. Albert Edward: 6 ♂, 8 ♀; June 23–July 2.

Found from near sea level to 3680 meters.

Wing: ♂ 114, 116, 117, 117, 119, 120, 120, 125; ♀ 113, 114, 115, 116, 117, 117, 118.

The two lowland birds differ somewhat from the rest of the series; they are slightly more smoky colored below; one has unfeathered tarsus and much concealed white in the back, the other has the tarsus feathered and no concealed white in the back; both are small (wing ♂ 109, 113).

With the exceptions of the specimens mentioned above, the present series is clearly separated from the series of *vanikorensis* from southeast New Guinea by (1) the smaller bill, (2) the feathered tarsus, (3) the blacker upper parts (not brownish bronze), (4) the whiter, more silvery under parts (not smoky), (5) more concealed white in the feathers of the back. The large size of the bill in *vanikorensis* is not correlated with age, as the nestling bird shows the same character.

A further study of these birds, which Mayr now has in progress, is

necessary to establish their subspecific identity, but from the present data from southeast New Guinea the existence of two species, *vanikorensis* and *hirundinacea*, seems evident. Of the other *Collocalia* described from the New Guinea region *steini* and *waigeuensis* belong to *vanikorensis*, and *pseudovestita*,[1] *baru*, *excelsa*, and *mayri* to *hirundinacea*.

Collocalia vanikorensis subspecies

Baroka: 2 ♂, 1 ♀, 2 sex(?); April 4–20.—Kubuna: 1 ♂; December 14.—Mafulu: 1 ♂, 3 ♀, 1 ♀ nestling; October 5–13.

Found from sea level to 1250 meters.

Wing Measurements

	Male	Female
From 100 meters and below	113, 117, 117	115
From 1250 meters	123	118, 119, 120

This whole group needs a revision, necessitating the comparison of more material than that secured by the 1933–1934 expedition. One of us (Mayr) is now working on this problem.

Hemiprocne mystacea mystacea (Lesson)

Wuroi: 1 ♀; January 23.—Mafulu: 1 ♂, 2 ♀; October 13–November 1.

Found near sea level and at 1200 meters.

Wing: ♂ 235; ♀ 234, 238, 229 (Wuroi).

The January specimen was molting; none had enlarged gonads.

Alcedo atthis hispidoides Lesson

Samarai: 1 ♂; February 22 (Beck).

Wing: 68.

This specimen was completing its molt.

A. a. pelagica Stresemann, based on its smaller size (wing: 66–73 against 68.5–75 mm.), cannot be recognized under the convention that at least seventy-five per cent of the specimens from the range of a form should be referable to that subspecies on the basis of its characters.

Alcyone pusilla pusilla (Temminck)

Daru: 4 ♂; March 9–11.

Wing: 50, 51, 52, 52.

Birds from north New Guinea appear somewhat brighter blue but there is considerable individual variation in this species.

[1] Type examined.

Ceyx lepidus solitarius Temminck

Wuroi: 1 ♂ imm.; January 18.—Kubuna: 3 ♂, 1 ♀; December 3–12.—Matsika: 1 sex (?); November.—Mafulu: 1 ♂; November 6.

Found from sea level to 1250 meters; commonest at 100 meters.

Wing: ♂ 52, 53, 54, 55.

The Wuroi specimen is not quite adult.

Kubuna was the only locality where this kingfisher was at all common. There it was usually found singly or in pairs along the little streams through the forest, sometimes in the forest itself. The specimen from Mafulu was shot near camp along one of the numerous little streams and was the only one seen in six weeks of field work. The Matsika specimen was a native skin purchased from a local boy, and at Bella Vista, Brass saw a skin of this species worn in the ear of a native woman. This last example may have come from the Auga River in the valley 500 meters below Bella Vista. Besides the specimen collected at Wuroi one other was seen along the border of the Oriomo River.

Two stomachs contained insect matter, one a locust as well.

Syma torotoro meeki Rothschild and Hartert

Baroka: 1 ♀; April 12.—Kubuna: 2 ♂, 3 ♀; November 28–December 15.

Found up to 100 meters.

Wing: ♂ 72, 74; ♀ 73, 74, 74, 75.

In one male the darker band across the chest is very pronounced, in the other specimens it is only indicated; in the females the black crown-patch is distant 7 to 10 mm. from the base of the bill.

All but one April and one November specimen were molting; none was breeding.

At Kubuna the saw-billed kingfisher was fairly common in the forest and about the second growth along its edge. Only the single specimen was seen at Baroka where it was sitting about twelve feet up in an area of rain forest. The call of this bird is very distinctive, a loud clear whistle recalling a police whistle, sometimes having a quality suggesting a tin whistle with a loose piece of wood in it. The tail is sometimes cocked up and this vibrates as the bird calls.

One stomach contained insects, another a large dragon fly, and another insects and a large earthworm.

Syma torotoro pseutes Mathews

Wuroi: 4 ♂, 1 ♀; January 21–February 7.—Dogwa: 2 ♂, 1 ♀; February 23–27.

Found near sea level.

Wing: ♂ 73, 73, 74, 74, 75, 76; ♀ 71, 74.

There has been considerable difference of opinion as to the identity of the birds from south New Guinea but Hartert (1932, Nova Guinea, XV, p. 455) has referred them to *pseutes* and our results are in accord with this. Our series differs from *meeki* in being darker below and this seems to be the only constant difference. The black of the crown-patch in the females is similar in area to that of females of *meeki*, being separated from the base of the bill by 7–8 mm. of rusty brown.

Although the males show little variation in the color of the under parts there is considerable variation in the color of the top and sides of the head, from pale to deep, rich, rusty brown; there is also variation in the color of the back, some individuals have darker backs than some *meeki*, others do not.

Molting specimens were taken in January (1) and February (3); none had enlarged gonads.

This was a fairly common forest bird at Wuroi where it was not often seen, but its police-whistle-like call was often heard from the gallery forests. It was less common about Dogwa where the more extensive savanna and restricted gallery forest provided less suitable habitat. It was usually found in the lower parts of the trees.

Four stomachs contained insect matter and one, in addition, bones of a very small reptile.

Syma megarhyncha megarhyncha Salvadori

Mafulu: 2 ♂; October 26, November 3.—Deva Deva: 1 ♂; May 21 (Hamlin).

Taken at about 900 meters.

Wing: 86, 88, 89.

In two specimens the whole side of the culmen is black, in the third the distal two-thirds above is black. A specimen in the American Museum collected at Deva Deva by L. S. Crandall has the bill recorded as orange on the label, but in the skin there is a little black above the nostrils and the terminal third of the culmen is blackish.

Mayr, from a study of material in London and Berlin, has reached the conclusion that *wellsi* Mathews is a recognizable subspecies and that Weyland Mountain as well as Snow Mountain birds belong to this race. It is on the average more bluish on the back and the throat and lower belly are more ochraceous than in *megarhyncha*.

Neither Mafulu specimen is molting, nor do they have enlarged gonads; the Deva Deva specimen is renewing its wings.

Melidora macrorhina macrorhina (Lesson)

Wuroi: 1 ♀ imm.; February 6.—Kubuna: 1 ♂ ad., 1 ♂ sub-ad., 1 ♂ imm.; November 28, December 11.—Delena: 1 ♂ sub-ad.; May 26 (Hamlin).—Deva Deva: 1 ♂ imm.; June 14.—Mafulu: 1 ♂ imm.; October 15.—Orangerie Bay: 1 ♂ ad.; December 16 (Zimmer).

From sea level to 1250 meters.

Wing: ♂ ad. and sub-ad. 115, 115, 117; ♂ imm. 112, 119; ♀ imm. 111.

The sub-adult specimens are molting from immature to adult plumage. The apparently adult bird from Kubuna differs from typical adults by being not white below but nearly uniform ochraceous (not the buffy and rufous with white belly of the young). This is not an intermediate stage of plumage as the sub-adults are molting directly from the immature to the adult plumage with white under parts. Hartert (1901, Nov. Zool., VIII, p. 150) mentions a specimen from Arfak with uniform rufous ochre under parts. Both types of coloration are found in the same area as well as intermediates. It is apparently a matter of individual variation.

Neither of the completely adult birds was molting.

Sauromarptis gaudichaud Quoy and Gaimard

Wuroi: 2 ♂, 3 ♀; January 20–24.—Inawabui: 1 ♂; June 5 (Zimmer).—Kubuna: 1 ♂; December 2.—Mainland near Samarai: 1 ♂; February 7 (Hamlin).—Milne Bay: 1 ♀; April 3 (Hamlin).—Annie Inlet: 2 ♂, 1 ♀, 1 ♂ [= ♀]; January 29 (Hamlin).

Found from sea level to 100 meters.

Wing: ♂ (7) 126–140 (135); ♀ 128, 130, 137, 137, 142.

For a discussion of variation see Rothschild and Hartert (1901, Nov. Zool., VIII, p. 151) and Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 174).

Molting specimens were taken in January (5), February (1), April (1), June (1); none of the specimens had enlarged gonads.

None was seen at Baroka in April, but it was fairly common at Kubuna, sometimes high in the forest trees, sometimes low in the secondary brush. At Wuroi this species was common in the savanna and edge of the forest. It was usually seen sitting quietly part way up in the trees, sometimes on exposed limbs, sometimes concealed by the foliage; occa-

sionally one perched on a branch that had fallen to the ground. It has a variety of calls. Once one sitting quietly fifteen feet up in a tree on the edge of the forest was calling a low slightly plaintive "eeee"; commoner calls were a short rattle and a short loud "chok" repeated a number of times.

Three stomachs contained insects, one included a beetle and a caterpillar, one a locust.

Clytoceyx rex rex Sharpe

Deva Deva: 1 ♀ [♂], 1 ♀ imm.; June 5–18 (Hamlin).—Mt. Tafa, west slope: 2 ♂; August 25, September 10.—Mt. Tafa, east slope: 1 ♀; May 11.

From 770 to 2400 meters.

Wing: ♂ 170, 163; ♀ 170; ♀ imm. 163; ♀ [♂] 162.

Bill: ♂ 47, 47; ♀ 51; ♀ imm. 45; ♀ [♂] 45.

The adult from Deva Deva labeled a female is surely a male from its plumage, having the tail dusky washed with greenish blue instead of being rufous, as in the female.

One May and one June specimen were molting; none was in breeding condition.

At our camp on the west slope of Mt. Tafa the specimens were the only records; on Mt. Tafa's east slope, besides the specimen collected, which flushed from the ground in heavy forest and flew with heavy flight to a perch ten feet up in a small tree, on May 22 I flushed a single bird from the ground, which I was unable to find, and later the same day I saw one fly into a tree about forty feet up. When I fired and missed it both that and another that had been sitting near it flew.

All three specimens that I examined had the bill caked with mud, both inside and out, as though the bird had been digging in the ground, and one specimen had earthworms in its stomach, the others were empty.

Hamlin has supplied us with the following field notes:

"Specimens collected between May 28 and June 20, 1929, along stream between Deva Deva and Mt. Iola located about 40 miles inland from Yule Island, in C. Division of Papua on Mission Road to Ononge. This kingfisher inhabits the densely-forested valleys flanking stream bottoms between the rugged ridges of from 3000–6000 feet altitude, the foothills of the great mountains. The natives say it nests in the ground and is expert at digging with its heavy bill. Apparently it digs for food also; the bills and lores of those collected were usually caked with mud. Both David and I observed the 'shovel-bill' in action. The birds were

seen down in the valley near the stream (elev. 700 meters). The one I saw was on the forest floor investigating around the roots of a tree. Its feet were firmly planted and the neck flattened out as it thrust its bill into the ground at a very slight angle. Then it would push, tail straight out or down, the heading moving occasionally from side to side. It would be at this for as long as a minute, perhaps; then the head would be jerked up. It shook the mud off, snapping its bill a few times. Then erect and motionless with the alert look that kingfishers have for a few seconds, then another vigorous shovel-full. Indeed, I was impressed with the effort shown in the process. David saw one get hold of a long worm and lifting its head drag out the captive sideways. I remember finding the remains of snails and possibly fresh-water crawfish in the stomachs. With its heavy bill it is no doubt enabled to catch and demolish such things. Ground beetles and bugs would be easy prey. The huge bill gives the bird a peculiar appearance and to witness it in action is a comical experience. It would be interesting to have observed more details of the environmental and nesting habits."

Dacelo leachi intermedius Salvadori

Dogwa: 1 ♀; February 22.—Wuroi: 2 ♂ ad., 1 ♂ juv., 2 ♀; January–February 7.—Hall Sound: 1 ♂; June 14 (Hamlin).—Delena: 3 ♂, 3 ♀; June 18–21 (Hamlin).—Port Moresby: 2 ♂, 1 ♀; May 30, October 17 (Zimmer).—Rona: 1 ♂, 2 ♀; March 8–17.

From sea level to 450 meters.

Wing: ♂ (9) 185–212 (200); ♀ (7) 194–215 (208).

All these specimens are referable to *intermedius*. Mayr comparing material from Rona with material from Mimika River in the British Museum concluded that *superfluus* Mathews was a valid race. The only adult female (in fresh plumage) from the Mimika was quite different from the fresh bird from Rona. It was much more brownish above and had the black of the head restricted to the centers of the feathers, the crown thus looks much lighter (two March birds compared, of which the Rona bird had the fresher plumage). The Mimika River bird had all the secondaries with broader white tips and also with more white in the wing. The same characters hold for a young male.

One of our specimens from Wuroi, a male, suggests *superfluus* in the lightness of the crown, but it is probably due to wear.

Molting specimens were taken in February (3), March (3), May (1), June (4); the only breeding datum was the nestling bird brought in by natives on February 1.

At Rona this was a common savanna bird, going about in parties of four to five. The whole party slept in the same tree to which they repaired each evening. Within a hundred and fifty yards of camp were the sleeping places of two such parties. They went to their roosting tree at dark but up to a half hour or more after dark the party burst out into a chorus of calls, and before daylight they start to call though they do not leave their roost until daylight. At Baroka they were also fairly common in the savanna; two birds were found daily in a newly burned area intended for a garden; there they sat quietly on bare dead trees apparently watching the ground for their prey.

Often several birds called at once, resulting in a harsh medley of croaks. When two called, one started with a loud "carruk– –" and the second joined in with a shorter "cark– –."

About Wuroi, where the savanna was much broken up with areas of woodland, this bird was seldom seen, but farther west and at Dogwa in the more open savanna it was a common, noisy bird, usually in pairs, sometimes sitting in the tops of dead stubs. The rattling call that probably corresponds to the laugh of the "laughing jackass," *Dacelo gigas*, was given with bill open and pointed skyward and the tail cocked up and with feathers spread apart. These birds were often quite shy and difficult to approach.

Of five stomachs examined, all contained insects, three of them including beetles and one a cicada. Zimmer records grasshoppers in the stomach of one bird.

Halcyon macleayi Jardine and Selby

Baroka: 1 ♂, 1 ♀; April 8, 17.—Rorona: 2 ♂; August 11 (Zimmer).—Port Moresby: 2 ♂, 1 ♀; October 10, 17 (Zimmer).—Rona: 1 ♂, 2 ♀; March 8–17.—Samarai: 1 ♂, 1 ♀; September 18, 28 (Hamlin).—Annie Inlet: 2 ♂; January 29 (Hamlin).

Taken up to 450 meters.

Wing: ♂ 88, 90, 90, 90, 91, 91, 91, 93; ♀ 91, 91, 94, 94.

A migrant from Australia.

Molting specimens were taken in January (1), March (2), and April (1).

Halcyon sancta sancta Vigors and Horsfield

Daru: 2 ♀; March 5, 7.—Yule Island: 1 ♂, 2 ♀; May 17, 21 (Hamlin).—Baroka: 1 ♂, 1 ♀; April 6, 9.—Port Moresby: 2 ♂, 3 ♀; May 1–October 2 (Zimmer).—Rona: 1 ♀; April 13.

Wing: ♂ 90, 92, 93, 96; ♀ 89, 89, 91, 93, 93, 93, 96, 98, 98.

Three May specimens are the only ones showing wing molt.

This is a migrant from Australia.

Halcyon chloris sordida Gould

Daru: 1 ♂, 2 ♀; January 10, March 8.—Samarai: 1 ♀; September 28 (Hamlin).

Wing: ♂ 97; ♀ 99, 101, 103.

All four are immature, with dark edgings to some of the breast feathers so that the measurements are not of much value for comparison.

Ogilvie-Grant (Ibis, 1915, Jub. Supp., p. 217) gives the following wing measurements for the Mimika River birds: ♂ 107, 110; ♀ 104.

Mayr, from a study of birds in the British Museum, obtained the following wing measurements:

Queensland and islands of Torres Straits: ♂ 104, 108, 112, 112.

Aru Island: ♂ 103 (+ x), 114.

New Guinea (1 Sekar, 2 Mimika River), ♂, 109, 113, 114.

A freshly plumaged bird from the Mimika is indistinguishable from Queensland birds. There is no significant difference between the females from Australia and New Guinea.

New Guinea and Aru Island birds should be included with the Australian *sordida*, *grayi* and *aruensis* being synonyms.

The measurements of the present series are smaller than typical *sordida*, but these specimens are immature, and even then they are much larger than *colona* Hartert from the islands to the east of New Guinea (wing 86–93 mm.).

Mathews (Birds of Australia, VII, pp. 194, 195) says this species is migratory in northern Australia: possibly some of the New Guinea birds are migrants.

On March 8, I found a male and a female together in the interior of an extensive mangrove swamp on Daru Island. The other specimen from Daru was collected by a shooting boy.

Tanysiptera hydrocharis Gray

Wuroi: 2 ♂; February 3, 6.

Wing: 88, 90.

This bird is easily distinguished from the other New Guinea forms which have been included in this species by its much smaller size. Since it occurs in New Guinea along with *galatea* it must be considered a different species. Salvadori (1880, Ornit. Pap. Mol., I, p. 451) has

already recorded this form from the Fly River but the record appears to have been hitherto overlooked.

Compared with three specimens from the Aru Islands (wing: ♂ 87; sex (?) 84, 89) there appear to be no significant differences. There is considerable variation in the shade of blue in the three Aru Island specimens.

Tanysiptera galatea minor Salvadori

Wuroi: 1 ♀ ad.; February 8.—Baroka: 1 ♂ ad., 2 ♀ imm.; April 5–19.—Kubuna: 4 ♂ ad., 2 ♂ imm., 1 ♀ sub-ad., 5 ♀ imm.; November 29-December 9.—Veimauri: 2 ♂ ad.; August 13 (Zimmer).—Kanosia: 1 ♀ ad.; August 22 (Zimmer).—Lolorua: 2 ♂ imm.; August 24, 25 (Zimmer).—Orangerie Bay: 1 ♀ ad., 1 ad. sex (?); December 12 (Zimmer).

From sea level to 100 meters.

Wing: ♂ ad. (7) 101–107 (104); ♂ imm. 3 are 101, 1 is 98; ♀ ad. 103, 105, 109; ♀ imm. (5) 101–104 (102).

For nomenclature of this species see: 1936, Ornith. Monatsber., XLIV, p. 42.

The race *minor* is characterized by a slightly smaller bill than *galatea*. While there is some overlap due to individual variation, there appears to be an average difference on which this race may be recognized.

One specimen with enlarged testes was taken in December; one adult from April and one from August were molting their wings.

Tanysiptera nympha danae Sharpe

Orangerie Bay: 1 ♂; December 12 (Zimmer).—Milne Bay: 2 ♂, 3 ♀; April 3 (Hamlin).—Samarai: 1 ♀; February 2 (Beck).

Wing: ♂ 91; ♀ 90.

The series from Milne Bay is from the type locality. A male from Orangerie Bay compares better with the description of the type than the two males from Milne Bay, the two latter being darker, more blackish on the back and scapulars, and, with one exception, the cinnamon of the streak above the eye is also suffused across the back of the neck and both of these specimens are deep vermilion below with pink under tail-coverts. The Orangerie Bay bird has paler under tail-coverts (not buff with a pink tinge) and paler under parts.

We also have two males from Mt. Lamington, Hydrographer Range (1500–2000 ft.), which is near the type locality of *T. d. intensa* of Rothschild (Hydrographer Range) west of Dyke Acland Bay (2500 ft.), and

one male from Bafu (wing, 85, 86, 88 mm.). Comparing these birds, which should be *intensa*, with Milne Bay birds we find that the two Milne Bay birds are the most deeply colored below, with pinker, in one case almost vermilion, under tail-coverts. One Mt. Lamington bird and the Bafu bird are quite as pale on the under parts as the Orangerie Bay bird. Above, one Mt. Lamington bird is slightly darker, more blackish, than Milne Bay birds, but the other two are not as dark as the darkest Milne Bay bird.

Subsequent to the description of *intensa*, Lord Rothschild received specimens from Milne Bay that were as intensely colored as the type of *intensa*. *T. n. intensa* is a synonym of *danae*.

Tanysiptera sylvia salvadorina Ramsay

Deva Deva: 1 ♀ ; June 19 (Hamlin).

Wing: 94.

The white central tail-feathers have only a very narrow edging of light blue on the basal half of the outer web.

This specimen was molting.

Merops ornatus Latham

Daru: 1 ♀ imm., 1 sex (?); March 10, 11.—Yule Island: 7 ♂, 1 ♀ imm.; May 17–June 20 (Hamlin).—Delena: 1 ♂; June 18 (Hamlin).—Baroka: 2 sex (?); April 16.—Port Moresby: 2 ♂; April 24, June 20 (Zimmer).—Rona: 1 ♂, 1 sex (?); April 17.—Milne Bay: 5 ♂ imm., 1 ♀ imm.; April 1, 2 (Hamlin).

A migrant from Australia.

Wing: ♂ ad. (9) 105–113 (110).

These birds were seen in the mountain-valley grassland and over the forest at 2400 meters.

Eurystomus orientalis pacificus (Latham)

Daru: 1 ♀ ; March 7.—Port Moresby: 1 ♀ ; October 10 (Zimmer).

A migrant from Australia.

Wing: 192, 198.

Eurystomus orientalis waigiouensis Elliot

Wuroi: 1 ♀, 2 ♀ imm.; January 26.—Kubuna: 2 ♂, 1 ♀ imm.; December 16.—Deva Deva: 1 ♂; June 16 (Hamlin).—Lolorua: 1 ♀ ; August 24 (Zimmer).—Kanosia: 1 ♂; August 22 (Zimmer).—Port Moresby: 1 ♀ ; March 18.—Orangerie Bay: 1 ♀ ; December 17 (Zimmer).

Hamlin recorded one specimen from Deva Deva, 770 meters.

Wing: ♂ 205, 205, 208, 210; ♂ 206, 206, 207, 212.

For a discussion of *waigiouensis* see American Museum Novitates, No. 709, p. 7.

Molting specimens were taken in March (1), and August (1); the fledgling birds brought in in December and January indicate breeding in November and December.

Rhyticeros plicatus ruficollis (Vieillot)

Baroka: 1 ♂ ad.; April 19.—Mafulu: 2 ♂ ad., 1 ♀ ad.; October 1–26.—Cloudy Bay: 1 ♀ ad.; January 2 (Zimmer).—Milne Bay: 1 ♀ [= ♂] imm.; April 3 (Hamlin).

	Wing	Tail	Bill (from Nostril)	No. of Folds in Casque
Ad. Male	416, 419, 440	246, 255, 254	209, 168, 198	4, 1, 7
Imm. Male	402	217	162	0
Ad. Female	386, 411	229, 246	159, 161	5,[1] 3

For a discussion of the status of the New Guinea form see American Museum Novitates, No. 709, p. 8.

The hornbill was common at the lower altitudes, and rather uncommon at 1250 meters. On January 13, on our way up the Oriomo River by boat, we were about 12 kilometers from the river mouth at dusk. Numbers of hornbills were seen there, flying from east to west across the river but little above the tree tops. The birds were in two's, three's, or four's and in all there were more than a hundred of them. All the birds were going in the same direction, giving the movement the appearance of a definite flight. At the same time numbers of ibis (*Threskiornis*) were moving in the same direction but considerably higher.

Pitta novae-guineae novae-guineae (Müller)

Wuroi: 3 ♂ ad., 1 ♀ ad.; January 18–31.—Yule Island: 1 ♂ imm.; June 7.—Vanumai; 2 ♂ imm., 1 ♀ imm.; June 6, 12 (Hamlin).—Baroka: 1 ♂ ad., 2 ♂ imm., 2 ♀ imm.; April 3–10.—Kubuna: 3 ♂ ad., 1 ♀ ad.; December 1–14.—Veimauri: 2 ♂ ad.; August 15, 16 (Zimmer).—Orangerie Bay: 2 ♂ ad.; December 15, 19 (Zimmer).—Annie Inlet: 1 ♀ ad.; January 29 (Hamlin).

Found up to 100 meters.

Wing: ♂ ad. 100, 100, 100, 101, 102, 102, 103, 106, 106; ♀ ad. 102, 104, 106.

[1] At least one fold has broken off.

None of the adults were molting; an immature male taken April 10 was molting into adult plumage. A male with enlarged testes was taken in April, and a nest with young was found in April.

On April 4 at Baroka I found a nest of this bird. It was just off a trail through second-growth forest. As I walked by the nest, not knowing it was there, a young bird flew from the nest and lit on the ground a short distance away. The adult male came about, but was shy. It occasionally gave a short scolding note but it was some time before I saw it fly to a perch about a meter up where it was collected, a male with enlarged testes. Later two other young were found by listening for their low call. The nest, on the ground and facing away from the trail, was partly under a dead brushy branch. Some grass and herbs had grown up, overhanging the nest, so that it was well concealed. It was a typical round domed structure 250 mm. across with an entrance about 90 mm. wide and 70 mm. high. In front, the bottom of the nest was carried forward to form a short "walk" up to the nest. No hollow had been prepared for the nest; it rested on the level ground. The base of the nest was largely of dead leaves, though the base of the front of the nest and the "walk" were formed of small dead sticks 100–140 mm. long and 5–10 mm. in diameter. The walls and top of the nest were of dead plant fiber and rootlets. A substantial lining in the bottom of the nest was composed of finer vegetable fiber, including fiber from a palm.

Pitta macklotii macklotii (Temminck)

Dogwa: 1 ♀ imm., 1 imm. sex (?); February 14, 27.—Kubuna: 1 ♂ ad., 4 ♂ imm., 1 ♀ imm.; December 1–16.—Deva Deva: 3 ♂ ad., 2 ♀ ad.; June 5–20 (Hamlin).—Deva Deva: 1 ♂ ad.; October 16.—Mafulu: 1 ♀ ad.; October 26.

Found from near sea level to 1250 meters.

Wing: ♂ ad. 104, 106, 108, 108, 111; ♂ imm. 106, 106; ♀ ad. 110, 111, 112; ♀ imm. 109.

The wings of the two Dogwa birds measure: ♀ 104; 1 sex (?) 99.

It is interesting that the birds from the higher altitudes are not *oblita*, nor even approach that form. *P. m. oblita* (we have examined the typical series of four specimens) is known only from the four specimens from Avera, Aroa River, and appears quite different, with the back very bluish and the nape pale ochraceous brown. *P. m. loriae* is found only in extreme eastern New Guinea.

The two south New Guinea birds have somewhat paler napes than

any *macklotii* before us, but they cannot be referred to *oblita* as Hartert (1932, Nova Guinea, XV, p. 458) has done.

This species has three plumages: the adult plumage, which is attained by a complete prenuptial molt, the first-year plumage attained by an incomplete post-juvenal molt, the wing-feathers and some of the upper wing-coverts at least of the nestling plumage being retained. This first-year plumage is similar to the adult plumage, but differs from it in having less blue in the upper surface of the wing, in having usually a paler red belly, with more brownish feathers in the flanks, the blue of the chest is not as intense, the back is somewhat paler and greener than in the adult.

Nos. 2184 and 2367 are in nestling plumage apparently undergoing no molt. The chin is dull brownish, the throat brownish with, in its center, an area of black or buffy white tipped black feathers. The chest is dull pale brownish, each feather with a darker margin, thus giving a scaled appearance; in the breast in both specimens are a few blue feathers similar to those of the first-year bird which can be called progressive feathers. Center of lower breast, belly, and under tail-coverts pale pink, flanks ashy brown more or less tinged pink; sides of head dull brown, top of head dark brown, a few feathers with lighter tips. In No. 2367 the nape is the same as the crown; in 2185 it is slightly paler and tinged with red. The back is of a dull olivaceous brown, with the feathers of loose texture, abundantly mixed with firmer bluish-green feathers very like those of first-year plumage. The wing-coverts are of the color of the back, not bluish; the amount of white on the lesser upper wing-coverts varies individually, and there seems to be no constant difference between nestlings and adult birds. These progressive feathers are not molting and belong apparently to the same plumage as the neighboring feathers.

Pitta macklotii loriae Salvadori

Cloudy Bay: 1 ♂ ad., 1 ♀ imm.; January 2, 6 (Zimmer).—Milne Bay: 1 ♂ ad., 1 ♀ ad.; April 3 (Hamlin).

Wing: ♂ ad. 106, 110; ♀ ad. 102; ♀ imm. 107.

The specimens from Cloudy Bay agree perfectly with a male and female from Milne Bay. This is an extension of the range of *loriae*, Hartert (1930, Nov. Zool., XXXVI, p. 91) giving its range as Milne Bay to Kumusi River.

Hirundo tahitica frontalis Quoy and Gaimard

Baroka: 1 ♂ imm., 1 ♀ imm.; April 8, 18.—Mafulu: 1 ♂ ad., 1 ♀ ad.; November 2.—Hisiu: 1 ♀ ad.; September 6.

Found from sea level to 2000 meters.

Wing: ♂ ad. 114; ♀ ad. 109, 111.

Mayr (1934, American Museum Novitates, No. 709, p. 13) states that birds from eastern and southern New Guinea and the islands of Torres Straits are apparently lighter underneath, average smaller, and have larger white spots in the tail than typical birds. Unfortunately we have no specimens from the type locality for comparison, but the measurements of this series are not smaller than those given by Mayr for typical *frontalis* (104–110). The April specimens are completing their molt and are in fresh plumage, the September specimen is slightly worn, and the November birds are in worn plumage.

At Baroka in April small parties of this bird were seen occasionally feeding over the large swamps, sometimes in company with a large flock of *Collocalia vanikorensis*. Near Kubuna on December 15 I saw a pair perched on a dead tree in second growth, the only ones seen there. In the mountains this swallow was common about most of the mission stations with frame buildings and the government station which we visited. It was seen at Mafulu (October, November), Fane (May, September), Mondo (May), Ononge (May, August), and Urunu (August). At Mondo, Mr. Middleton showed me an old nest on a support under the eaves of his veranda in which he said the swallows had raised a brood some time before. The missionaries told us that the natives call this swallow the missionary bird because, they said, they followed the mission stations into the mountains, being unknown before. Certainly we saw them only in the vicinity of frame buildings built by white men. This swallow was also common about Port Moresby in March and January, perching on telephone wires and buildings and feeding about the town, and we saw a few about Mr. King's place at Rona in March feeding over the valley and perching on cornices of the buildings.

Hylochelidon nigricans nigricans Vieillot

Baroka: 1 ♂; April 18.

This specimen was one of several of this species in a loose, feeding flock, composed largely of *Collocalia vanikorensis* and a few *Hirundo tahitica*, that appeared over the large swamp at Baroka and fed there for some time. This was the only record.

Lalage tricolor (Swainson)

Lolorua: 1 ♂ ad.; August 28 (Zimmer).—Port Moresby: 4 ♂ imm., 1 ♀ ad.; April 17–June 20 (Zimmer).

Found near sea level.

Wing: ♂ ad. 92; ♂ imm. 95, 95, 98.

A migrant from Australia, extreme dates April 17 to August 28.

Apparently the only previous record for New Guinea is that made by Stone of an individual collected near Port Moresby (see Salvadori, Ornit. Pap. Mol., II, p. 160, 161).

The adult female (June) is molting and the immature males (except the April specimen) are beginning to change to the adult dress.

Lalage karu polygrammica Gray

Daru: 2 ♂ ad., 1 ♀ imm.; March 8, 10.—Wuroi: 1 ♂ ad., 2 ♀ ad., 1 ♀ imm.; January 27–February 3.—Dogwa: 1 ♂ ad.; February 28.—Delena: 1 ♂ imm.; May 24 (Hamlin).—Baroka: 2 ♂ ad., 1 ♂ imm., 1 ♀ ad.; April 3–18.—Kubuna: 1 ♂ ad., 1 ♂ imm.; November 30, December 1.—Mafulu: 1 ♂ imm.; November 16.—Lolorua: 1 ♀ [♂] ad.; August 28 (Zimmer).—Rona: 1 ♂ imm.; March 13.—Milne Bay: 1 ♀ ad.; April 1 (Hamlin).

Found from sea level to 1250 meters.

Wing: ♂ ad. 91, 92, 95, 95, 96, 96, 97, 97; ♂ imm. 87, 89, 90, 91, 93; ♀ ad. 89, 90, 90, 91; ♀ imm. 91, 91.

An immature female from Daru (March) is finishing its molt into its first-year plumage as is a male from Rona (March). Immature males from April (Baroka), May (Delena), and November (Kubuna), and a January female (Wuroi) are molting out of their first-year plumage. Adults are molting, January and February (Wuroi), March (Daru), April (Baroka), November (Mafulu), December (Kubuna).

At Dogwa two of these birds were seen sitting in the tops of gallery forest trees; at Wuroi and Daru it was not common. At Baroka, where it was fairly common, single birds or couples were most often seen resting on the dead branches in the top of savanna trees, less often in the rain forest. At Kubuna the species was fairly common, often seen sitting in the tops of the trees along the forest edge. The only time I ever saw this species feeding was when three birds in low second growth were gleaning for insects from the twigs and leaves. The single specimen from Mafulu was the only record there; it came into a low, dead tree in the second growth. The species was not common at Rona, where it was found in the savanna.

Of five stomachs examined three contained only fruit, one half fruit and half insect matter, and one a small caterpillar.

None of the specimens collected was in breeding condition.

Edolisoma melan meeki Rothschild and Hartert

Delena: 1 ♂ imm.; June 27 (Hamlin).—Baroka: 1 ♀ [♂] ad.; April 8.—Vanumai: 2 ♂ imm., 1 ♀ ad.; June 7, 9 (Hamlin).—Kubuna: 2 ♂ ad.; December 1, 12.—Deva Deva: 2 ♂ ad.; June 3, 12 (Hamlin).—Mafulu: 1 ♀ imm.; October 15.—Hisiu: 1 ♂ ad.; September 7 (Zimmer).—Milne Bay: 2 ♂ ad., 1 ♂ imm., 1 ♀ imm.; April 1 (Hamlin).

Found from sea level to 1250 meters.

Wing: ♂ ad. (8) 112–126 (122); ♂ imm. 120, 121, 123, 125; ♀ ad. 125; ♀ imm. 117, 127.

Wear and fading are not very pronounced in the black plumage of adult males, the black merely turning purplish and more evenly glossy; in the brown plumages of females and immature males, however, the worn feathers turn quite light, thus differing considerably from fresh feathers.

The specimens collected were the only ones seen; the Baroka bird was taken in gallery forest, the others brought in by shooting boys.

One stomach contained insects, another largely insect matter and a little fruit.

None of the specimens had enlarged gonads.

Edolisoma melan subspecies

Wuroi: 2 ♂ ad., 1 ♂ imm., 2 ♀ ad., 2 ♀ imm.; January 18–February 6.

Wing: ♂ ad. 129, 129 + x; ♂ imm. 125; ♀ ad. 124, 124; ♀ imm. 123, 125 + x.

These specimens do not appear to agree with either *melan* or *meeki*, but our comparative material is not sufficient to decide whether or not they represent a new race.

The black cuckoo shrike was common at Wuroi where it was often found in parties of as many as five in the heavy forest and occasionally out in the savanna. At Daru a party was seen in the mangroves. These birds frequented the smaller branches of the lower trees in the forest, searching for insects amongst the twigs. A low soft grunting call was sometimes given by a number of birds at the same time. This species sometimes comprised part of the mixed flocks of passerine birds that wandered through the forest.

One stomach contained soft fruits; one, fruit and a caterpillar; and one, insect matter.

None of the specimens collected had enlarged gonads.

Edolisoma montanum minus Rothschild and Hartert

Deva Deva: 2 ♂ ad., 1 ♂ [♀]; May 25–31 Hamlin.—Mafulu: 2 ♂ ad., 2 ♀ ad.; October 17–November 18.—Mt. Tafa, east slope: 2 ♂ ad., 1 ♀ imm.; May 15–22.

Found from 770 to 2070 meters.

Wing: ♂ ad. 126, 128, 130, 131, 133, 135; ♀ ad. 126, 127; ♂ [= ♀] ad. 124; ♀ imm. 125.

The female No. 329881 has a smaller bill (13 mm. against 14–15 mm.) than the others, but otherwise is similar.

We refer this series to *minus*, a southeast New Guinea race distinguished by its smaller size. The following measurements from series in the American Museum substantiate the claim of the distinctiveness of this race.

	Male	Female
Arfak Mts.	135, 140, 140	132, 135
Cyclops Mts.	144	139
Huon Peninsula	135, 135	128, 130
Southeast New Guinea	126–135 (130.5)	124, 127

The measurements show that the birds from the Cyclops Mts. and from the Arfak Mts. (typical *montanum*) are the largest (see also Hartert, 1930, Nov. Zool., XXXVI, p. 90); birds from the Sepik Mountains (Stresemann, 1923, Arch. für Naturgesch., LXXXIX, Heft 9, p. 23) and from the Saruwaged and Herzog Mts. (see Mayr, 1931, Mitt. Zool. Mus. Berlin, XVII, p. 694) are somewhat smaller, but must be referred to *montanum*, while *minus* is restricted to the Owen Stanley Mts. and neighboring ranges. *Edolisoma m. montanum* has the wing measurement of 130–142 in males, and 128–139 in females, while *minus* measures 126–135 in males, and 124–127 in females.

The female No. 428 is molting out of the first-year plumage, the wing having nearly completed its molt, but some of the first-year body plumage remains. The new feathers on breast and under tail-coverts are abnormally colored. The breast feathers have dark shafts and dark tips giving a slightly barred appearance and the under tail-coverts have two subterminal dark bars, and a faint rusty to whitish tip.

At Mafulu pairs or threes of the black-bellied cuckoo shrike often visited the fig trees to feed on the fruits along with many other species.

On the east slope of Mt. Tafa this bird was fairly common at about 2000 meters, where it was normally found singly searching in its leisurely fashion for food in the lower forest trees.

One stomach contained insects, one one-half figs and one-half insects, and one only figs.

A laying female from Mafulu, October 26, was the only breeding specimen.

Edolisoma tenuirostre mülleri Salvadori

Port Moresby: 1 ♂ ad., 2 ♂ imm.; April 17–May 8 (Zimmer).—Rona: 1 ♂ ad.; March 13.

Found up to 450 meters.

Wing: ♂ ad., 129, 130; ♂ imm., 132, 134.

The immature male has the base of the bill brown instead of completely black as in the adult. One April immature has molted most of the fluffy nestling plumage, retaining only a few brownish black, white-tipped nestling feathers on the crown and nape. The first-year plumage resembles that of the adult female except for the pointed tips of the rectrices and the white tips on the remiges, alula and greater series of upper wing-coverts; the May immature specimen is just completing its molt into the adult male plumage. The Rona specimen was taken in savanna country.

Edolisoma tenuirostre aruense Sharpe

Daru: 1 ♀ ad., 1 ♀ imm.; March 6.—Wuroi: 1 ♂ imm., 1 ♀ ad.; February 2, 5.—Dogwa: 1 ♀ ad.; February 22.

Only found up to 40 meters elevation.

Wing: ♂ imm. 117; ♀ ad. 113, 114, 120; ♀ imm. 118.

This series is referred to *aruense* on the basis of its smaller wing (ad. ♀ 113–120 against 130, 130, 132 for three adults from north New Guinea). It shows a slightly broader bill and, though variable, seems to have more buff below.

The male is in the midst of the complete molt from the first-year to the adult plumage; the adult females, showing considerable wear, are all molting. The immature female is in the first-year dress, differing from the adult in the pointed rectrices, white-tipped remiges, alula and greater wing-coverts, and the presence of a few light-tipped nestling feathers on the back.

In south New Guinea this was not an uncommon species in the forest

areas, in the savanna, and in the mangroves. One stomach contained fruits and insects including a caterpillar. None of the specimens was in breeding condition.

Edolisoma ceramense incertum (Meyer)

Matsika: 1 ♂; November 23.—Deva Deva: 1 ♀ [♂]; May 30 (Hamlin).—Mafulu: 4 ♂, 3 ♀; October 12–November 1.

Found from 770 to 1250 meters.

Wing: ♂ 111, 113, 117, 117, 118, 119; ♀ 111, 114, 115.

All birds are adults, showing very little wear, and no signs of molt.

The series shows a great deal of individual variation. One male from the Mt. Lamington district (No. 329894) collected by Hamlin has the upper throat gray, hardly darker than breast and belly, the blackish area being restricted to lores, cheek, and ear-coverts; the two central tail-feathers in this and one specimen in the present series are gray with only a small black spot near the tip; the Deva Deva bird (wing 118) has an enormous bill (18 mm. from the nostrils to the tip of the bill against a maximum of 16 mm. in the rest of the series) but agrees in every other detail with the other specimens. The three females belong to two very distinct types. Of the one we have 2 specimens (Nos. 419985, 419986) which have the ear-coverts gray, scarcely darker than the rest of the body, and with no light markings. The breast feathers are gray, without a darker shaft-streak. In the one which has a perfect tail, the black tip to the two central tail-feathers is rather large (wing 111, 115). The female of the other type (No. 419984) is distinctly darker, above and below, the feathers of the crown have more pronounced dark centers, the breast feathers have distinct dark shaft streaks, the feathers of the chin are blackish-tipped gray, the area of the ear-coverts and below the eye is blackish flecked with white and the black tip to the central tail feathers is smaller (wing 114). These three are all breeding birds so it is not a question of different plumages. A single female from the Arfak mountains (Mayr coll.) is very similar to this second type, but has a slightly longer and more slender bill and more boldly marked under-wing coverts.

This was not an uncommon bird at Mafulu. Of four stomachs examined, three contained only insect matter, one fruit, and several small caterpillars. The three females from Mafulu (October and November) were in breeding condition.

Coracina caeruleogrisea adamsoni Mayr and Rand

1936, Mitt. Zool. Mus. Berlin, XXI, p. 245, Mafulu.

Matsika: 1 ♀ nestling; November 24.—Deva Deva: 2 ♀ ad.; May 25, 29 (Hamlin).—Mafulu: 2 ♂ ad., 4 ♀ ad.; September 30–November 4.—Ononge: 1 sex (?) imm.; August 17.—Mt. Tafa, east slope: 1 ♀ ad., 1 ♀ imm.; May 14, 17.

Found from 770 to 2070 meters.

In the southeast New Guinea series the May specimens from Deva Deva and Mt. Tafa are molting their wing feathers. The old primaries that are about to be molted show little wear, a common phenomenon in this group, while the wear is more pronounced in the rectrices.

The female nestling from Matsika has the whole body covered with a downy white plumage except for a few slaty tipped feathers in the crown. The coverts of the secondaries and the tertials are also white, while the rest of the wing and the rectrices which will be retained in the next plumage are slaty. This downy white plumage is worn but a short time as it is already being replaced on the back and nape by the slate-colored feathers of the first year plumage. Hartert (1930, Nov. Zool., XXXVI, p. 89) has recorded a young male in downy nestling plumage which was largely white, and this he considered albinistic, but it seems that this white nestling plumage is the normal condition.

This was a common cuckoo shrike at the camp where we found it, except Matsika where the nestling brought in by natives was our only record. It was not confined to the heavy forest, being equally common in the secondary brush and patches of forest, and its loud harsh cries made it conspicuous. It fed through the upper part of the trees, its prey consisting of rather large insects. At Mafulu on October 17 when I shot one bird of a mated pair the other stayed about some time calling a whining "whaaaa."

Of seven stomachs examined all contained insects, most of them large, including locusts, beetles, and caterpillars.

The breeding season includes at least October and November, judging by the condition of the gonads of our specimens and the nestling bird.

Coracina longicauda (De Vis)

Fane: 1 ♂; June 8 (Hamlin).—Mt. Tafa, west slope: 2 ♂, 1 ♀; September 3.—Mt. Tafa, east slope: 2 ♂, 2 ♀; May 17–29.—Murray Pass: 5 ♂, 2 ♀; July 25–31.

Found from 2000 to 2840 meters (one specimen from 1300 meters).

Wing: ♂ (10) 176–188 (182); ♀ 175, 177, 178.

Comparing this series with four specimens collected in the Huon Peninsula by R. H. Beck, March, 1929, the chief difference is that the Huon Peninsula birds have a slightly shorter and stouter bill (only one adult male has a perfect bill).

The plumage of the present series shows very little wear. This is especially noticeable in the molting wings where the old primaries, that are about to be replaced, have the margin practically intact and are little duller than the fresh feathers. This is probably correlated with their damp forest habitat as cuckoo shrikes of the drier coastal savanna, such as *C. papuensis*, show much more wear. Most of the specimens are not molting except May and July birds.

This was a common bird at our east Mt. Tafa camp where it was usually seen in parties of four slowly searching the smaller branches well up in the forest tree for insect prey. Most of their calls were loud, sharp, and often heard; the commonest may be written "ker kee." The species was much less common at the west Mt. Tafa camp and Murray Pass, though still usually in parties of four. Here, where the trees were lower, they could sometimes be closely approached as they sat quietly in the branches. Of nine stomachs examined, five contained only insects (including walking-stick insects and beetles), one contained almost all insect matter and, in addition, a little fruit, and three contained three-quarters insects and one-quarter fruit. Judging by the condition of the gonads of our specimens, the species does not breed from May to September.

Coracina boyeri subalaris Sharpe

Wuroi: 3 ♂ ad., 3 ♂ imm.; January 19–31.—Kubuna: 1 ♀ ad., 1 ♀ imm.; December 10.

Found up to 100 meters.

Wing: ♂ ad. 135, 140, 141; ♂ imm. 136; ♀ ad. 120; ♀ imm. 128.

The present series shows that in this species the males at least have four different plumages. The nestling plumage is composed of fluffy white feathers each with a dusky spot near the tip. A few remnants of this plumage are retained by the female No. 2325 (December) and an occasional nestling feather by male No. 2598 (January).

The first-year plumage is attained by an incomplete molt, the wings and tail not being renewed. This plumage is pale gray, less bluish than the next plumage, and without black on the throat; compared with the adult plumage the rectrices are more pointed and edged white near the

tip, the remiges and alula are tipped and edged white. Specimen No. 2598 (January) has nearly completed its molt into this plumage.

The third, or sub-adult, plumage, reached by a complete molt (shown by No. 2451 (January) which is molting into this plumage and No. 2469 (January) which is molting out of it), resembles the adult bird in wing, tail, and general coloration of the body plumage. Only a small area on the chin is black, the rest of the throat being gray.

The fully adult plumage with its black throat is the fourth plumage, and is reached by a complete molt. Three January specimens (Nos. 2450, 2569, and 2662) are molting from one adult plumage to another.

Five stomachs examined all contained fruit and two contained, in addition, a little insect matter.

None of the specimens was in breeding condition.

Coracina papuensis angustifrons (Sharpe)

Delena: 1 ♀ ad.; no date (Hamlin).—Baroka: 1 ♂ ad.; April 8.—Kubuna: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad.; December 8–13.—Port Moresby: 1 ♂ ad., 1 ♂ imm., 1 sex (?) imm.; June 20, July 4 (Zimmer).—Rona: 2 ♂ ad., 1 ♀ ad., 1 ♀ imm.; March 10–17.—Annie Inlet: 1 ♂ ad.; January 29 (Hamlin).

Found from sea level to 700 meters.

Wing: ♂ ad. 143, 144, 148, 149, 150, 151; ♂ imm. 141, 147; ♀ ad. 136, 149; ♀ imm. 147.

The wear on both the remiges and rectrices is much more pronounced in this savanna species than it is in mountain forest species of this genus, such as *C. longicauda* and *C. caeruleogrisea*. We have adults showing wing molt from March, April, July, December, and January. The July specimen, No. 295597, shows an irregular tail molt, one of the central pair and the two outer pairs of rectrices being old and worn, while the rest are new.

The pale cuckoo shrike was fairly common in the savanna and secondary brush where it was usually seen singly, or in two's or three's, in the tops of the trees apparently searching for insects. On April 8 at Baroka, while watching the various birds at a big fig tree in a patch of rain forest, I was surprised to see several of these cuckoo shrikes visit the tree apparently to feed on the figs.

Of four stomachs examined, three contained only insects (including beetles, grasshoppers, and a walking-stick insect) and one contained half fruit and half insects. None of the specimens was breeding.

Coracina papuensis oriomo Mayr and Rand

1936, Mitt. Zool. Mus. Berlin, XXI, p. 244 (Wuroi, Oriomo River).

Wuroi: 4 ♂ ad.; January 24–February 11.

Found near sea level.

Wing: ♂ ad. 146, 147, 148, 149.

This race, apparently restricted to south New Guinea and most closely related to *stalkeri* of Queensland, shows again the strong avifaunal connection between this area and Australia.

This pale cuckoo shrike was common at Wuroi and Dogwa, frequenting the savanna. It was usually seen in pairs, in the tops of the trees, and especially favored tops of dead trees for perches. Its two note call "wit-chee" was its commonest note and very distinctive, as was its hawk-like flight in which it often sailed with its wings below the horizontal.

None of the specimens was breeding.

Coracina novaehollandiae (Gmelin)

Yule Island: 4 ♂ imm. (?), 1 ♀ ad., 2 ♀ imm., 1 ♀ [♂?]; May 17–24 (Hamlin).—Vanumai: 1 ♀ [♂?]; June 9 (Hamlin).—Mafulu: 1 ♂ imm. (?); October 13.—Port Moresby: 1 ♂ ad.; October 2 (Zimmer).

Found from sea level to 1250 meters.

Wing: ♂ ad. 182; "♀" [♂ ad. ?] 192, 193; ♂ imm. (?) 181, 190, 194, 199; ♀ ad. 190; ♀ imm. 187, 187.

The sexing of this series is rather unreliable so we are unable to work out definite differences between adult females and first-year birds (male and female).

The October adult male from Port Moresby differs from the two adult birds labeled ♀ (but almost certainly adult males) from Yule Island and Vanumai (May and June) in being somewhat darker on the back and chest, this dark color also extending farther down toward the belly, in having a definitely smaller bill and a shorter wing (182, against 192, 193). The May and June specimens are rather worn, but show no wing nor tail molt (except one specimen which has probably lost part of its tail accidentally). The immature male (October) is very worn, the adult male (also October) only slightly worn, neither bird showing any signs of molting.

This Australian migrant winters in New Guinea, our extreme dates being May 17 and October 13.

Coracina lineata axillaris (Salvadori)

Mafulu: 2 ♂ ad., 2 ♀ ad., 1 ♀ imm.; October 10–November 1.

Found only at 1250 meters.

Wing: ♂ ad. 138, 139; ♀ ad. 131, 143; ♀ imm. 132.

Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 693) records a female from the Sattelberg with a wing of 144, and Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 18) records the following measurements of birds from the Sattelberg: ♀ 135, ♂ 135, 136. Stresemann and Paludan (1932, Nov. Zool. XXXVIII, p. 161) give ♂ 143, ♀ 131, 131.5, 133 for Waigeu birds. From specimens in the American Museum the following data were obtained: Siwi (Arfak) ♂ 130, ♀ 132; Madang ♀ 143. From these data it can be seen that no subspecies based on size can be recognized.

The yellow-eyed cuckoo shrike was fairly common about Mafulu, the only camp at which we found it. It was usually seen in parties of three to five flying about over the second growth or perched in the tops of the tall trees of the forest edge. Sometimes the birds searched for insects among the smaller limbs with typical *Coracina* actions, but more often they visited the fig trees to feed on the fruits which they swallow whole; here consorting with fruit pigeons and birds of paradise they were one of the commonest visitors to the fig trees. Somewhat restless, they usually did not stay long each visit, and kept moving about after uttering a plaintive whistled "whee." Occasional pairs of birds probably were mated, as I shot one of a pair (November) which proved to be a breeding female (the other four specimens did not have enlarged gonads). This suggests, as do the series of many other species, that the breeding activities of many New Guinea birds are not concentrated into a short period. Of four stomachs, two contained only small figs, one fruit, and one figs and a caterpillar.

Anthus gutturalis gutturalis De Vis

Murray Pass: 3 ♂, 1 ♀; July 29, August 6.—Mt. Albert Edward: 6 ♂, 4 ♀; June 15–July 17.

Found from 2840 to 3680 meters, also seen commonly to 3950 meters.

Wing: ♂ 100, 100, 102, 103, 104, 104, 106; ♀ 96, 97, 98, 98.

All these birds are apparently adult. Molting birds were secured in June and July but most of the birds were in somewhat worn plumage and not molting.

This pipit was a bird of the grasslands on top of the Wharton Range.

About Mt. Albert Edward itself and our camp, where the grasslands were extensive and the numerous ridges supported a rather scant growth of grass, this bird found its optimum conditions. Here it was common, usually in pairs or loose parties of sometimes as many as eight to ten. In Murray Pass, however, where the grassland was less extensive, more dotted with tree ferns, and much of it with a heavy growth of grass, the pipit was common only locally on the few scantily grassed ridges.

The pipits fed on these ridges, walking about, often with the head stretched upward to its fullest extent, possibly to get a clearer view. They were not very shy and when alarmed flew to some nearby vantage point, a rock, the top of a dead tree, or even the branches of a tree in the edge of the forest.

Occasionally during our stay a bird gave a snatch of song, but on a few mornings they were noisy. On our last trip to the top of Mt. Albert Edward (July 11) pipits were giving their sweet whistle and piping about the very summit in the clear dawn. On the beautifully sunny morning of July 5, the day before having been rainy, many pipits were singing. They gave five high notes running into a trill, and a lower, coarser trill, as well as other subdued calls and whistles all very musical, several nearby birds contributing to make a continuous medley. The trills were sometimes given as the birds sailed with set wings a short distance above the ground.

Of eight stomachs examined, all contained seeds, probably mostly of some grass; four contained some insect matter varying from a little to about half of the stomach contents; one contained a little green herbaceous matter, and all contained some quartz grains. The rigorous conditions of life on these grasslands evidently demand that these birds take whatever is offered in the way of food.

None of the birds taken showed enlarged gonads; the breeding season evidently being later in the year.

Turdus poliocephalus papuensis De Vis

Mt. Tafa, west slope: 2 ♂, 1 ♀; August 22–September 15.—Murray Pass: 3 ♂, 1 ♀, 1 ♀ imm.; July 27–August 2.—Mt. Albert Edward: 4 ♂, 5 ♀; June 16–July 2.

Found from 2400 to 3680 meters and also seen up to 3850 meters.

Wing: ♂ (9) 127–135 (132); ♀ (7) 126–129 (127).

This form is nearly uniformly colored but the throat and upper breast are browner, outlining the breast shield, which is of a conspicuously different color in some other members of this group. In this

character, *papuensis* stands as a connecting link between such forms as the uniformly colored *samoensis* and the forms with a distinctly different breast shield such as *poliocephalus* and *vitiensis*.

The amount of rusty edgings on the feathers of the under parts varies, but the females usually have more of it. Their general color is duller, less intense black, and the bill has a dusky tip instead of being usually all yellow as in the male. The size of the buffy to rufous markings in the under tail-coverts varies greatly in both sexes and may be almost absent.

The immature bird, evidently not long out of the nest (July 28), is in nestling plumage. The upper parts are dull brownish black, the crown with triangular rufous marks on the tips of the feathers, the nape tinged brownish; the back is tinged olive, the scapulars with a central streak of light rufous; a buffy line extends from over the eye to above the ear-coverts which are black flecked with buffy. A line from the gape extending back below the ear-coverts is buffy rufous, and a black stripe separates that from the grayish throat. The feathers of the breast and the flanks are rufous with a dark gray base and a black terminal spot. The belly is white, the anterior feathers with small black tips, the under tail-coverts blackish brown with a broad central white stripe. The wing coverts are blackish, tinged olive, the outer lesser ones with a rufous shaft-streak; the median coverts have a pale rufous shaft-streak and a small triangular terminal spot of the same color, the greater series with smaller buffy triangular spots on the tips. The remiges are black, the secondaries strongly tinged olive on the outer web, the primaries edged with gray; the black rectrices are much more pointed than in the adult. The series is in slightly to somewhat worn plumage, and none shows wing molt.

Males with testes enlarged were taken in June, July, and August; none of the females was in breeding condition, though one, September 15, and another, June 30, showed some enlargement of their ovaries. This seems to point to a breeding season later in the year, but the fledgling (July 28) indicates that one pair of birds at least nested the end of June.

The mountain blackbird was not common at our camp on the west slope of Mt. Tafa where only a few individuals were seen, and these all in the camp clearing. Sometimes one hopped about on the ground within fifty yards of the tent but it was timid and the appearance of anyone sent it flying to the forest edge. The raspberries (*Rubus*), which were common in the clearing, attracted this bird. It also occasionally

visited our latrine to feed on the maggots which swarmed there. This bird was encountered elsewhere only on top of the Wharton Range. At Murray Pass it was fairly common; here it ranged over all the tree-fern dotted grassland, feeding on the ground and when alarmed making rather long flights to perch on the tops of the ferns, or when near the edge of the forest, flying into the tree tops. A common, yellow-seeded sedge that grew in tussocks (No. 4552) was one of its favorite foods, though a few insects were also eaten. Accustomed to think of this thrush as restricted to the grassland, I was surprised to find one feeding in the top of a tall fruit laden tree (*Elaeocarpus*, No. 4537) in the heavy forest several hundred yards from any clearing. On Mt. Albert Edward the blackbird was common, found in the forest edge and the nearby grassland, clumps of trees, and forest glades. It did not go far out into the grassland where there were no trees for it to fly to when alarmed. Our highest record was on the edge of a little lake with clumps of low trees along its edge at 3850 meters on Mt. Albert Edward. True to habit, the single bird found here flew to a clump of trees for shelter. The blackbird spent a great deal of time in the open, apparently feeding on the ground, but its stomach contents were almost entirely fruits of trees of several sorts, that of a taxad being the most common. Everywhere the bird was shy, and usually before the bird was within gunshot it flew up and away to the security of some tree top uttering as it flew a sharp, excited chirping, as if exulting over its escape.

Of 11 stomachs examined, 7 contained the fruits of trees of several sorts, that of a taxad being the most common, and once that of an *Elaeocarpus;* 4 contained seeds of a sedge; 2, raspberries; 1, maggots; and one a few other insects.

Oreocincla dauma papuensis (Seebohm)

Mafulu: 1 ♂ ad.; November 14.

Taken at 1250 meters.

Wing: ♂ ad. 116.

This specimen, the only one seen, was shot from a low bush in the heavy forest.

Saxicola caprata aethiops (Sclater)

Mafulu: 1 ♂ imm., 3 ♀ ad., 2 ♀ imm.; September 29–October 18.—Mt. Tafa west: 1 ♂ ad.; September 28.—Urunu: 1 ♂ ad.; August 16.

Found from 1200 to 2400 meters (rare at last locality).

Wing: ♂ ad. 77, 81; ♀ ad. 72, 76, 76.

Four males from New Britain (Wide Bay and Nakanai Mts.) are slightly smaller, wing 69, 70, 71, 75, and have a slightly smaller bill, but adult males from Ifaar (north New Guinea) and one from Huon Peninsula measure 72, 74, 74, 76 and have as small bills. Three females in nestling plumage from New Britain are slightly darker than the two females in nestling plumage from Mafulu and also have much more pronounced spotting on the crown, but these differences are of no significance.

The three females (from September and October) are in very worn plumage. A September male and female had enlarged gonads; a nest with eggs was found November 2, a female was seen building on October 7, and the immature birds are still in nestling plumage. Evidently this species breeds at least from September to November.

We found this bird only in the areas of second growth and grass in the mountains, in the Auga (upper St. Joseph) and the upper Vanapa valleys. These areas of mixed grassland and second growth are completely isolated. Though of considerable extent, they are surrounded by forest and are secondarily formed by the agricultural activities of the dense native population.

We thus have the interesting case of this chat, a peculiar New Guinea form (and *Lanius* is the same), found only in secondary clearings at moderate altitudes in the mountains. The question arises as to the original habitat of these forms; where they lived before these clearings were formed. The numerous and often rather extensive landslides that are common on these steep slopes supply the probable answer. The areas uncovered by these landslides, growing up to shrubs, grass, and herbaceous plants along their edges, always have provided small scattered areas of suitable habitat, and the increase of open ground due to cultivation has resulted in a corresponding great increase of these species.

The chat was fairly common and usually seen perched on some shrub. At Mondo it frequented the garden and there I first heard the male give its sweet song from the top of a banana tree. Near Urunu, on August 17, I heard a male give its song as it flew to the top of a tall dead pine which was standing in the grassland.

On November 2, at Mafulu, I found a nest of this species, by flushing the female from it. In the Mafulu area trenches five or six feet deep and three or four feet wide surround some of the gardens to prevent pigs from entering and destroying the crops. The chat's nest was in an abandoned trench of this sort, being set back in a little natural cavity about two-thirds of the way up the vertical side of the ditch. The nest was a

cup-shaped structure, solidly built of coarse, soft grasses, lined with finer grasses. It measured outside 140 × 100 mm. deep, and inside 90 × 70 mm. deep. It contained two eggs. They were greenish white in color, well spotted and blotched with earth brown, more plentifully on the larger end; in one egg the markings formed a wreath about the larger end; in the other, the markings completely covered the large end. One egg measured about 20 × 14 mm.

On October 7, I saw a female chat pick pieces of loose, weather-beaten bark from a low dead bush and fly away with it over tall dense shrubbery. It was evidently building a nest though I was unable to find it.

Amalocichla sclateriana De Vis

Mt. Albert Edward: 1 ♂ imm., 1 sex (?); June 28, July 7.—Murray Pass: 4 ♂ ad., 1 ♂ imm., 3 ♀ ad., 1 ♀ imm.; July 21–August 8.

Found from 2840 to 3680 meters.

Wing: ♂ ad. 106, 106, 107, 109; ♂ imm. 102, 107; ♀ ad., 98, 99, 102; ♀ imm. 96; sex (?) 104.

No. 420016 (Aug. 7) is a male largely in first-year plumage but still retaining some feathers of the nestling plumage. On the back of the head these nestling feathers are pale rufous with a black tip; on the back, rufous brown with an irregular crescent subterminal and another terminal black mark to each feather. A few nestling feathers left in the breast are fulvous with a narrow black tip. The remiges and rectrices are very similar to those of the adult, but the upper wing coverts have two subterminal rufous, one subterminal black, and one terminal bar.

No. 420013 (July 7) is in a somewhat similar plumage, but retains fewer of the nestling feathers. The first-year plumage, attained by a partial molt, is similar to the adult plumage. There is a considerable individual variation in the coloration of this series but there seems to be no constant color difference between the sexes.

This babbling thrush was apparently fairly common in Murray Pass, but rather uncommon on Mt. Albert Edward.

It was a shy, retiring bird that lived and fed on the ground and was seldom seen. Its loud three-note whistle was distinctive, quite unlike any other call in the forest where it occurred. In the forest on Mt. Albert Edward I followed a bird, which was calling frequently, for more than seventy-five yards before securing it. On July 25, in Murray Pass, I heard one of these birds calling softly, and approaching startled it from an area of freshly scratched- over moss. Possibly this is one of the

creatures that contributes to the scratched-up appearance of the forest floor, so conspicuous a feature of the forest of these higher altitudes, but its legs seem very slender and feet weak for it to do this. Alarmed, this individual gave a sharp scolding call. It was in fairly open forest and I caught occasional glimpses of it as it moved about on the ground uttering now and then a softly whistled call or its scolding note. I finally collected it when it mounted into a low bush. From an examination of eight stomachs, the food of this bird consists entirely of animal matter including spiders and insects (among the latter were beetles).

June and July specimens were not breeding.

Crateroscelis murina murina (Sclater)

Iola: 1 ♂ ad., 1 ♀ ad.; June 4 (Hamlin).—Deva Deva: 1 ♀ ad.; June 15 (Hamlin).—Mafulu: 6 ♂ ad., 2 ♀ imm.; September 29–November 11.

Found from 770 to 1250 meters.

Wing: ♀ ad. (7) 57–64 (60.7); ♀ ad. 58, 59.

A Mafulu male (October 26) is the only specimen showing wing molt. All but one of the Mafulu males have slightly enlarged gonads.

This was a fairly common forest bird about Mafulu, haunting areas where the undergrowth was fairly dense. Apparently it fed largely on the forest floor where it hopped about, occasionally going up into the low shrubbery when alarmed. It had a chattering, rattling call, given when the bird was disturbed.

Crateroscelis robusta robusta (De Vis)

Mt. Tafa, west slope: 3 ♂ ad., 1 ♂ imm., 2 ♀, 1 sex (?); Aug. 25–Sept. 22.—Mt. Tafa, east slope: 6 ♂ ad., 1 ♀; May 14–24.—Ero Creek: 1 ♀ imm.; June 10.—Murray Pass: 6 ♂ ad., 1 ♂ imm., 1 ♀ [♂] ad., 4 ♀; July 21–Aug. 15.—Mt. Albert Edward: 1 ♂ imm., 2 ♀, 2 sex (?); June 18–30.

Found from 1690 to 3680 meters.

Wing: ♂ ad. (14) 61–66 (63); ♂ imm. 61, 62, 63; ♀ (9) 57–63 (61).

The color of the iris of the adult male varies considerably, being recorded as white to brownish white and orange-yellow. Possibly there is some change at the time of death. Immature males have a brown iris and females a brown or red-brown iris.

The adult birds from the higher altitudes have a slightly longer wing as the following table shows:

	Male	Female
3680 meters	.....	60, 63
2860 "	64, 65, 66, 66	60, 61, 62, 63
2400 "	61, 62, 62, 62	59, 60, 60
2070 "	61, 61, 62, 62, 63, 64	57

The white-throated babbler was common at all our camps above 2000 meters. Its favorite haunts were where the low shrubbery densely covered the forest floor, but at our camp on the west slope of Mt. Tafa this bird came commonly into the dense second growth in the camp clearing. Two or three individuals usually were found together, on the ground or in the low shrubbery, but they were so secretive that it was difficult to be sure of their number or to see what they were doing. The first intimation of their presence was often their buzzing "chee" of alarm. Then, quiet as a mouse, they might creep away over the ground for some distance before mounting into the shrubbery where the shaking of the plants betrayed them; though secretive they were sometimes not so shy and could be seen hopping from branch to branch in the shrubbery about one, and at times they responded to squeaking. This babbler apparently feeds largely on the ground, as a number of times I've watched one feeding, hopping about as though impelled by a spring, picking up its food from the ground, and only occasionally mounting to a low perch. Besides the buzzing call "chee," which was sometimes given a number of times as though scolding, the white-throated babbler had a whistled call, or perhaps song, usually of three notes with the first the longest. The quality of this song varied greatly; sometimes it was clearly whistled, at others very throaty or almost buzzing.

Three stomachs examined contained only insect matter. None of the specimens was breeding. Most of the July, August, and September males, however, showed some enlargement of the gonads, indicating the approach of the breeding season, which was also suggested by the condition of the plumage.

Drymodes superciliaris brevirostris De Vis

Wuroi: 2 ♂ ad.; January 24.—Baroka: 1 ♀; April 11.

Taken only near sea level.

Wing: ♂ 87, 91; ♀ 85.

Two Aru Island birds are slightly darker, richer brown above than three southeast New Guinea birds, but the difference is too slight to recognize Mathews' *adjacens*. The south New Guinea birds are very similar to those from southeast New Guinea.

One of the Wuroi specimens is molting its wing, the other is in fresh plumage; the Baroka specimen is also in fresh plumage. None had enlarged gonads.

The Baroka specimen when first seen was bathing in a shallow pool where rain forest bordered the extensive swamp. Its bath finished, it hopped to a log to preen its feathers but alarmed by my presence flew into the undergrowth. The specimens collected were the only records.

Cinclosoma ajax goldiei (Ramsay)

Orangerie Bay: 1 ♂ imm.; December 9 (Zimmer).
Wing 101.

Cinclosoma ajax alaris Mayr and Rand

1935, American Museum Novitates, No. 814, p. 6 (Wuroi)
Wuroi: 1 ♀ ad.; January 24, 1934.
Wing 99.

Eupetes leucostictus loriae Salvadori

Bella Vista: 1 ♂; November 11.—Mt. Tafa, west slope: 4 ♂, 2 ♀; September 9–24.—Mt. Tafa, east slope: 1 ♂, 2 ♀; May 19–23.

Found from 1450 to 2400 meters.

Wing: ♂ 78, 80, 81, 81, 81, 85; ♀ 77, 79, 80, 80.

All these specimens are in fairly fresh to slightly worn plumage, a female (May) and a male (September) are renewing wings.

The following subspecies can be recognized in *Eupetes leucostictus:*

leucostictus with an olive-green back; the black triangle on the lower throat is white-spotted.

mayri with a chestnut-brown back and a few white spots on the black throat patch.

sibilans distinguished from the two following by a distinct olive-green breast-band and brighter chestnut crown.

amabilis distinguished by its nearly pure blue under part and darker chestnut crown.

loriae with the under parts dull greenish on the flanks and breast, but without a distinct breast band.

On May 20 on Mt. Tafa, Mr. Archbold saw a party of at least five. They were feeding on the forest floor, moving aside the leaves with a quick sidewise movement of the bill as they sought for their insect food.

Of four stomachs examined, all contained insect matter and one contained in addition a few seeds of some fruit.

A female from the west slope of Mt. Tafa, September 12, had an en-

larged ovary; none of the other specimens was breeding though the September and November males showed some enlargement of the gonads. The main breeding season was probably later.

Eupetes caerulescens nigricrissus (Salvadori)

Wuroi: 2 ♂ ad., 2 ♀ ad., 1 ♀ imm.; January 23–27.—Kubuna: 2 ♂ ad., 3 ♀ ad.; November 27–December 10.—Kanosia: 1 ♂ ad., 1 ♀ ad.; August 22 (Zimmer).

Found up to 100 meters.

Wing: ♂ ad. 85, 87, 89, 89; ♀ ad. 83, 83, 84, 85, 86, 88; ♀ imm. 82.

The two August specimens are in fresh plumage, the November, December, and January birds are in worn plumage or are molting, as though the breeding season was past. None of these specimens had enlarged gonads. The immature female is molting into the first-year plumage.

At both Wuroi and Kubuna this was a common bird in the heavy forest, and at Kubuna in the lighter, dryer forest as well. I usually found it in couples which kept together as they walked or ran along the ground ahead of me. If hard-pressed they easily took wing and flew a few feet, usually to light on the ground again. Their common call of alarm, or of protest, was a sharp "chit chi-chi-chi," the latter part of the call considerably lower than the first.

Eupetes castanonotus pulcher Sharpe

Iola: 1 ♀ ad.; June 13 (Hamlin).—Matsika: 1 ♂ imm.; November 24.—Mafulu: 2 ♂ ad., 2 ♀ ad., 1 ♀ imm.; October 24–November 4.

Found at 950 and 1250 meters.

Wing: ♂ ad. 96, 99; ♂ imm. 95; ♀ ad. 91, 94, 95; ♀ imm. 97.

One female has a pale blue stripe above the eye; in the other two it is rust-colored mixed with pale blue in one, whitish in the other (see Mayr, 1931, Mitt. Zool. Mus. Berlin, XVII, p. 691). The June bird is in fairly fresh plumage, the October and November specimens are somewhat worn and one October female is renewing its wing. The two immature birds are molting out of the nestling plumage.

Pomatorhinus isidori isidori Lesson and Garnot

Yule Island: 1 ♂ ad.; June 5 (Hamlin).—Delena: 2 ♂ ad., 1 ♀ imm.; May 23–June 20 (Hamlin).—Baroka: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad.; April 17, 25.—Kubuna: 1 ♂ ad., 1 ♀ imm.; November 28, 29.—Kanosia: 3 ♂ ad.; August 21 (Zimmer).

Found up to 100 meters.

Wing: ♂ ad. 113, 114, 116, 121, 121, 121, 122, 125; ♂ imm. 109; ♀ ad. 118; ♀ imm. 110, 116.

The nestling plumage is very similar to that of the adult, but has a slightly more olive crown.

We have molting specimens from April, May, June, and November. A male (April) that was feeding a young bird out of the nest had already started to renew its wing, showing how quickly after breeding the molt starts. None of April or November specimens was in breeding condition.

This babbler was a common bird at Baroka in the areas of rain forest. In parties of five to eight, which kept closely together, they moved about through the shrubbery and low trees in the forest, often in company with other smaller birds of the lower part of the forest. Always ready to respond to squeaking, they were noisy birds when excited or disturbed, uttering loud whistled notes as well as a soft "ca–co–co–co." On April 25, at Baroka, I watched two adults feeding their young. The young were sitting about ten feet up in saplings in a rather dark, very shady spot in the forest. The adults searched the limbs, twigs, and vines of the lower parts of the forest and the undergrowth, sometimes even the ground, for food for the young. The young were calling a "quoa" and when I alarmed the adults, they at once became very noisy uttering whistles and soft cooing notes. I collected one young and one adult. The adult proved to be a male, so apparently both sexes feed the young. This feeding male had a small lizard in its bill, apparently intended for the young.

Of seven stomachs examined (data for three of these were taken from the labels of Zimmer's birds), all contained only insects, most of them of medium to somewhat large size, including katydid, beetle, cricket, and caterpillar remains.

Pomatorhinus temporalis strepitans Mayr and Rand

1935, American Museum Novitates, No. 814, p. 6.

Dogwa: 3 ♂ ad., 2 ♀ ad.; February 23, 24.—Wuroi: 4 ♂ ad., 4 ♀ ad.; January 19–February 11.

Wing: ♂ 118; ♀ 110, 111, 113, 115, 115.

This series shows a great deal of wear on the old feathers; all the specimens are completing their body molt and renewing their wings and tails; none had enlarged gonads.

The plumage wear shown by this savanna species is very pronounced.

The other New Guinea representative of the genus *P. isidori* is a forest bird, and the effect of wear is little pronounced. The amount of wear shown in the old plumage appears to be directly due to habitat.

The happy family bird was a common bird of the open savanna, almost always in parties of six to ten individuals, sometimes low in the shrubs in the savanna, sometimes well up in the savanna trees. They all kept together, uttering soft wickering calls. The head was often held low and the tail cocked up at an angle. A number often sat close together on the same limb. They continually moved about. One or two birds flew on ahead, then the main body went on to join them, all calling softly together, and as the laggards came hurrying up the leaders flew on again. Sometimes they responded readily to squeaking and also showed much concern over a wounded member of the band. Groups of their nests were common sights on the savanna, placed among the terminal twigs of a branch fifteen to thirty feet up, four or five nests being placed in a radius of a few yards. They were oval structures with an opening at the side, those examined being composed on the outside of twigs with a dense lining of rather coarsely shredded bark. On February 20 I found a nest that was barely started and on the morning of February 24 it still had the outside part of twigs incomplete. Two birds, the only two about, were actively building. These two birds were not collected, but as others taken at this time were not breeding, it seems that these nests may be built and used as sleeping places.

Five stomachs contained insect matter.

Ifrita kowaldi (De Vis)

Iola: 1 ♂ ad., 1 ♀ imm.; June 1 (Hamlin).—Mt. Tafa, west slope: 3 ♂ ad., 1 ♂ imm., 4 ♀ ad., 2 ♀ imm.; August 23–September 19.—Mt. Tafa, east slope: 3 ♂ ad., 2 ♀ ad., 1 sex (?); May 18–21.—Murray Pass: 2 ♂ ad., 1 ♀ ad.; July 17–August 3.—Mt. Albert Edward: 1 ♀ ad.; July 10.

Found from 2000 to 3680 meters, two specimens from Iola (alt.?).

Wing: ♂ ad. (7) 83–87 (85); ♀ ad. (7) 80–86 (82).

These specimens, collected not far from the type locality of *I. kowaldi*, have larger measurements than those given by Stresemann for typical birds in his description of *schalowiana*. Accordingly, the overlap in the wing measurements is so large that it seems inadvisable to recognize *schalowiana*. We found the following measurements in material from different parts of New Guinea:

	Male	Female
Saruwaged Mts. (see Mayr, 1931)	83, 84, 84, 85	77, 79, 82, 82, 82, 83
Snow Mts. (Brit. Museum)	83	78, 80, 81
Mts. of S. E. New Guinea (Rand-Archbold)	83–87 (85.1)	80–86 (82.2)
"schalowiana" (see Stresemann, 1923)	85–89.5 (87.4)	80–87 (84.5)

This comparative table of measurements shows that birds from the Saruwaged and from the Snow Mts. average smaller, those from the Sepik Mts. average larger than typical *kowaldi*, but there is too much overlap in the measurements to recognize any forms. According to Stresemann, Sepik birds tend to have a stronger bill; this is also true for the Snow Mts. birds, which Mayr compared in the British Museum. This difference also seems to be insufficient for the subspecific separation of the Sepik Mts. birds.

No. 420081 (a ♀ Mt. Tafa west slope, 31 Aug.) is still largely in nestling plumage, the feathers being more fluffy than those of the first-year plumage, but the head has already molted. The back is more brownish olive than that of the first-year plumage, the center of the breast and belly is pale buffy, the sides are sooty, strongly tinged buffy. Wings and tail are retained at the most juvenile molt.

In the first-year plumage the black crown is spotted with paler, less irridescent blue than the adult, with the forehead olive with rusty flecks as pointed out by Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 687) but this varies considerably. Mayr has also shown that the superciliary line is rust colored in the first-year male instead of white as in the adult. The rest of the plumage is similar to that of the adult except that the back is somewhat more brownish olive and the upper wing-coverts are of less compact structure and tipped with broader, more ochraceous spots, and the tail feathers are more pointed than in the adult. The outer primary is even more pointed than in the adult, contrary to the condition in many passerine birds.

The following is a summary of the condition of the plumage and gonads:

May.—Three birds have fairly fresh to slightly worn plumage, two others are molting their wings. One male had somewhat enlarged testes.

June.—The single bird is completing its wing molt.

July.—A male and a female are molting, one female is in fresh plumage, the male had somewhat enlarged gonads.

August.—Adults show no molt and are in fairly fresh to worn plumage; there was no enlargement of gonads.

September.—Adults show no wing molt; one male had enlarged testes.

The above, taken in connection with the fledgling of August 31, sug-

gests a prolonged breeding season, at least through July, August, and September.

The blue-capped babbler was common at our Mt. Tafa camps, especially about the 2400 meter camp on the west slope; it was less common in Murray Pass, and the specimen collected was the only one seen on Mt. Albert Edward. A forest bird, it is not restricted to any part of the forest. Besides searching for food on the smaller limbs and even on fallen logs, it very often behaves in a creeper-like fashion, or an almost nuthatch-like manner, climbing up the trunks of saplings and trees, and exploring the branches of the tree tops for food. The moss on the trees is not neglected and the blue-capped babbler often digs vigorously into it for its prey. On the horizontal branches, it creeps along the top and sides, rarely venturing onto the underside where it has difficulty in maintaining a hold. To examine the under part of the branch it more often hops along the branch peering down from one side, then from the other, hanging head downward, but not upside down. Often two or three of these birds go about together, sometimes associated in feeding parties of various species. They are sometimes noisy birds, repeatedly calling a sharp "quit" or "truit," and they have a whistled continuous song.

On August 31, on the edge of the camp clearing on the west slope of Mt. Tafa, I found a single young bird following its parents and still being fed. The three birds were close to the ground, the young one calling continually for food and hopping along after one or the other adult as the latter climbed about the bases of trees and shrubs and along fallen mossy logs looking for food with but indifferent success. One of the adults became alarmed at my presence, I was within three meters of them, and went swiftly into the undergrowth, calling to the young one which followed it at once. I collected the young, and a few moments later one of the adults came about, with a rather large beetle in its bill, and calling a plaintive "queet." Five stomachs contained only insect matter.

Melampitta lugubris lugubris Schlegel

Mt. Tafa, west slope: 1♂ ad., 1♀ ad.; August 24, September 10.—Mt. Tafa, east slope: 4♂ ad., 2♀ ad.; May 12–27.—Murray Pass: 1♂ ad., 1♂ imm., 1♀ ad.; July 19–August 13.

Found from 2000 to 2840 meters.

Wing: ♂ ad. 85, 86, 87, 88, 89; ♂ imm. 85; ♀ ad. 80, 82, 82, 84.

Two males taken in May are molting their wings. None of the specimens had enlarged gonads.

Melampitta was common at our camp on the east slope of Mt. Tafa, and fairly so at our camps on the west slope of Mt. Tafa and in Murray Pass.

The *Melampitta* was a bird of the forest floor where the undergrowth was rather dense. Though its habitat makes it difficult to find, the bird was not shy, and when disturbed has a little call of alarm which it often repeated, which helped to locate it. The call, which was somewhat insect-like, or could perhaps be likened to the tapping together of two pebbles, was a short sharp "pit" or "spit," sometimes doubled to "pit-pit" or "spit-it." Couples were often found, though this was not the breeding season. Several times I located single birds, or couples, and watched them for short intervals. They hopped about on the ground, very rarely flying up to a low perch. Sometimes they were within a few yards of me. They were active, nervous birds, continually hopping about, the tail was carried somewhat cocked up and the wings were often fluttered.

Of eight stomachs examined, all contained insect matter, including beetles and caterpillars; one stomach also contained a small snail and one a seed of a fruit.

Orthonyx temmincki victorianus van Oort

Mt. Tafa, west slope: 1 ♀ ad., 1 ♀ imm.; August 16.—Murray Pass: 2 ♂ ad.; July 29, August 5.

Found from 2400 to 2840 meters.

Wing: ♂ ad. 89, 90; ♀ ad. 84; ♀ imm. 86.

The immature female is molting out of the nestling plumage and the male taken August 5 is renewing its wing. No specimens had enlarged gonads.

The log runner was a bird of the forest floor. Judging from the few I saw, it was a quiet, rather inactive bird and I was unable to trace any call to it, which perhaps in part accounts for the few records I have. I first encountered this bird in Murray Pass on July 29. A native was beating through a tangle of bamboo in the forest for a wallaby we had seen there, when two of these birds came running steadily along some thirty yards ahead of him, not uttering a sound, and I secured one of them. Later in the day, I found another on the ground amid low dense shrubbery beside the trail. A few days later, I secured one of two that were together on the ground in a similar place along the trail. On Mt.

Tafa I recorded it but once. In the heavy forest, near a tangle of shrubbery, three birds started from near my feet and walked quickly away, uttering a low "eeee" call, but appearing like shadows on the dark forest floor. I secured one and sent the native boy with me to head the others off and drive them back. Soon one came walking slowly back, pecking at a leaf here and there, and this, too, I secured.

One stomach contained indeterminable animal matter and two insects.

Possibly these birds scratch up the leaves and moss on the ground in their search for food, thus helping to account for the many small patches in the forest at Murray Pass that we found scratched up and never satisfactorily explained.

Pomareopsis bruijni Salvadori

Iola: 1 ♂ ad.; June 5 (Hamlin).—Mafulu: 1 ♂ ad., 1 ♀ ad., 1 sex (?) juv.; October 3–23.—Ononge: 1 ♂ ad.; June 19.

Taken at 770 and 1250 meters; the Ononge specimen was collected by a native and may not have come from above 1200 meters.

Wing: ♂ ad. 105, 107; ♀ ad. 101.

The fluffy nestling plumage of the juvenile bird resembles that of the adult female but the black is much duller.

The June bird from Ononge is renewing its wing. None of the specimens had enlarged gonads. The wing-quills of the juvenile bird are only partly grown; it was probably hatched in October.

Megalurus timoriensis macrurus (Salvadori)

Mafulu: 4 ♂ ad., 1 ♀ ad., 1 ♀ imm.; October 25–November 17.—Bella Vista: 1 ♂ ad.; November 7.—Ononge: 1 ♂ ad.; June 8.—Orangerie Bay: 1 ♂ ad.; December 11 (Zimmer).

Found in the lowlands and between 1200 and 2000 meters in the mountain valley grassland.

Wing: ♂ 68, 68, 68.5, 70, 70, 71; ♀ 63.

As we have already shown (1935, American Museum Novitates, No. 814, p. 8), the birds from the mountain valley grassland differ slightly from *macrurus* of the lowlands, but are best included with them. The spotting of the breast varies individually and may or may not be present in both this and in the next race.

These birds are very near *stresemanni* from the Arfak Mountains. The only difference is a somewhat stronger buffy or pale ochraceous wash on the flanks of *stresemanni;* the measurements are the same and the streaking on the under tail-coverts rather variable.

The condition of plumage and gonads of these birds is as follows: the Ononge specimen is worn, the Bella Vista and Mafulu birds are fairly fresh or slightly worn; all the October and November males showed some enlargement of the gonads, a June male (Ononge) had enlarged testes; the immature bird (November 16) was a fledgling, indicating breeding in October.

This grass warbler was fairly common in the Auga Valley and probably was also fairly common in the Vanapa Valley. These areas of mountain valley grassland are completely separated from one another and from the grassland of the lowlands by a belt of forest, so that the various populations are completely isolated.

Compared with the bird of the Alpine zone, the Mafulu bird appeared to skulk more through the grass, consequently being less often seen, though its loud calls were often heard, and it was usually seen when flushed at close range. This was perhaps correlated with the taller denser, more tangled condition of the grass at Mafulu.

Megalurus timoriensis alpinus Mayr and Rand

1935, American Museum Novitates, No. 814, p. 8 (Mt. Albert Edward, southwest slope, alt. 3680 meters).

Murray Pass: 3 ♂ ad., 4 ♀ ad.; July 19–August 8.—Mt. Albert Edward: 3 ♂ ad., 4 ♀ ad.; June 16–July 2.

Collected from 2800 to 3680; also seen commonly to 3850 meters.

Wing: ♂ 70, 70.5, 73, 74, 74, 76; ♀ 67, 68,69, 69, 70, 70, 71.

The Mt. Albert Edward birds (June, July) are very worn or beginning to molt, Murray Pass birds (July and August) in fresh plumage or completing their molt. All the August males showed some enlargement of their gonads and the August female had an enlarged ovary.

On Mt. Albert Edward this warbler was a bird of denser grass, in the damp hollows and along the edge of the forest. Its presence was not easily overlooked, for often while the intruder was still fifty yards away from where the bird was it mounted to the top of some low shrub or grass stem and started to give its loud scolding notes. Sometimes I approached much closer, to see it hopping about low in the grass where it fed, or surprised it in the grass at close range when it went flying off, sometimes to a low, conspicuous, nearby perch, but it usually soon sought safety in flying to some distance. A bird often sat for some time in the top of some tussock of grass or low bush, and it gave its song from such a place, the song consisting of loud, full notes repeated at rather long intervals. Occasionally, both on Mt. Albert Edward and at Mafulu

I saw what was evidently a flight song, a bird flying up a few yards above the grass, uttering a few notes, then dropping back into the grass.

Of six stomachs examined all contained insect matter, but in two of these, seeds of grasses and a sedge composed most of the stomach contents, and another contained a few seeds. In this adaptability in food habits this bird indicates how it has been able to maintain its existence under the comparatively rigorous conditions of the high altitudes.

Cisticola exilis diminuta Mathews

Dogwa: 4♂ ad., 3 ♀ ad., 1♂ imm., 2 ♀ imm., 1 sex (?) imm. February 15–27.—Daru: 1 ♀ ad., 1 sex (?), 1 ♂ nestling; January 10, 16, March 7.—Kubuna: 3 ♂ ad., 1 ♀ ad.; December 8, 12.

Found up to 100 meters.

Wing: ♂ ad. 44, 45, 45, 46, 46, 46, 48; ♀ ad. 41, 42, 42, 42.

The Dogwa birds are in pale, somewhat worn plumage, the Kubuna are in a very dark, unworn plumage. This difference in color is apparently the result of fading.

None of the adults are molting; a nest containing a young bird was found on January 10.

This bird was surprisingly scarce in southeast New Guinea where the only ones seen were a few about Port Moresby and the four specimens taken at Kubuna. Conditions seemed suitable for it at Baroka and Rona but it was absent. In south New Guinea, however, it was common at Daru and at Dogwa. At Dogwa it was most common in the very open savanna and valleys where tussocks of tall grass were scattered about through the shorter grass. At Dogwa it was usually wary, keeping some distance ahead of the collector; at Daru, however, it was a familiar bird about the settlement and two nests were found near the house in which we were staying.

On January 1 at Daru within ten yards of the house I found a nest. It contained one young which left the nest at my approach. The nest was about 300 mm. above the ground near the edge of a patch of tall grass. It was a semipensile affair, attached to the supporting grass stems all about it. It was oval in shape with an opening on one side at the top.

The nest was of rather neat, dainty construction, composed largely of plant down held together and lined with animal silk. A few dead broad blades of grass were worked into the outside of the nest. The nest measured outside 90 mm. high by 60 mm. wide; inside 60 mm. high by 45 mm. wide; the entrance was 28 mm. across.

Before approaching the nest I watched the adult go to it once. It flew and lit about a meter from the nest and crept through the grass to the nest.

On January 11 I found another nest about fifty meters from the other, on the opposite side of the house. The nest was about 500 mm. up, in a stand of tall grass. In construction it was very like the nest of the day before except that the large green leaves of an herbaceous plant which helped support it had been bound to the surface of the nest and partly covered it.

The nest contained two eggs. The description is as follows: shape ovate, rather broad at the larger end; texture smooth and fairly glossy; color light greenish blue, well-marked on the larger end, lightly on the smaller end, with spots and dots, often converging and overlapping, of dark earthy brown; many of the markings were more or less overlaid with white, giving paler markings; measurements 13.9 × 10.9 mm. and 13.7 × 10.9 mm.

The eggs were not collected and on January 16 two young, a day or two old, were in the nest. The downy covering was very scanty so that at first glance they appeared naked. However, there were a few tufts of down on the under parts, including the abdomen, on the head, back, rump, and upper surface of the wings and legs. The young have the inside of the mouth yellow, except the base of the tongue which is black. On February 27 at Dogwa a female was carrying food to young out of the nest.

Malurus alboscapulatus moretoni De Vis

Port Moresby: 3 ♂ ad., 1 ♀ ad.; May 2, October 3, 17 (Zimmer).—Rona: 8 ♂ ad., 3 ♀ ad., 3 ♀ imm.; March 7–17.—Samarai: 2 ♂ ad., 4 ♀ ad., 1 ♀ imm.; February 2, March 25, September 18, 27 (Beck and Hamlin).—Milne Bay: 2 ♂ ad., 2 ♀ ad.; April 2, 3 (Hamlin).

For a discussion of this race see American Museum Novitates, No. 814, p. 10.

This subspecies was found up to 450 meters at Rona.

Malurus alboscapulatus naimii Salvadori and D'Albertis

Baroka: 3 ♂ ad., 5 ♂ imm., 2 ♀ ad.; April 5–19.—Kubuna: 2 ♂ ad., 1 ♂ imm., 2 ♀ ad.; December 2–16.—Hisiu: 1 ♀ imm.; September 1 (Zimmer).

Found up to 100 meters.

For a discussion of this race see American Museum Novitates, No. 814, p. 10.

Malurus alboscapulatus mafulu Mayr and Rand

1935, American Museum Novitates, No. 814, p. 10 (Mafulu, Central Division).

Mafulu: 7 ♂ ad., 6 ♂ imm., 11 ♀, 5 ♀ imm.; October 1–November 5.—Bella Vista: 1 ♂ ad., 3 ♂ imm., 1 ♀, 1 ♀ imm.; November 6–8.—Mt. Tafa, east slope: 1 ♂ ad.; May 17.—Ononge: 3 ♂ ad.; August 17, 19.—Ero Creek; 1600 meters: 1 sex (?) imm.; June 10.

Found in the mid-mountain grasslands of the Auga and Vanapa Valleys, between 1000 and 2000 meters, a mountain representative of *naimii*.

Malurus alboscapulatus dogwa Mayr and Rand

1935, American Museum Novitates, No. 814, p. 11 (Dogwa, Western Division).

Wuroi: 5 ♂ ad., 2 ♂ imm., 7 ♀; January 18–February 11.—Dogwa: 3 ♂ ad., 4 ♂ imm., 4 ♀, 1 sex (?); February 17–26.

Only known from the vicinity of the Oriomo River where it was common.

Sericornis[1] **beccarii** subspecies

American Museum Novitates (in press).

Wuroi: 1 ♂, 1 ♀, 1 sex (?); January 25, 27.

Wing: ♂ 58; ♀ 55; sex (?), 58.

On one occasion at Wuroi several of these birds were found feeding in the shrubbery in the river bank forest. They were in the company of a number of other small birds of various species.

Sericornis nouhuysi oorti Rothschild and Hartert

Mt. Tafa, west slope, 2400 m.: 7 ♂ ad., 2 ♂ imm.; 5 ♀ ad., 1 ♀ imm.; August 22–September 25.—Mt. Tafa, east slope, 2000 m.: 3 ♂ ad., 1 ♂ imm., 2 ♀; May 13–27.—Ero Creek, 1690 m.: 1 ♀; June 10.—Murray Pass, 2800 m.: 5 ♂, 5 ♀, 3 ♀ imm.; July 18.

For measurements of this series see 1936, Mitt. Zool. Mus. Berlin XXI, p. 246.

Series from different parts of the range of *oorti* are not uniform in character. The Mt. Tafa specimens are somewhat more olive, less brownish, than typical birds from the head of the Mambare River. Murray Pass is evidently at about the altitude where *oorti* meets and intergrades with *monticola*. Two of the specimens from Murray Pass

[1] For a detailed account of this genus see Mayr, Amer. Mus. Novitates (in press).

are fairly typical *monticola*, the rest are nearly like the Mt. Tafa *oorti*, but with a slight tendency toward *monticola*.

Only one of the May specimens from Mt. Tafa was molting and none had enlarged gonads.

Breeding birds were taken in July at Murray Pass; most of the August and September specimens from Mt. Tafa were molting.

Sericornis nouhuysi monticola Mayr and Rand

1936, Mitt. Zool. Mus. Berlin, XXI, p. 246 (Mt. Albert Edward, southwest slope, alt. 3680 meters).

Mt. Albert Edward: 3680 m.: 6 ♂, 3 ♀; June 18–July 10.

This is another of the altitudinal subspecies discovered by the 1933–1934 Papuan Expedition.

Both races of this warbler had very similar habits. It was a common bird at the camps from 2000 meters up. It was typically a bird of the ground cover though often mounting into the lower part of the middle spaces in the forest, and it was often found in the masses of trailing bamboo. It was usually found in parties of four or five, gleaning for small insects from the twigs, leaves, and trunks of shrubs and saplings. Occasionally I saw one hop up the vertical trunk of a sapling.

The little parties displayed a certain amount of curiosity and sometimes came to look at the collector. They had a short, rattling call of alarm.

Sericornis spilodera guttatus (Sharpe)

Matsika: 1 ♂; November 24.—Mafulu: 7 ♂, 4 ♀; October 3–November 15.—Cloudy Bay: 1 ♀; December 29.

Found from near sea level to 1250 m.

Wing: ♂ (8) 59–64 (60.9); ♀ 56, 56, 57, 58, 60.

The specimens of the present series, all apparently adult, show considerable variation. The dull reddish brown of the forehead in some is very pronounced, in others only indicated; the black spotting of the forehead varies in intensity, and the color of the top of the head is very variable. The color of the ear-coverts is also variable, from grayish brown to dusky olive.

Some of the October and November specimens are molting their wings, as is the only December bird. Two males (Mafulu, October 4, 7) had enlarged gonads.

This bird was fairly common at Mafulu where it was found gleaning from the smaller limbs and twigs usually in the lower parts of the forest,

sometimes venturing higher up among the lower tree tops, and also ranging fairly commonly out into the second growth. It is quick and active in its movements and it often flits its tail with a peculiar downward motion that is very distinctive.

Sericornis spilodera subspecies

American Museum Novitates (in press).

Wuroi: 2 ♂, 1 ♀, 1 sex? [= ♀]; January 18–February 9.

Found near sea level.

Wing: ♂ 60, 61; ♀ 56, 56.

The two males are in perfectly fresh plumage; the females are just completing their molt.

This bird was rather uncommon at Wuroi; but it occurred occasionally in the mixed bands of small insectivorous birds of several species in the humid forest along the streams.

Sericornis papuensis papuensis (De Vis)

Mt. Tafa, west: 7 ♂, 3 ♂ imm., 10 ♀, 4 ♀ imm.; August 24–September 25.—Mt. Tafa, east: 4 ♂, 1 ♂ imm., 2 ♀; May 10–May 29.—Murray Pass: 4 ♂, 8 ♀, 4 ♀ imm.; July 18–August 9.—Mt. Albert Edward: 2 ♂; July 3, 10.

Found from 2000 to 3680 m.

Wing: ♂ ad. (15) 57–61 (58.5); ♂ imm. 55, 55, 56, 56; ♀ ad. (14) 53–58 (55.0); ♀ imm. 55, 55, 56, 56, 56.

This is a highly variable species, a fact overlooked by most of the earlier authors who had only a few specimens for examination. A study of most of the type specimens and of the descriptions of the inaccessible specimens has convinced us that the names *papuensis* De Vis (1894), *brunnea* De Vis (1897), *meeki* Rothschild and Hartert (1913) and *bürgersi* Stresemann (1921) all refer to this species. *Acanthiza papuensis* De Vis (1894, Annual Rept. Brit. New Guinea, 1893–1894, App. EE, p. 102) was described as follows: "Male at 5650 feet; iris brown, April. Upper surface olive-green, browner on the head and brighter posteriorly; lores, cheeks, ear-coverts, chin, throat, and upper breast rufescent gray, becoming greenish-gray on the side of the breast and flanks, and grayish-white washed with pale yellow on lower breast and abdomen; under tail-coverts pale buff; wing fuscous, greater wing-coverts excepted, edged with whitey brown; tail brown, the two median feathers uniform brown, rest with a broad subterminal fuscous band and a very narrow pale tip. Legs pale brown, in life brown. Bill brown.

Length, 83; wing, 48; tail, 35; tarsus, 19." This description fits our adult males in fresh plumages perfectly, only the measurements of wing and tail are too short, but this is practically always the case with De Vis' measurements.

Gerygone brunnea De Vis (1897, Ibis, p. 378) also seems to refer to this species, and not to *Acanthiza murina* (De Vis), as Meise believes (1934, Ornith. Monatsber., XLII, p. 79). All specimens of *Acanthiza murina* (including the adults) have a very conspicuous light base of the bill.

When Stresemann described *Sericornis bürgersi* (1921, Anz. Ornith. Ges. Bayern, I, p. 34.—Schraderberg, Sepik Mts.) he compared it with such totally different species as *Ser. arfakiana rufescens* [= *nouhuysi stresemanni*] and *Ser. olivacea* [= *arfakianus olivaceus*], but not with *papuensis* or *meeki*. In the key to the genus *Sericornis* (1923, Arch. f. Naturgesch., LXXXIX, Heft 9, p. 14) he distinguishes:

"5....Frontal feathers yellowish green, eye-ring rufous with a yellowish green tinge .....*S. papuensis* De Vis.
6....Frontal feathers not yellowish green, eye-ring rufous without greenish tinge .....*S. bürgersi* Stresemann."

An examination of our specimens of *papuensis*, as well as of De Vis' original description, shows that this distinction is not valid. Comparing a series of specimens from southeast New Guinea with the type and the three paratypes of *bürgersi*, Mayr found that they belong to the same species, but that the Sepik birds averaged more brownish than southeast New Guinea birds. *Sericornis rufescens bürgersi* is an apparently recognizable subspecies.

The females are slightly smaller than the males (see above) and in spite of the great individual variations shown by the series the females tend to be greener on the back and with paler, less warm ochraceous lores and sides of the throat.

In describing the variations in the series an attempt was made to separate them into groups based on the brownness, grayness, or greenness of the upper parts, the darkness or paleness of the sides of the head and sides of throat, and the amount of buffy, yellowish, or olive tinge below, but the extremes of variation are so connected by intergrades that this was found impractical; there do not appear to be two or more phases of plumage but rather there is an extremely variable type of plumage.

The following are descriptions of the most pronounced variations.

1.—A dark rich-colored male (No. 757, Mt. Albert Edward, July 3, 1933, fresh plumage): Above brownish olive slightly greener on the rump and browner on the head; the forehead is buffy ochraceous, the feathers with more or less pronounced dark tips. The eye-ring is buffy ochraceous, the ear-coverts ochraceous brown, the sides of the throat rather warm ochraceous buffy with faint dark tips to some of the feathers. The center of the throat is paler ochraceous buffy, the rest of the under parts is whitish tinged with yellowish ochraceous, more olive along the sides. The flanks are rather strongly olive-colored. The under tail-coverts are buffy, upper surface of rectrices and outer edge of remiges olive-brown.

Some slightly worn specimens are somewhat browner above. The ear-coverts and eye-ring are sometimes much paler; the ear-coverts in one specimen are almost olive-brown. The warm ochraceous of the throat may be barely indicated, the whitish under parts much more lightly washed with yellowish buffy and the flanks less strongly marked with olive-gray.

2.—Another extreme of this species is a greenish-backed plumage of which the following description is of a pronounced example. (No. 952, Murray Pass, July, 1933, ♂, fresh plumage.) Similar to No. 757 but whole upper parts greenish olive with scarcely a trace of brown on the head; forehead pale fulvous; eye-ring ochraceous buffy, ear-coverts the same, but slightly darker; the throat slightly buffy; rest of under parts yellowish white, sides tinged olive-green and flanks olive-green; the upper surface of the rectrices and the outer edge of the remiges somewhat brighter, more greenish. The under tail-coverts are yellowish buffy.

A few very worn specimens are much paler everywhere, with a tendency toward grayish olive above, the ear-coverts are very pale and the under parts with very little wash of either yellowish ochraceous or buffy. Though it seems unusual for fading to be very pronounced in these birds which inhabit the substage and ground cover of the humid mountain forest, where they are rarely exposed to much sunlight, such is evidently the case in this species.

The nestling plumage differs so much from that of the adult that one is at first inclined to consider it a distinct species. Above it is dark green, with a narrow area on the forehead yellowish to whitish, lacking the dark tips to the feathers characteristic of the adult. Below it is yellowish green to greenish yellow, brighter along the center of the under parts, more whitish on the throat, the dark bases of the feathers showing through everywhere in some specimens, giving a dusky appearance.

The eye-ring is yellowish to buffy, the ear-coverts olive to yellowish olive. The remiges are greenish olive on their outer edge, paler and browner on the outer primaries, the upper surface of the tail is brownish olive.

The colors of the soft parts which differ from those of the adult are as follows: iris gray, bill brownish black, lower edge of maxilla and mandible yellow, feet grayish olive, toes yellow.

The following is a summary of plumage and gonad conditions:

May specimens were fairly fresh, showing no wing molt; the males had enlarged gonads, the females did not. The two July specimens from Mt. Albert Edward were in fresh plumage and breeding condition. In July and August specimens from Murray Pass one of four males has enlarged gonads and all but one are molting their wings; none of the females have enlarged gonads and but two of eight are molting. None of the September specimens had enlarged gonads and most of them were molting.

Birds in complete nestling plumage were taken in July, August, and September.

The breeding season on Mt. Tafa is evidently in June and July, and in Murray Pass, May and June.

At our Mt. Tafa and Murray Pass camps this warbler was fairly common, being found singly or in small parties of three or four of its own kind gleaning among the twigs and leaves from the second story tree tops to the ground cover and into the trailing bamboo. It was not at all shy. The two birds collected on Mt. Albert Edward were the only ones seen there. One was feeding quite alone, the other was in company with a flock of *Paramythia montium.*

Sericornis perspicillatus Salvadori

Mafulu, 1700 meters: 1 ♀; November 17.—Mt. Tafa, west slope: 2 ♂; September 14, 18.—Mt. Tafa, east slope: 6 ♂, 1 ♂ imm., 6 ♀, 1 ♀ imm.; May 10–26.—Urunu: 1 ♀; August 16.

Found from 1700 to 2400 meters.

Wing: ♂ (8) 55–58 (56.4); ♀ (9) 51–54 (52.4).

The immature bird (May 13) is a fledgling. Its plumage is very similar to that of the adult, differing only in the back being slightly browner, the eye-ring and ear-coverts warmer ochraceous, and in a more pronounced ochraceous tinge below. The bill is grayish black with base of mandible flesh, gape yellow, feet grayish pink. In the adult the bill is blackish or black with a gray base. The feet are brownish gray to pinkish horn.

None of the May specimens are molting their wings; one September and the November bird are molting. One male September 18 also has enlarged testes. One fledgling was taken May 31, and a full-grown young bird still in nestling plumage was taken May 13. Evidently this species breeds on Mt. Tafa at least in April and May.

This species was common at both Mt. Tafa camps; it did not occur about the Mafulu camp, the specimen from there being secured on a trip to the top of the ridge above Mafulu. It was often found in small parties of four or five, sometimes high up in the trees, sometimes low among the saplings in the forest, gleaning among twigs and leaves with active movements. On May 31, on the east slope of Mt. Tafa, I found the fledgling low in the underbrush along the trail, attended by two adults, both of which were very concerned over the safety of the young and came within a few feet of me.

Sericornis arfakianus olivaceus Salvadori

Mafulu: 7 ♂, 4 ♀, 1 ♀ imm., 1 sex (?); September 29–October 30.

Found only at 1250 meters.

Wing: ♂ 51, 54, 54, 54, 55, 56, 56; ♀ 50, 51, 52, 52.

The immature specimen (October 9) is fully fledged, and appears to be in nestling plumage. This plumage closely resembles that of the adult, differing from it only in being slightly browner above, and more dusky olive, less whitish below.

Four of the specimens (October) are renewing their wings.

One male (October 1) had testes enlarged; most of the other males had their gonads somewhat enlarged; none of the females showed enlargement of the ovaries.

The green sericornis was not uncommon at Mafulu. It was a solitary bird, usually found low in the forest gleaning for insects among the twigs and leaves.

Gerygone[1] **cinerea** Salvadori

Mt. Tafa, west slope: 2 ♂, 2 ♂ imm., 2 ♀, 1 ♀ imm., 1 sex (?); August 23–September 2.—Mt. Tafa, east slope: 2 ♂; May 14–21.

Found from 2000 to 2400 meters.

Wing: ♂ 52, 53, 53, 53; ♂ imm. 51, 51; ♀ 52, 52; ♀ imm. 51.

The immature birds in first-year plumage are very similar to the adults but the color of the bill is different, in adults it is black or grayish black with a paler gray mandible or base to the mandible (nearly black

[1] For a detailed account of this genus see Meise, 1931, Nov. Zool., XXXVI, pp. 317–378.

in dried skins); in the immature it is black with the basal two-thirds of the mandible yellow (persisting as yellowish or whitish in the dried skins).

The two May males are not molting; their testes are recorded as enlarged. Some of the August and September specimens are renewing their wings, and one male (September 23) has the testes recorded as enlarged; the others were not breeding.

The gray warbler was fairly common on Mt. Tafa where it was the only common warbler that habitually frequented the upper part of the forest. It was usually found in small parties of its own kind actively gleaning from the twig and leaves well up in the forest.

Gerygone chrysogaster chrysogaster Gray

Wuroi: 4 ♂, 2 ♀; January 18–February 6.—Kubuna: 2 ♂, 2 ♂ imm., 3 ♀; December 2–13.—Cloudy Bay: 1 ♂, 1 sex (?); December 29, January 2 (Zimmer).

Found up to 100 meters.

Wing: ♂ (7) 53–56.5 (54.8); ♀ 50, 51, 52, 52, 54.

Meise, 1931, Nov. Zool., XXXVI, p. 340, on map 4*a* showing the distribution of this form, questions the record of southeast New Guinea as a locality for this species. This record is apparently based on D'Albertis specimens from Mt. Epa, Hall Sound (Salvadori, 1881, Ornit. Pap. Mol., II, pp. 97, 98), and there seems no reason to question it.

The two immature birds in first-year plumage have the ear-coverts grayer, less brownish, than the adult.

Some of the specimens taken in December, January, and February were molting their wings, while others, taken during this same period, were not molting and were in both fresh and worn plumage. One January and a February male had enlarged testes.

The yellow-bellied warbler was not an uncommon bird at both Wuroi and Kubuna in the second growth and the forest, often in small parties of its own kind. At Wuroi it sometimes formed part of the mixed flocks of small birds in the river bank forest.

Gerygone chloronota cinereiceps (Sharpe)

Wuroi: 3 ♂, 1 ♀; January 30, February 6.—Kubuna: 2 ♂, 1 sex (?); December 5, 7.

Found up to 100 meters (Meise calls this a high mountain bird).

Wing: ♂ 49, 50, 51, 52, 53; ♀ 47.

The December specimens all show wing molt. The January and February specimens show no wing molt, one male is in fairly fresh plumage, the other specimens are worn; the three males all have enlarged testes.

Apparently this is the first record for south New Guinea. Besides the specimens from the Arfak mountains collected by Mayr, there is another record from northwest New Guinea, a specimen from Manokwari collected by Laglaize and now in the Paris Museum.

The bird collected by Mayr is the only specimen available from the Arfak, and as it is in immature plumage, it cannot be used to determine if the Arfak birds differ from those of the rest of New Guinea.

The green-backed Warbler was not uncommon at both Kubuna and Wuroi where it was usually found actively gleaning among the twigs and leaves of low trees and shrubbery along or near the forest edge, often in small parties of three or four of its own kind. It was sometimes associated with *G. chrysogaster*.

Gerygone palpebrosa personata Gould

Wuroi: 4 ♂ ad., 2 ♂ imm., 1 ♀, 1 sex (?); January 21–February 8.

Found only near sea level.

Wing: ♂ ad. 52, 52, 54, 55; ♂ imm. 47, 51; ♀ 51.

D'Albertis secured an example of this species in south New Guinea. Meise (1931, Nov. Zool., XXXVI, p. 330) believed this was a good record in spite of Salvadori's doubts and the present specimens conclusively show that this form does occur in New Guinea.

Two of the adult males show no wing molt and have enlarged testes, the other two are renewing their wings and have their gonads not enlarged. The female is molting its wings and has the ovary not enlarged. The two immature males are in first-year plumage.

On February 8, at Wuroi, I found several of these little birds comprising part of a mixed flock of small birds. They were in the top of the lower trees and shrubs in the forest actively gleaning insects from the twigs and leaves.

Gerygone palpebrosa inconspicua Ramsay

Kubuna: 1 ♂; December 10.—Mafulu: 3 ♂, 2 ♀; September 29–November 1.

Found from 100 to 1250 meters.

Wing: ♂ 53, 53, 53, 54.5; ♀ 51, 54.

The Mafulu specimens are not molting and from the condition of

their gonads they breed in the period September–November. The Kubuna specimen (December) is molting its wings, though its testes were enlarged.

Gerygone ruficollis insperata De Vis

Mt. Tafa, east slope: 1 ♀; May 17.—Murray Pass: 4 ♂, 4 ♀, 1 ♀ imm.; July 15–August 1.

At 2070 meters the single specimen was brought in by a native; common at 2840 meters.

Wing: ♂ 55, 58, 60, 61; ♀ 53, 54, 56, 56.

Mayr compared material in the Berlin Museum from Mongi-Busu, etc. He found that a series cannot be separated with certainty from a series from Murray Pass. The Murray Pass birds average more sandy colored, less reddish brown on the upper parts, and also have a tendency toward having the rufous throat a little more pronounced, but the difference is very slight. The Snake River bird agrees with the Saruwaged, rather than with the Murray Pass specimens. The tail pattern is identical in these birds. The slight differences found do not justify separating these two series as different forms. Wear is very pronounced on the upper parts of these birds (which inhabit the open tree fern country) and the old worn plumage is much paler, more sandy colored, than that of fresh specimens.

Molting specimens were taken in July and August, as well as fresh plumaged to somewhat worn, non-molting birds in July. One August male had enlarged testes but was renewing its wing. The May female was completely renewing a very worn plumage.

The Mt. Tafa specimen was brought in by a native. Elsewhere I found it only in Murray Pass. There it was restricted to the grassy, tree fern-dotted country where it was fairly common. Sometimes singly, more often in small parties up to six or so in number, gleaned among the fronds of the tree ferns and through the occasional isolated shrubs. Its song, which I heard a number of times, was thin and wiry, with occasional fuller notes.

Gerygone magnirostris brunneipectus Sharpe

Daru: 1 ♂, 2 ♀; March 6–11.—Baroka: 2 ♂, 1 ♀, 1 ♀ imm.; April 4–11.—Kubuna: 1 ♂, 1 ♀; November 28–December 5.

Found up to 100 meters.

Wing: ♂ 55, 56, 56, 57; ♀ 52, 52, 53, 53.5.

The specimens from southeast New Guinea are slightly darker and

browner above, especially on the head. Possibly the Daru specimens are approaching *mimikae* (or *magnirostris*).

The immature bird (April 6) is a well-feathered young one which was taken from the nest.

One Baroka (April) and one Kubuna male (December) are the only specimens renewing their wings.

The two Baroka males had enlarged gonads and the female was laying (April); evidently the birds breed here at Baroka in March and April.

Gerygone olivacea cinerascens Sharpe

Port Moresby: 2 ♂, 1 ♀; September 26–October 10 (Zimmer).

Taken near sea level.

Wing: ♂ 54, 57; ♀ 52. Tail: ♂ 35, 37; ♀ 33.5.

These three specimens are in worn plumage but have not started to molt.

Mr. Zimmer tells us that these birds were secured in the open savanna near Port Moresby. Meise (1931, Nov. Zool., XXXVI, p. 325) records this species from above 2000 m. on the Aroa River; this altitude is undoubtedly an error as this is a typical lowland species. Meek's Aroa collection (1907, Nov. Zool., XIV, pp. 447–483) was really an aggregate of three or four collections with different field numbers. Most specimens with B numbers were obviously collected near the coast.

Acanthiza murina (De Vis)

Mt. Tafa, west slope: 1 ♂, 1 ♀; August 24, 29.—Murray Pass: 3 ♂, 3 ♀; July 15–August 13.—Mt. Albert Edward: 4 ♂, 5 ♀, 1 ♀ (?); June 16–July 6.

Found from 2400 to 3680 meters.

The wings of the birds from the higher altitudes are slightly larger. This is especially noticeable in the females as the following table shows:

	Male		Female	
	Wing	Tail	Wing	Tail
Mt. Albert Edward	60, 62, 62, 63	38, 37, 38, 40	60, 61, 61, 62	37, 36, 37.5, 38
Murray Pass	60, 60, 61	36, . . , 39	58, 58, 59	37, 37, 36
Mt. Tafa, west slope	60	37	57	35

Color of soft parts: iris whitish, bill black, base of mandible grayish to whitish, feet black, undersurface of toes yellow. In one dried skin the bill is now about unicolored, though marked on the label that the mandible has a grayish base. In another specimen, a breeding male, the whitish base to the mandible is still distinct as in most of the skins.

This is contrary to Meise's suggestion that the pale base of the mandible is a sign of immaturity (1934, Ornith. Monatsber., XLII, p. 79). In the same paper he also puts forward the view that *Gerygone brunnea* De Vis is *A. murina*. It is, however, more probably *S. papuensis* (for a discussion of this see p. 123).

Mayr compared one of this series, No. 626, with a cotype of the species in the Dresden Museum. This cotype was secured through an exchange with the Queensland Museum, Brisbane. Mayr found that No. 626 differed in lacking the brownish tone above, and in having the light spots on the forehead much reduced, which were pronounced in the cotype. The pattern of the cheeks was identical but the ground color was more yellowish; the ear-coverts grayish green, not brown, slightly rufescent, as in the cotype and the original description; underparts not washed with buffy, as in the cotype, but whitish, which is especially conspicuous on the throat and under tail-coverts; bill in the cotype brownish with a light base, not blackish as in our specimen; the tail pattern and wing formula were the same.

These differences are probably due to individual variation, as some specimens of our series also have a brownish tone above, with the light tips to the feathers of the forehead more pronounced, the ear-coverts more rufescent, and the under parts washed with yellowish to buffy, comparing very well with the original description (Ibis, 1897, p. 377).

Summary of conditions of plumage and gonads:

June, July (Mt. Albert Edward).—Males in fresh or worn plumage, showing no wing molt; their testes were enlarged. The females are in fresh plumage except one which is molting. None had enlarged gonads, but several of these are less than a year old as their skulls were incompletely ossified.

July, August (Murray Pass).—The males are in worn plumage, and one is molting, their testes are not enlarged. Of the females one is in fresh plumage, one worn, and one is molting; their gonads are not enlarged.

August (Mt. Tafa).—Both birds are molting, though the male still has somewhat enlarged testes.

The breeding season evidently ends in June.

This is the first time this warbler has been collected since the time of De Vis. We found it common at the higher altitudes.

On Mt. Albert Edward this was the commonest warbler. It was sometimes found gleaning among the twigs and leaves of the tree tops, sometimes on the low bushes on the edge of the forest. It often moved about and fed in small parties of four to six of its own kind, though sometimes associated with numbers of *Sericornis nouhuysi*, the latter

species feeding in the lower strata in the forest, while *A. murina* fed in the upper strata. This species was also common at Murray Pass, but it was rare on Mt. Tafa, where only a few specimens were encountered at our 2400 meter camp. Here on one occasion I found a number associated with a small party of *Gerygone cinerea*, both species feeding in the upper part of the forest trees.

Eugerygone rubra saturatior Mayr

Mt. Tafa, west slope: 1 ♂, 1 ♀; August 29.—Mt. Tafa, east slope: 1 ♀, 1 [♀]; May 14, 25.—Mt. Albert Edward: 1 ♀; July 10.

Found from 2000 to 3680 meters.

Wing: ♂ 57; ♀ 57, 58, 58.

None of these specimens is molting.

The red-backed warbler was a rare bird and besides the specimens collected I saw only one other specimen, a single bird low in the dense undergrowth about a glade in the forest. The white in the wing was a very conspicuous field mark (Mt. Tafa, west slope, September 24). The two birds collected on Mt. Tafa were in the undergrowth in the forest, about fifteen feet from the ground. The Mt. Albert Edward specimen was part of a mixed flock of several species, and flew into the top of one of the forest trees.

One stomach examined contained small insects.

Phylloscopus trivirgatus giulianettii (Salvadori)

Mafulu: 5 ♂, 1 ♀, 1 sex (?); September 30–November 15.—Mt. Tafa, west slope: 1 ♂; September 13.—Ero Creek, 1690 meters: 1 ♀ (?); June 10.

Found from 1250 to 2400 meters.

Wing: ♂ 55, 56, 56, 56, 57, 58; ♀ 52.

None of these specimens is molting its wings. A male from Mafulu (October 2) was the only specimen with enlarged gonads.

This warbler was not common on Mt. Tafa, west slope, but was fairly common about Mafulu, gleaning for its small insect food from the twigs and leaves of the tops of the second growth bushes and trees as well as in the top of the forest trees.

Microeca leucophaea zimmeri Mayr and Rand

1935, American Museum Novitates, No. 814, p. 7.

Port Moresby: 2 ♂, 2 ♀; June 20, July 11 (Zimmer).

Taken near sea level.

Wing: ♂ 80, 84; ♀ 81, 83. Tail: ♂ 50, 51; ♀ 49, 52.

These specimens were taken in the savanna near Port Moresby. It is surprising that this race, a representative of an Australian species, has not been taken in south New Guinea.

Microeca flavigaster terraereginae Mathews

Yule Island: 1 ♂ imm.; June 10 (Hamlin).—Delena: 2 ♀; June 16 (Hamlin).—Baroka: 1 ♂, 1 ♂ imm., 1 ♀; April 3–19.—Vanumai: 1 ♂; June 9 (Hamlin).—Port Moresby: 3 ♂, 1 ♀; April 10–October 10 (Zimmer).—Rona: 3 ♂, 1 ♂ imm., 2 ♀, 2 ♀ imm.; April 8–17.

Collected up to 450 meters and seen up to 700 meters, above Rona.

Wing: ♂, 75, 76, 76, 77, 78, 79, 80, 80; ♀, 72, 73, 73, 74, 75; ♂ imm., 76, 76, 78; ♀ imm., 74, 74.

In London, Mayr compared four specimens from Cape York and one from Olive River, North Queensland, which are *terraereginae* (distinguished by the throat being tinged yellowish, the belly much darker yellow, and the entire upper parts much more yellowish citrine than *flavigaster*), with two Port Moresby specimens, which also appeared to belong to this race, agreeing with it on the characters mentioned above, though they were not in good condition for comparison, one being very worn and one an immature. The wing measurements of four Cape York birds are 73, 74, 75, 76, which agree with the present series of measurements.

Mayr also compared the specimen from the Mimika River with Port Essington birds and arrived at the same conclusion as did Ogilvie-Grant (1915, Ibis, Jub. Supp., No. 2, p. 173) that it is very much like birds from northwest Australia (i. e., *flavigaster*, distinguished from *terraereginae* by having the throat and upper chest almost white, across the breast a band with a buffy tinge, breast and belly being more or less pale yellowish, and the upper parts being brownish olive). The Mimika River bird is in fresher plumage than the Australian birds it was compared with, and differed somewhat in being slightly darker on the upper parts with rather pronounced fuscous centers to the feathers. The crown is rather grayish, throat whitish, chest buffy, belly yellowish, slightly darker than in *flavigaster*, but it is best referred to that form. It is not *laeta* Salvadori of North New Guinea which is apparently similar to *terraereginae*, if distinguishable at all.

The first-year plumage, which resembles that of the adult, is attained by an incomplete molt, the remiges, rectrices, and primary coverts being retained. These last, with their pale tips, are a very distinctive mark of age.

The present series, taken from March to July, is mostly in worn plumage (except one male taken June 9) and few of the adults are molting; only three March and one April bird are renewing their wings. One specimen, March 13, is molting out of the nestling plumage.

None of the specimens was in breeding condition. Evidently the breeding season is earlier, perhaps about the first of the year.

A common bird at both Rona and Baroka, where it was strictly a savanna bird. It was surprising not to find it in the savanna in south New Guinea about Dogwa.

It was a typical flycatcher in habits, sitting up straight and darting out after passing insects. At Rona two or three were frequently seen together, and at Baroka couples were common. The exposed dead limbs of the savanna trees were favorite perches and in March and April its short song was often given from such a location. It was surprising to hear these birds commonly in song and yet to find that none were in breeding condition.

Microeca flavovirescens Gray

Wuroi: 2 ♂ ad.; January 22, February 10.—Kubuna: 2 ♂ imm., 1 ♀ ad., 1 ♀ (?) ad.; December 4–11.—Deva Deva: 1 ♂ imm.; June 14 (Hamlin).—Cloudy Bay: 1 ♂ ad., 1 sex (?) ad.; December 29, 30 (Zimmer).—Orangerie Bay: 1 ♀ ad.; December 9 (Zimmer).—Milne Bay: 2 ♂ ad., 1 ♀ ad.; April 3 (Hamlin).

Found up to 770 meters.

Wing: ♂ ad. 75, 75, 78, 80, 80, 81; ♂ imm. 73, 77; ♀ ad. 73, 73, 78.

The first-year plumage, which resembles that of the adult, is attained by an incomplete molt, the rectrices, remiges, light-tipped primary-coverts and a few of the outer median wing-coverts being retained. None of the April and June specimens was molting. Some of the December birds were renewing their wings; the January bird was molting its wing; the February specimen was not. None of the specimens had enlarged gonads.

The olive microeca was not uncommon at Kubuna where it was usually seen singly or in couples in the lower middle spaces in the forest. Like most of its genus in Papua, it was quiet and rather inactive, sitting up straight watching for its prey, which it seized on the wing, and as the bird flitted out to capture a passing insect, it usually went on to another perch, rather than returning to its original perch, and so traveled slowly through the forest.

Microeca griseoceps griseoceps De Vis

Wuroi: 1 ♂ imm.; January 28.—Deva Deva: 1 ♂, 1 ♀; May 8, 29 (Hamlin).—Mafulu: 3 ♂, 3 ♀; October 15–November 4.

Found from 40 to 1250 meters.

Wing: ♂ ad. 67, 69, 69, 71; ♂ imm. 66; ♀ ad. 65.5, 66, 67. Tail: ♂ ad. 50, 51, 51, 55; ♂ imm. 49; ♀ ad. 50, 51, 51, 52.

The Mafulu and Deva Deva birds are typical *griseoceps*. The crown has the gray marked with greenish; the bill is small and the wings somewhat shorter than in the two other New Guinea races. The color of the back is not a distinctive character.

The Wuroi bird is an immature male in first-year plumage and it appears very similar to the Mafulu birds; the crown may be slightly grayer, and, though it is a young bird, the bill is as long as the longest adult bill (13.5 mm.).

One of the May specimens is in fresh plumage, the other is somewhat worn, the October and November specimens are more or less worn; the immature male from January is in fresh first-year plumage. The only molting bird was an October specimen. One October male had enlarged testes and one October female was laying.

The gray-headed microeca was a rare bird at Mafulu, the specimens collected being the only records. It was found in the larger second growth and along the edge of the forest. A solitary bird, it was seen perching upright on small branches and twigs, darting out after passing insects, and passing on to another perch. But the single specimen collected was seen at Wuroi.

Microeca papuana Meyer

Fane: 1 ♂ ad.; June 6 (Hamlin).—Mave: 1 ♂ ad.; September 6.—Mt. Tafa, west slope: 2 ♂ ad., 1 ♂ imm., 1 ♀; September 2–25.—Mt. Tafa, east slope: 4 ♂ ad., 1 ♀ ad.; May 12–22.

Found from about 1350 to 2400 meters.

Wing: ♂ ad. 71, 73, 75, 76, 76, 76, 77, 77; ♂ imm. 74; ♀ ad. 75, 75.

None of these specimens show any wing molt, they are in fresh plumage, except for three slightly worn September birds. Two September males have enlarged testes.

Probably the breeding season starts shortly after September.

The yellow microeca was only fairly common at our Mt. Tafa camps and at Mave. It was a silent, rather inactive bird, usually seen singly or in couples on the branches of low trees and saplings in the forest. It sat rather upright, watching for its insect prey, which it darted out and

secured on the wing. One that I heard give its rather finely drawn song (September 7) was sitting quietly in the middle space of the forest.

Microeca leucops auricularis Mayr and Rand

1935, American Museum Novitates, No. 814, p. 7 (Wuroi).

Wuroi: 1 ♂ ad.; January 23, 1934.

Found near sea level.

Wing 79 mm.

The specimen shows no wing molt and was in breeding condition.

This was the only specimen seen in south New Guinea. It was low in the ground cover of the forest, clinging to the sides of upright stems and scolding.

Microeca leucops albifacies Sharpe

Deva Deva: 2 ♂ ad., 1 ♂ imm.; May 26, June 1 (Hamlin).—Iola: 2 ♂ ad.; June 6, 19 (Hamlin).—Mafulu: 4 ♂ ad., 3 ♂ imm., 1 ♀ ad.; October 1–22.

Found from 770 to 1250 meters.

Wing: ♂ ad. 72, 74, 75, 77, 78, 78, 80, 82; ♂ imm. 75, 75, 75, 77; 1 ♀ ad. 74.

There is a certain amount of individual variation in this series; the amount of greenness, or yellowness, of the upper chest and throat varies, the chin may have a distinct whitish area or it may be barely indicated; the black of the upper forehead may almost reach the bill or be separated from the bill by several millimeters of white.

June specimens are in fresh plumage; October specimens are more or less worn; none show wing molt. Most of the October males had somewhat enlarged testes, and one on October 7 had testes enlarged, while the female (October 17) also had an enlarged ovary. The immature birds are in first-year plumage, some with somewhat enlarged gonads as though they bred in the first-year plumage. The breeding season evidently starts in October.

The white-faced microeca was common at Mafulu. It differed somewhat in habits from the other Papuan species, for besides sitting upright and solitary on slender twigs, it often was found clinging to the sides of the bases of the tree trunks as it moved low through the forest in company with one or two others of its kind. This habit of clinging to the sides of tree trunks is possibly correlated with its larger foot, as compared with other Papuan members of the genus and suggests the action of certain *Poecilodryas*.

Petroica bivittata De Vis

Murray Pass: 2 ♂, 1 sex (?); July 22, August 3.—Mt. Albert Edward: 3 ♂, 2 ♀, 3 sex (?); June 22–July 10.

Found from 2840 to 3680 meters.

Wing: ♂ 74, 75, 75, 76, 77; ♀ 74, 72.

Color of soft parts: female iris dark, bill black, gape and inside of mouth orange, feet blackish, undersurface of toes yellow.

The plumage of the female is duller, less black on the throat and breast than that of the male.

Three males have enlarged testes (June, July, August) but two of these (June, July) are molting, suggesting that the breeding season is past.

A few specimens, both male and female, have traces of a white edging to the black breast feathers. Possibly in freshly molted specimens the breast is veiled with white.

Two unsexed specimens (July and August) are in first-year plumage, which resembles that of the adult except that the black is much duller than that of the female, the throat especially being almost sooty black and the white of the forehead is of lesser extent. However, the wing and its coverts resemble that of the adult except for being slightly browner. Is this possibly a retarded plumage such as Mayr records for Polynesian members of this genus (1934, American Museum Novitates, No. 714)?

The white-browed flycatcher was not uncommon near timber line on Mt. Albert Edward; in Murray Pass the three specimens secured were the only ones seen there. It was a bird of the upper part of the forest, where it was usually seen sitting quietly upright on the smaller branches. Its movements were slow and deliberate, and after a short time on one perch, it flew on to another, thus moving slowly through the forest. Apparently it fed by darting out after flying insects. Occasionally I heard a bird sing a loud deliberate "dad dad dad dad." Couples were sometimes seen but more often the birds were solitary.

Poecilodryas placens (Ramsay)

Kubuna: 1 ♂ ad.; December 13.

Found at 100 meters.

Wing: ♂ ad. 91.

Compared with an adult female from Keku, Astrolabe Bay (Beck coll.), the southeast New Guinea bird is slightly darker, more greenish on the back and breast-band, darker gray on the head, and slightly more

yellowish, less orange-yellow on the abdomen. A first year male from Keku is similar to the female but is slightly lighter, more yellowish green, on the upper parts and breast-band, and has some of the greater upper wing-covert brown.

The two Astrolabe Bay birds measure ♂ 95, ♀ 92 mm.

The present southeast New Guinea specimen shows no wing molt and the testes are not enlarged.

Poecilodryas hypoleuca hypoleuca (Gray)

Baroka: 1 ♀; April 10.—Kubuna: 2 ♂, 1 ♀; December 3–16.

Found up to 100 meters.

Wing: ♂ 75, 77; ♀ 71, 72.

This series differs from five specimens from Keku, Astrolabe Bay (Beck coll.) and one from Hollandia (Mayr coll.), which are *hermani*, in the smaller size of the white area in the wing.

In the present series both females and one male are brownish black above, one male is black.

One of the December males and the December female are molting their wings. The April female had just finished laying.

Poecilodryas cyana subcyanea De Vis

Matsika: 1 ♀ ad.; November 23.—Bella Vista: 1 ♀ ad.; November 8.—Mt. Tafa, west slope: 1 ♂ ad., 1 ♀ ad.; September 5, 17.—Mt. Tafa, east slope: 4 ♂ ad., 2 ♂ imm.; May 10–24.

Found from 950 to 2400 meters.

Wing: ♂ ad. 92, 92, 93, 96, 96; ♂ imm. 90, 91; ♀ ad. 84, 84, 87.

Huon Peninsula birds (8 specimens, Beck coll.) are referable to this form, though slightly lighter on the back, while Cyclop Mt. birds (7 specimens, Mayr coll.) are *atricapilla* Hartert and Paludan (1934, Ornith. Monatsber., XLII, p. 45).

In the southeast New Guinea series two May males are completing their wing molt; none of the specimens had enlarged gonads.

The immature males are finishing their incomplete molt into first-year plumage, rectrices, remiges, and wing-coverts being retained. This plumage resembles that of the adult except for the upper wing-coverts being brownish with buffy spots at the tips.

Poecilodryas sigillata sigillata De Vis

Mt. Tafa, west slope: 4 ♂, 3 ♂ imm., 4 ♀; August 24–September 24.—Murray Pass: 2 ♂, 3 ♂ imm., 1 ♀ ad., 2 sex (?) imm.; July 21–

August 6.—Mt. Albert Edward: 2 ♂, 3 ♂ imm., 3 ♀, 1 ♀ imm.; June 17–July 5.

Found from 2400 to 3680 meters.

There is some variation in size with altitude, as is shown by the following

	Male	Female
Mt. Albert Edward, 3680 m.	100, 100	93, 94, 96
Murray Pass, 2840 m.	96, 99	90
Mt. Tafa, west slope, 2400 m.	92, 92, 93, 93	89, 90, 92, 92

The ratio between young and adult birds is very high, compared with other New Guinea species.

The immature birds are in nestling plumage. This nestling plumage is apparently worn for a considerable time, as at Mt. Albert Edward and Murray Pass we secured eight birds in complete black and white plumage, none of which had enlarged gonads, and nine birds in nestling plumage, only one of which was molting into the black and white plumage. A series from the Huon Peninsula (1931, Mitt. Zool. Mus. Berlin, XVII, p. 680) also showed a high percentage of immature birds: eight adults and seven immature in first-year plumage. There is considerable variation in the nestling plumage.

The least pigmented individual has the under parts dull ochraceous buffy with the centers of the feathers somewhat lighter, giving a slightly streaked appearance. The upper parts are dark brownish, warmer in tone, more dark rufous in the middle of the back, and more buffy on the rump, the upper parts being sparingly streaked with buffy to light rufous. The outer web of the remiges is dull brownish, each quill with a pale buffy triangle at the tip and also a narrow shaft streak of the same on the inner secondaries. The wing-coverts are broadly margined with pale rufous and buff. The rectrices have small buffy marks at their tips.

This varies to a condition in which the maximum amount of rufous is reached. The under parts have the feathers edged with rich rusty rufous, with the throat somewhat olive; the paler centers to the feathers and the more extensive dark bases to the feathers give a very pronounced streaked appearance. The upper parts are more blackish in tone, with pronounced streaking of rusty rufous. The outer edges of remiges and the rectrices are blacker but the buffy markings still persist at their tips, though smaller, and the wing-coverts have narrower light tips. The darkest condition has lost all the rufous and has it replaced largely

by olive-brown or olive-gray, the streaking is not pronounced, and the brownish-black remiges and rectrices have no light marks on their tips, except on the inner secondaries, and the wing-coverts have still smaller tips. These types of plumage are connected by intergrades. All these birds have a few blackish feathers (i.e., feathers approaching the adult plumage) on various parts of the body.

Mayr has suggested as an explanation of the different types occuring in first-year and adult plumages in some species as due to the difference in the rate of physiological change of different individuals during feather growth, calling the plumages most resembling those of the adult "advanced," those least like the adult "retarded" (1933, American Museum Novitates, No. 666). It hardly seems possible to consider the differences in the present series of nestlings to be due to varying physiological states of the young at hatching? The darkest birds would be in a more advanced state than paler individuals. That these conditions prevail from the start of feather growth is shown by the tips of the remiges and rectrices, feathers which grow first.

The nestling plumage is lost by a complete molt, including wings and tail, and a black and white plumage indistinguishable from that of the adult is acquired. This differs considerably from the closely related *P. cyana* in which the nestling plumage is lost by only an incomplete molt, the remiges, wing-coverts, and rectrices being retained in the first-year plumage.

One July adult shows wing molt; August and September males all had enlarged testes, and one September female had an enlarged ovary.

This was a common bird of the forest, about the forest edge, and even out into scattered trees and shrubs in the open. Singly or in two's or three's it moves slowly about low through the forest. Its method of searching for its food is very characteristic, clinging to the sides of tree trunks and saplings a few feet above the ground, pecking insects from them and watching for insects on the tree trunks or ground. When some prey is seen on the ground, the bird flies down usually lights and seizes its prey, then flies back to its perch. At Mave I saw two of these birds perched on stumps in the camp clearing feeding in this manner.

Its movements are all slow, and it often stays for some moments on one perch, with the only movement an occasional twitching of its tail.

Though usually low in the forest, on several occasions in July at Murray Pass I saw birds chasing each other through the tree tops, uttering thin metallic calls. They also have a sharp note of alarm.

On September 24 on Mt. Tafa, 2400 meters, a shooting boy brought

in a nest which he said belonged to this species. He said that there had been two young birds in the nest, which had escaped at his approach, and both adult birds had come about. The nest was in the fork of a branch. It was a rather globular structure with a small, cup-shaped depression at the top. The greater part of the nest was composed of loose, green moss with a firm, neat cup of filmy fern placed on the top to form the receptacle for the young. On the inside of this cup-shaped structure were a few pieces of dry *Lycopodium*, some dry, rather hard fern tips, and a few bits of soft vegetable fiber. The nest measured outside 140 mm. deep by 180 mm. wide; the firm cup of filmy fern measured 80 mm. deep by 100 mm. wide; the inside measurements were 45 mm. deep by 60 mm. wide.

Two stomachs contained only insects.

Poecilodryas albonotata correcta Hartert

Mt. Tafa, west slope: 3 ♂ ad., 3 ♀ ad., 1 ♀ imm.; August 24–September 23.—Mt. Tafa, east slope: 2 ♂ ad., 1 ♂ imm.; May 15–27.—Ero Creek, 1690 meters: 1 ♂ imm.; June 10.—Murray Pass: 1 ♂ ad.; July 18.

Found from 1690 to 2840 meters.

Wing: ♂ ad. 106, 107, 108, 108, 110, 113; ♂ imm. 101, 102; ♀ ad. 101, 102, 103; ♀ imm. 97.

We have also for comparison five adults from the Huon Peninsula. As Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 680) has pointed out, the Huon Peninsula birds average more white on the abdomen.

The immature birds are in first-year plumage. None of the specimens show wing molt. A July, an August, and a September male have testes somewhat enlarged and a female taken September 23 was laying.

Poecilodryas pulverulenta pulverulenta (Bonaparte)

Delena: 2 ♀ ad.; June 14, 19 (Hamlin).

Taken near sea level.

Wing: ad. ♀ 80, 92.

Mayr examined in the Leiden Museum three skins from Utanata River (cotypes of *pulverulenta*), the type of *cinerea* (from Geelvink Bay), one skin from Humboldt Bay, and two skins from the Aru Islands.

The New Guinea birds agree very well with each other. Mathews, in describing *mimika* (1933, Bull. Brit. Orn. Club, LII, p. 25), with Mimika River as the type locality, ignored *pulverulenta* Bonaparte of

which the type locality, Utanata River, is but a few miles west of the Mimika River.

In comparing the Aru Islands birds Mayr found that they had a darker breast-band than the New Guinea birds, though the upper parts were about the same, and they could best be referred to the Australian *leucura*.

Heteromyias albispecularis armiti De Vis

Mt. Tafa, east slope: 2 ♂ ad., 2 ♂ imm., 3 ♀ ad.; May 11–29.—Mt. Tafa, west slope: 2 ♂ ad.; August 25, September 13.

Found at 2000 and 2400 meters.

Wing: ♂ ad. 100, 101, 102, 103; ♂ imm. 96, 97; ♀ ad. 91, 92, 96.

The immature males are in first-year plumage, differing from the adult chiefly in having some of the greater upper wing-coverts tipped with rufous chestnut.

One male taken May 21 which is completing its wing-molt is the only specimen that shows molt. No females show enlargment of the gonads but one May and the August and September males show some enlargement of the testes.

Pachycephalopsis poliosoma poliosoma (Sharpe)

Matsika: 1 ♂ ad., 1 ♂ imm., 1 ♀ imm.; May 24 (Hamlin).—Deva Deva: 1 ♂ ad., 1 ♀ ad.; May 26, 31 (Hamlin).—Mafulu: 4 ♂ ad., 3 ♂ imm., 5 ♀ ad., 1 ♀ imm.; October 4–November 15.—Bella Vista: 3 ♂ ad.; November 7, 8.

Found from 770 to 1450 meters.

Wing: ♂ ad. (10) 103–110 (105.5); ♂ imm. 96, 101, 103; ♀ ad. (6) 99–104 (100.5); ♀ imm. 95, 96.

The immature birds are in first-year plumage. This plumage is attained by an incomplete molt, the tail-feathers, flight-feathers, and wing-coverts being retained and the browner color of these feathers serves to distinguish this plumage, which otherwise resembles the adult.

One May, one October, and two November specimens show wing-molt; none had enlarged gonads.

Monachella mülleriana mülleriana (Schlegel)

Deva Deva: 1 ♀ ad.; May 25 (Hamlin).—Mafulu, 580 meters: 2 ♀ ad., 2 ♀ imm.; October 15, November 14.

Found at about 580 meters at Mafulu; probably the Deva Deva specimens come from even lower.

Wing: ♀ ad. 91, 94, 95.

The immature birds, one taken October 15, the other November 14, are both in the same stage of development, retaining much of the nestling plumage. For a description of the nestling plumage see Ibis, 1915, Jub. Supp., p. 166.

Todopsis cyanocephala bonapartii Gray

Wuroi: 1 ♀; February 4.—Delena: 4 ♂ ad., 1 ♂ imm., 2 ♀ ad., 1 ♀ imm.; May 23–June 20 (Hamlin).—Vanumai: 4 ♂ ad., 1 ♂ [♀] ad.; June 6–11 (Hamlin).—Baroka: 2 ♂ ad., 1 ♂ imm., 1 ♀ ad.; April 4–10.—Kubuna: 2 ♂ ad., 1 ♀ ad.; December 2–8.

Found up to 100 meters.

Wing: ♂ ad. (11) 59–63 (60.9); ♀ ad. 53, 56, 56, 57.

The two immature males cannot be correlated with the idea of a direct molt from the immature plumage (see Stresemann, 1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 94) to that of the adult. One, No. 420372 Amer. Mus. Nat. Hist., which is molting, has the top of the head and back of the neck sooty gray, some of the feathers, especially those of the forehead, tipped with dull blue. Many new feathers of the crown are dark glossy blue but not like the crown feathers of the adult bird. A few feathers over the eye have very pale gray, almost whitish, edges. The sides of the head are black, glossed blue, not the velvety black of the adult. The back is dark chestnut, the black bases of the feathers showing through to give a blackish hue. The rump is dull black, with the feathers lightly tipped chestnut; the new feathers coming in are rather glossy black. The throat is dull blue, the feathers with some white along the shaft, the new feathers growing in are of a lighter blue. The chin is white, with light blue feathers growing in; the rest of the under parts is whitish, tinged with rufous along the sides; the under tail-coverts are blackish, tinged white; the thighs rufous. The tail is black, strongly tinged with blue and with white, dark marbled tips to the feathers. The old wing resembles that of the female but the coverts are tinged blackish and it has broad, pale rufous edges to the quills, but the new feathers growing in are blackish, without a bluish wash, and have a very narrow pale edge.

The other immature male, No. 329703 Amer. Mus. Nat. Hist., also molting, has a dark glossy blue crown, but not as pale blue nor as glossy as the adult. The upper back is dark blue, the lower back and rump black, washed with blue, some of the feathers with pale rufous tips, and rufous or chestnut feathers are present. The chin, throat, and upper

breast are slightly paler blue than the adult, and some of them are more or less mixed with white. The center of the abdomen and lower breast is white, the sides bluish black, tinged rufous posteriorly, the thighs are blackish, some of the feathers tinged chestnut. The tail is black, strongly washed with blue, with narrow tips of white, marbled with blackish, to the feathers. The wings have blackish, chestnut-tinged coverts, the quills are black, the tertials with broad blue edges, except one which has a broad rufous edge, but the rest without a bluish tinge and several have a very narrow pale rufous edging. One wing is molting, apparently due to an accident.

The immature female seems to be like the first-year birds described by Stresemann (see above) but the new blue feathers growing in on the crown differ somewhat from those of the adult.

The explanation of these variations is not apparent, with only three immature birds before us. Do they represent stages between the nestling and the adult plumage or do they illustrate retarded and progressive plumages?

Summary of Molt and Breeding

Two of the three April adults are molting, one of the two May adults is molting, six of the nine June birds show wing molt, two of the three December birds are molting, and the single February bird is molting its wing. An April male that is molting had enlarged testes, and an April female that is molting its wings was laying.

I found this blue "wren" common only at Baroka. In two's or three's it frequented the low shrubbery in the forest, hopping and creeping about with tail cocked over its back and frequently giving a loud rattling call. Sometimes it gave softer rattling notes, or a short sharp note followed by a short rattle. These were apparently calls of alarm or protest at being disturbed. It was usually rather shy and retiring, but its alarm notes betrayed its presence, and as it responded fairly well to "squeaking" it was easily collected. Frequently two or three of these birds composed part of a mixed flock of small birds.

Todopsis wallacii Gray

Wuroi: 1 ♂, 1 ♂ imm., 1 ♀; February 4–8.—Kubuna: 1 ♂; December 15.—Mafulu (alt. 580 m.): 1 ♂ (?), 2 ♀; November 13, 14.

Found from sea level to 580 meters.

Wing: ♂ 47, 48, 49; ♂ (?) 50; ♀ 46, 46, 46.

The three February birds are the only specimens molting their wings.

Nowhere did I find this species common. Much like *T. cyanocephala* in habits, I found both in the same habitat, low in the ground cover in the forest at Kubuna and Wuroi. At Wuroi, on February 6, I found two of these birds in the lower part of a dense area of secondary bush. They were part of a mixed flock of many small species of birds.

Clytomyias insignis oorti Rothschild and Hartert

Mt. Tafa, west slope: 1 ♂, 1 ♀; September 9, 13.

Found only at 2400 meters.

Wing: ♂ 56; ♀ 55.

The male was in breeding condition; the female had the ovary not enlarged; neither showed wing molt.

I saw this species on but two occasions. On September 9 I shot one of two in the top of tall shrubs in the forest, and I saw another a day later in a similar situation. The specimen taken on September 13 was shot by a native boy.

Machaerirhynchus flaviventris xanthogenys Gray

Wuroi: 1 ♂ ad.; 2 ♀ imm., 1 sex (?) ad.; January 8–February 10.—Kubuna: 1 ♂ ad., 1 ♀ ad., 1 ♀ imm.; December 4, 5.—Deva Deva: 1 ♂ ad.; May 20 (Hamlin).

Found from sea level to 770 meters.

Wing: ♂ ad. 61, 62, 63; ♀ ad. 61; ♀ imm. 57, 58, 60.

Of the three adult males only one has the upper back black and the lower back and rump olive-green mixed black, the other two also have the upper back mixed olive and black.

The May specimen shows no wing-molt, nor do the December birds. One of the two January adults is renewing its wing. None of the specimens have enlarged gonads.

From what little I saw of this boat-billed flycatcher, its movements and habits appear similar to those of *M. nigripectus*. One taken on February 8 at Wuroi was in the company of a large scattered flock of many species of small insectivorous birds.

Machaerirhynchus nigripectus harterti van Oort

Mafulu: 1 ♀ imm.; October 17.—Bella Vista: 1 ♀ ad., 1 ♀ imm.; November 6, 7.—Mt. Tafa, west: 4 ♂ ad., 3 ♀ ad.; September 5–25.—Mt. Tafa, east: 2 ♂ ad., 1 ♂ imm., 1 ♀ ad., 1 ♀ imm.; May 10–22.

Found from 1250 to 2400 meters.

Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 382) mentions that

birds from the higher altitudes in the Saruwaged Mts. are larger so the wing measurements of the present series are given below for each altitude.

2400 meters	♂ ad. 62, 62, 65, 66	♀ ad. 61, 62, 65
2000 meters	♂ ad. 60, 63	♀ ad. 60, 63
1450 meters		♀ ad. 60

Besides the differences pointed out by Mayr (*loc. cit.*) the southeast New Guinea birds have a slightly darker, more orange tinge to the yellowish under parts, as compared with birds from the Huon Peninsula.

Two of the three adult May birds are molting, none show enlargement of gonads. Three of the four September adult males show wing-molt and have enlarged testes, the fourth is molting its wing and has its testes not enlarged. Two of the three September adult females are molting their wings and none had enlarged gonads, but one specimen that was not saved was breeding. The November adult female showed no wing molt nor enlargement of gonads.

We found the black-breasted boatbill not uncommon at our Mt. Tafa camps, but rare at Mafulu. It was a bird of the middle part of the forest, usually in the second-story trees but occasionally it ventured down to within a few feet of the ground. Near Ononge I saw one in company with a small mixed party of birds low in the shrubbery on the edge of an area of second growth. However, it was usually solitary and somewhat active, moving about through the branches snapping up flying insects. In life it appeared surprisingly long-tailed, the tail often being raised above the wing tips, but not spread. On Mt. Tafa, September 5, one was singing from a perch well up in a forest tree along the trail, interrupting its performances to dart out after passing insects.

One stomach contained small insects.

Myiagra rubecula papuana Rothschild and Hartert

Dogwa: 2 ♂ ad., 1 ♀ ad., 1 ♀ imm., 2 sex (?) ad.; February 14–28.—Wuroi: 4 ♂ ad., 1 ♀ ad.; January 19–February 9.—Yule Island: 1 ♂ ad.; May 22 (Hamlin).—Delena: 1 ♂ ad., 1 ♀ ad.; June 19 (Hamlin).—Baroka: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad., 1 ♂ ad.; April 4–12.—Kubuna: 1 ♀ ad.; December 5.—Rona: 2 ♂ imm.; March 8.

Found up to 450 meters at Rona.

South New Guinea: ♂ ad., wing 70, 71, 72, 73, 74; tail . . . , 61, . . , 62, 62; ♀ ad., wing . . , 71; tail 60, 58.

Southeast New Guinea: ♂ ad., wing 73, 74, 76, 78; tail 63, 65, 65, 67; ♀ ad., wing 71, 72, 73; tail 61, 60, 63.

From this it may be seen that the birds from south New Guinea are slightly smaller than those from southeast New Guinea. The south New Guinea birds are in worn plumage but there appear to be no color differences between the two series.

The immature are in first-year plumage, or molting out of this plumage.

The first-year plumage of the male and female resembles that of the adult female, but may be distinguished by the broad white edge and tips to the brownish greater wing-coverts, the broader, more whitish edges to the inner secondaries, and the narrow light tips to the browner primary-coverts.

The adult male plumage is attained by a complete molt including wings and tail. In one specimen the wing- and tail-molt is nearly complete, while the blue breast and throat feathers have just started to appear. In another first-year male specimen there are a few blue feathers in the throat that appear to belong to the first-year plumage.

Wear is very pronounced in this species; the worn back feathers become brownish and the breast feathers paler.

The adults taken in April, May, and June are in fairly fresh plumage and show no wing molt. Of the December, January, and February adults only one (February 2) is not molting its wings. None of these specimens had enlarged gonads.

Myiagra cyanoleuca (Vieillot)

Rona: 1 ♂ ad.; March 10.

Wing: 87.

This specimen, taken in the open savanna, was the only one seen.

Myiagra ruficollis mimikae Ogilvie-Grant

Daru: 2 ♂ ad., 1 ♀ ad.; March 7, 9.

Taken at sea level.

Wing: ♂ ad. 72, 75; ♀ ad. 70.

One male and the female are renewing their wings.

These birds were taken in the mangroves near Daru and were the only ones seen. C. H. B. Grant (1915, Ibis, Jub. Supp. No. 2, p. 146) records it as tolerably common [at the mouth of the Mimika River] and seen only in the mangrove swamps on the coast.

Monarcha frater periophthalmicus Sharpe

Matsika: 1 ♂ ad., 1 ♀ ad.; May 24 (Hamlin).—Mafulu: 6 ♂ ad., 5 ♀ ad.; September 29–November 4.

Found at 980 and 1250 meters.

Wing: ♂ ad., 84, 86, 86, 86, 88, 88, 90; ♀ ad., 83, 84, 85, 85, 85, 88.

Most of these specimens are in slightly worn plumage and none show wing molt.

All the September, October, and November specimens show enlargement of the gonads and some were in breeding condition.

The spotting of black in the crown is more pronounced in the females. The females average lighter on the abdomen than males, but some males are lighter than some females.

The spotting of the crown is correlated with a less glossy black forehead and a darker, more bluish tone to the gray, but not with the intensity of color of the under parts.

There is no sharp line between the two conditions and it appears to be merely a matter of individual variation; that it is an age character (Ogilvie-Grant, 1915, Ibis, Jub. Supp., No. 2, p. 133) is unlikely as in our series extremes of both types are in breeding condition.

Monarcha melanopsis (Vieillot)

Daru: 1 ♂ ad., 1 ♂ imm., 1 sex (?) imm.; March 7–10.—Yule Island: 1 ♂ ad., 1 ♀ ad.; May 17, 20 (Hamlin).—Delena: 1 ♀ ad., 1 ♀ imm.; May 23 (Hamlin).—Baroka: 2 ♂ ad., 1 ♀ ad., 1 ♀ imm., 1 sex (?) ad.; April 3–18.—Vanumai: 1 ♀ ad.; June 12 (Hamlin).—Hisiu: 1 ♂ ad.; September 6 (Zimmer).—Veimauri: 1 ♂ ad.; August 16 (Zimmer).—Kanosia: 1 ♂ ad.; August 21 (Zimmer).—Port Moresby: 1 ♂ ad.; October 2 (Zimmer).—Samarai: 1 ♂ ad., 1 ♀ imm.; September 18, 27 (Hamlin).

Found near sea level.

Southeast New Guinea: ♂ ad., wing 88, 90, 90, 91, 91, 92, 93, 94; tail 74, 73, . . , 75, 75, 76, 75, 74. ♀ ad., wing 87, 89; tail 71, 73, 73, 73. ♀ imm., wing 83; tail 65.

South New Guinea: ♂ ad., wing 83; tail 64. ♂ imm., wing 79; tail . . .

An immature male from Tufi (S. E. New Guinea, north coast) measures, wing 87, tail 73.

From this it appears that the birds from south New Guinea are smaller than southeast New Guinea birds, though we have only a single adult male from the former locality.[1] The black on the forehead is of less extent in the south New Guinea bird, but there appears to be no other color difference.

[1] A female coll. by Nevermann at Merauke has a wing of 81 mm. (1935, Mitt. Zool. Museum Berlin, XX, p. 456).

A larger series from south New Guinea may show that it is necessary to separate these birds.

The immature birds are in first-year plumage or are molting into the adult dress.

The first-year plumage lacks the black of the face, forehead, and about the eye; the rectrices, remiges, and wing-coverts are brownish. The next plumage is attained by a complete molt; this plumage resembles the adult except for the lesser extent of black on the forehead and throat.

None of the adult males (March–October) show wing-molt, though the March and April birds are in worn plumage, the rest are in fresh plumage. Two adult females taken in April are molting, the third is in worn plumage; one June bird is molting its wing. The rest, May and September, are in fresh plumage. Wear is very pronounced in this species.

No specimens showed enlargement of the gonads.

This species has been thought to be only a winter visitor from Australia. Though, in the American Museum collection, there are specimens of immature birds from Fergusson Island collected in January by Hamlin, this species was not found during the course of field work in December, January, and February in the lowlands of south and southeast New Guinea, where it would be expected if a resident. Possibly the immature birds taken in January on Fergusson Island were birds that had not migrated back to the breeding areas of the species.

A series of birds from Cape York and New South Wales have wing measurements of 85–97, which compares well with the southeast New Guinea series, but is larger than the south New Guinea bird.

Monarcha guttula (Garnot)

Wuroi: 2 ♂ ad., 2 ♀ ad., 1 ♀ imm.; January 18–February 5.—Vanumai: 1 ♂ ad.; June 6 (Hamlin).—Baroka: 2 ♀ ad.; April 7, 8.—Kubuna: 2 ♂ ad., 1 ♀ ad., 1 ♀ imm.; November 28–December 13.—Veimauri: 1 ♂ ad.; August 16 (Zimmer).—Mafulu, 580 m.: 1 ♂ ad.; October 15.—Orangerie Bay: 1 ♂ ad., 1 ♂ imm.; December 12, 19 (Zimmer).—Milne Bay: 1 ♂ ad.; April 4 (Hamlin).

Found from sea level to 580 meters.

Wing: ♂ ad. 74, 78, 78, 78, 79, 80, 81, 81, 81, 83; ♂ imm. 77; ♀ ad. 75, 75, 76, 76, 78; ♀ imm. 72.

The following are additional measurements:

Hollandia	♂ 80, 80; ♂(?) 78 (Mayr coll.)
Snow Mountains	♂ 79–85; ♀ 75–78 (Ogilvie-Grant, 1915, Ibis, Jub. Supp., No. 2, p. 135)
Maeanderberg	♂ 76–81; ♀ 71–79 (Stresemann, Arch. für Naturgesch.; LXXXIX, Heft 7, p. 96)
Astrolabe Bay	♂ 76, 77, 77, 78, 78, 79, 80, 80, 82; ♀ 74, 74, 77, 79 (Beck coll.)
Huon Peninsula	♂ 82 (Beck coll.)

The differences between these series do not seem pronounced enough to be used in distinguishing subspecies, as suggested by Stresemann (*loc. cit.*).

There is a slight variation in the white tips to the outer rectrices between the present series of south and the southeast New Guinea birds.

In the males from the southeast the white tip on the outermost rectrices, measured on the outer web along the shaft, varies from 16–19 mm. in extent, the third as well as the second pair also have a white tip, which, measured in the same way, varies from 5–10 mm., except for one specimen from Vanumai, with no white tip to third pair. In the males from south New Guinea the white on the outer web of the outer rectrices measures 16 and 18 mm.; the second pair are white-tipped, but there is no white tip to the third pair, though there is a white spot 6 mm. long near the tip of the third pair in one of the specimens.

In the females from southeast New Guinea the white on the outer pair of tail-feathers varies from 17 to 19 mm., but there is a tendency in two of these three specimens for the end of the feather to become dark, thus showing a slight approach to the spot in one of the south New Guinea males. In the females from south New Guinea the white on the outer web measures 11 and 13 mm. and there is no white on the third pair.

However, Rothschild and Hartert (1912, Nov. Zool., XIX, p. 199) record one female from the Aroa River with only the two outer pair of rectrices tipped with white, and Salvadori (1896, Ann. Mus. Civ. Genoa, (2) XVII, p. 74) described *M. heterurus* on the basis of the lack of white tips to the third pair of rectrices from five specimens collected at Vikaiku in southeast New Guinea. The three birds from Hollandia all have broad white tips to the third pair of rectrices (11, 12, 13 mm.) and none on the fourth from the outside. Rothschild and Hartert (*loc. cit.*) state that of the series of more than fifty specimens (no localities given) examined by them, the Aroa River female was the only specimen without the white tips to the third pair of rectrices.

Of the birds from Astrolabe Bay three of the nine males have the

outer three rectrices tipped with white, the other six have white on the four outer rectrices. The amount of white varies: on the outermost pair from 15 to 22 mm. in extent, on the third from 9 to 17 mm., and when it occurs on the fourth, from 1 to 9 mm.; in one of the cases with very little white, the white is separated from the end of the tail by an edging of black. The females of this series are in poor condition for comparison and yield only the following data: extent of white on the outermost pair of rectrices varies from 16 to 17 mm.; the white tips occur on the outer three pairs only, in two specimens (the only ones determinable) and on the third pair of rectrices it measures 8 and 15 mm.

The male from the Huon Peninsula has white tips on the three outer tail-feathers and a small white spot (2 mm. long) very close to the end of the outer web of the fourth. The extent of the white is on the outermost 17 mm., on the third 15 mm.

From this it may be seen that birds in north New Guinea have considerably more white on the ends of the outer rectrices than have birds from south New Guinea, but the amount of intergradation in northwest and southeast New Guinea is such that no subspecies can be based on this character.

April, June, and August, and some November, December, and January specimens show no wing-molt; October and February and some November, December, and January specimens show wing-molt.

Two November males, one molting and one showing no wing-molt, were the only birds with enlarged gonads.

Monarcha alecto chalybeocephalus (Garnot)

Daru: 4 ♂ ad., 3 ♀ ad., 1 sex (?) imm.; March 6–11.—Yule Island: 3 ♂ ad.; May 20–29 (Hamlin).—Baroka: 2 ♂ ad., 1 ♂ imm.; April 4–19.—Inawaia: 1 ♀ (?) imm.; June 3 (Zimmer).—Kubuna: 2 ♂ ad., 2 ♂ imm.; 1 ♀ ad.; December 4–16.—Kanosia: 1 ♀ imm., 1 ♀ (?) imm.; August 21, 22 (Zimmer).—Port Moresby: 1 ♂ ad.; May 2 (Zimmer).—Samarai: 1 ♀ imm.; March 23 (Hamlin).

Found up to 100 meters.

Wing: ♂ ad. (11) 85–94 (89.1); ♀ ad. 82, 85, 86, 88.

This series is referred to *chalybeocephalus* but the whole species is in need of revision and possibly two forms may be recognized as occurring in New Guinea. The present series from Daru and a series from the Huon Peninsula are extremes in the New Guinea population in the distinctly different color of the upper parts of the female, the former being much darker.

The immature birds are in first-year plumage, though one, March 8, still retains some of its nestling plumage. Some of the March, April, May, and June adults are renewing their wings.

One December and one March male had enlarged testes.

Monarcha manadensis (Quoy and Gaimard)

Kubuna: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad.; December 4–13.

Found at 100 meters.

Wing: ♂ ad. 86; ♂ imm. 78; ♀ ad. 78.

The immature male is in first-year plumage, the black of the upper parts and breast is duller black than in the adult male, the feathers of the fore crown and breast tipped with gray. The greater wing-coverts, primary-coverts, and the outer edges of the remiges are dull brownish black, not glossy black as in the adult.

This differs somewhat from the description of the immature female given by Ogilvie-Grant (1915, Ibis, Jub. Supp., No. 2, p. 137) but we have an immature female from Madang (Beck) molting out of the first-year plumage in which the forehead is dark gray as described by Ogilvie-Grant. Possibly there is a sexual dimorphism in the first-year plumage.

The female is somewhat duller than the male, and with a slightly grayish-blue gloss, but this sexual difference is not as pronounced as it is in birds from Madang, where most of the females have a pronounced grayish-blue gloss. (Also see Stresemann, 1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 2.)

None of these specimens is molting and the female was laying.

This monarcha was found only at Kubuna where it was rather uncommon and shy. It was always seen singly, and within a few meters of the ground in the heavy forest.

Monarcha axillaris fallax Ramsay

Deva Deva: 2 ♂ ad.; May 30, 31 (Hamlin).—Mt. Tafa, west slope: 1 ♂ ad., 2 ♀ ad.; August 24–September 29.—Mafulu: 9 ♂ ad.; 2 ♂ imm., 3 ♀ ad., 1 ♀ imm.; October 10–Nov. 16.

Found from 1250 to 2400 meters; Hamlin's specimens are recorded from 770 meters.

Wing: ♂ ad. (12) 74–80 (77.4); ♂ imm. 74, 76; ♀ ad. 73, 73, 76, 76, 81; ♀ imm. 73.

A small series of *axillaris* from Arfak (Mayr coll.) measure: ♂ ad.

79, 79, 80, 81; ♀ 79, 79. Three adults of *fallax* from Saruwaged measure 75, 77, 77 (Mayr, 1931, Mitt. Zool. Mus. Berlin, XVII, p. 683), and one female from Lordberg, 73 (Stresemann, 1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 2).

Comparing the southeast New Guinea birds with those from Arfak, the color of the under wing-coverts and axillaries varies so that it cannot be used to separate the two series (see Stresemann, 1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 2). As can be seen from the measurements above, size is not a very good character, though it may separate northeast New Guinea birds, which are smaller. The larger white patch on the sides of the breast is constant for the *axillaris* before us; the males also appear blacker and slightly more glossy, especially on the belly, than southeast males. The Arfak females are considerably blacker and more glossy and the breast patch is much larger than in southeast birds, which have more of a grayish gloss (though one specimen approaches the Arfak bird in this); the abdomen is distinctly grayish, and the white breast patches are almost lacking. Two males from southeast and one Arfak bird have white tips to the feathers of the abdomen.

We have examined the type of *ernesti* Rothschild (1931, Nov. Zool., XXXVI, p. 264) from the Weyland Mountains and find that it has the white areas on the sides of the breast no larger than in the Arfak birds. There appear to be no other differences (wing 79) so it cannot be recognized as different from *axillaris*.

Mayr examined specimens from the Snow Mountains in the British Museum and found that they have the white patches on the side of the breast smaller than in the Arfak birds, as Ogilvie-Grant (1915, Ibis, Jub. Supp., No. 2, p. 140) has already pointed out. Ogilvie-Grant has also mentioned the grayish belly of the Snow Mountain specimen (a male), which is also a character of *fallax*, and it is to this form that the Snow Mountain bird must be referred.

Unfortunately we have no birds from the Sepik region and the Huon Peninsula, which were separated from the Arfak bird on the basis of the color of the under wing-coverts and axillaries, a variable character. Is it possible that these are really *axillaris*?

None of the adults of the present series shows wing-molt; the October males all show some enlargement of the testes, and two had the testes enlarged. One November female has the ovary somewhat enlarged. Probably the breeding season was just commencing.

Monarcha chrysomela praerepta White

Wuroi: 2 ♂ ad., 1 ♀ ad.; January 19–February 4.—Baroka: 1 ♂ ad.; April 18.—Kubuna: 1 ♂ ad., 1 ♂ imm.; November 30, December 12.—Mafulu (580 m.): 1 ♂ ad.; October 15.—Lolorua: 1 ♂ ad.; August 28 (Zimmer).—Oibada: 1 ♂ ad.; June 19 (Zimmer).—Orangerie Bay: 2 ♂ ad.; December 14, 19 (Zimmer).

Found up to 580 meters.

Wing: ♂ ad. (9) 68–72 (70.3); ♂ imm. 65, 69; ♀ ad. 64.

There is some variation in the depth of color in the males, apparently due to fading, as freshly molted birds are brighter, more orange in color, and this difference between old and new feathers can be seen on the crown of one bird which is molting its head feathers.

This series compares well with a large series of males and females from the D'Entrecasteaux Archipelago (Hamlin coll.). The New Guinea female has an olive wash on the breast, but not as much so as some D'Entrecasteaux birds.

Specimens from January, April, June, and October show no wing molt, while February, August, November, and December specimens are molting. None had enlarged gonads.

The golden monarcha was not common in the areas we visited. It was usually in the lower part of the forest, but a specimen was also taken in a low tree on the edge of the savanna.

Arses telescophthalmus harterti van Oort

Wuroi: 4 ♂ ad., 5 ♀ ad.; January 18–February 6.—Dogwa: 1 ♂ ad.; February 20.

Found up to 40 meters.

Wing: ♂ ad. 75, 77, 78, 79, 80, 80, 80; ♀ ad. 73, 74, 76, 77, 77.

The amount of black on the chin in the male is intermediate between the condition in *telescophthalmus* and *henkei*. The fleshy ring about the eye appears to be less developed than in these other forms. The females are easily distinguished by the darker, more dull brown back, with hardly a tinge of rufous.

Two February males are the only birds showing molt. No specimens had enlarged gonads.

Arses telescophthalmus henkei Meyer

Delena: 2 ♂ ad., 2 ♀ ad.; May 21, 28 (Hamlin).—Hall Sound: 1 ♂ ad.; June 14 (Hamlin).—Vanumai: 1 ♂ ad., 1 ♂ imm.; June 12, 13 (Hamlin).—Baroka: 2 ♂ ad., 3 ♀ ad.; April 3–10.—Kubuna: 4 ♂ ad.,

1 ♂ sub-ad., 2 ♀ ad., 1 ♀ imm.; November 29–December 16.—Deva Deva: 1 ♂ ad.; May 25 (Hamlin).—Iola: 1 ♂ ad.; June 8 (Hamlin).—Mafulu: 8 ♂ ad., 4 ♀ ad.; September 30–November 14.—Lolorua: 2 ♀ ad.; August 26, 27 (Zimmer).—Milne Bay: 2 ♂ imm.; April 2 (Hamlin).

Found from sea level to 1250 meters.

Wing: ♂ ad. (21) 78–83 (80.9); ♂ imm. 75, 76, 76; ♀ ad. (13) 75–81 (78.7); ♀ imm. 76.

The males are distinguished from those of *telescophthalmus* by the smaller amount of black on the chin, which though varying somewhat does not overlap with the three males of *telescophthalmus* available. The single female of the latter form which we have is lighter, brighter rufous on the back than any specimen of *henkei*, and the series of this latter averages considerably darker on the back.

A. telescophthalmus averages slightly larger than *henkei*. Stresemann (Arch. für Naturgesch. LXXXIX, Heft 8, p. 4) gives for the former: male 80–86, female 76–82, and our specimens measure: male 82, 84, 86, female 81. One Milne Bay female has a rufescent abdomen but another from Milne Bay has the abdomen only tinged with fawn. Hartert (1930, Nov. Zool., XXXVI, p. 74) raised the question as to this rufescent belly being a character of geographical variation in northeast New Guinea. We have two birds from the Huon Peninsula that also have the rufescent abdomen, but one bird from Kubuna and one from Lolorua have just as rufescent abdomens. From the present material, however, it is impossible to state whether or not the area from Milne Bay to the Huon Gulf is inhabited by a rufescent-bellied form. The two females from the Huon Peninsula are indistinguishable from typical *henkei*.

Of the present series of adults, all August to December birds and some April, May, and June specimens show no wing molt; some April, May, and June birds are molting. Males with enlarged testes were taken from September to December, and a female with ovary enlarged was taken on November 14. The sub-adult male has nearly completed the complete molt into the adult dress, only a few rufous feathers about the head and neck and a few first-year remiges remain.

Rhipidura leucophrys melaleuca (Quoy and Gaimard)

Daru: 1 ♂ imm.; January 12.—Dogwa: 1 ♀; February 25.—Baroka: 1 ♂, 1 ♀; April 2, 15.—Kubuna: 1 ♂; December 5.—Port Moresby: 1 ♂; July 4.

Collected up to 100 meters.

Wing: ♂ 105, 105. Tail: ♂ 100, 108, 108; ♀ 95, 104.

Mayr (1931, American Museum Novitates, No. 502, p. 3) has pointed out that birds from between the Moluccas and Solomon Islands had best be considered as belonging to one subspecies, but that the specimens from south New Guinea and Aru Islands are on the average slightly smaller and approach somewhat the smaller *picata* Gould of northwest Australia.

The "willie wagtail" of the colonists is a common bird in and about Port Moresby. It is a familiar bird, coming up onto the porches and verandas of the buildings where its pleasing song makes it a welcome visitor. At Baroka it was common in the savanna and edge of the rain forest near the edge of the swamp. Occasional birds were seen at Kubuna along the river or perched on rocks in the stream. It was common at Daru about the dwellings and lawns and was found in the mangroves; but very few were seen at Dogwa and none at Wuroi.

The habits of this Australian species are well known.

Rhipidura threnothorax threnothorax Müller

Wuroi: 1 ♂; February 3.—Vanumai: 1 ♂ imm.; June 6 (Hamlin).—Kubuna: 1 ♀ imm.; December 16.—Mafulu: 1 ♂; November 16.—Cloudy Bay: 1 ♂; December 30 (Zimmer).—Milne Bay: 1 ♂; April 2 (Hamlin).

Found from sea level to 1250 meters.

Wing: ♂ ad. 83, 83, 85, 89; tail ♂ ad. 101, . . , 106, 106.

Besides the above material, we have for comparison one male from the Bafu district (Hamlin), two males from Keku, Astrolabe Bay (Beck), two males from Madang (Beck), and two males from Arfak (Mayr). There is some geographic as well as individual variation in this series and as Hartert (1930, Nov. Zool., XXXVI, p. 75) has suggested that the birds from southeast New Guinea may belong to a different race characterized by their lighter abdomen, it may be advisable to list the differences we find.

The Arfak birds have medium-sized, fairly plentiful spots on the breast, the abdomen is dark sooty gray with a brownish tinge; the back is rather dark brownish. One bird is slightly paler than the other. The two Madang males have less plentiful spots on the breast; in one they are of medium size, in the other they are small. In the former, the abdomen is about the same as in the paler Arfak bird, but the back has less warm brown. In the latter, the abdomen is blackish, much darker

than in either Arfak bird, and it has barely a trace of olive-brown; the brown of the upper back is about the same as in the paler Arfak bird, but the rump is much blacker.

In the two birds from Keku the back has much less warm brown than the Arfak birds, indeed it is almost olive-brown in one specimen, the rump is blackish, the breast has medium-sized spots which are not very plentiful, the abdomen is grayish black with hardly a trace of brownish, but is not quite as dark as the darkest Madang bird.

The Bafu specimen compares well with the Keku birds, but the abdomen is much paler sooty gray, paler than in the Arfak birds. This is near the locality, Kumusi River, from which four of Hartert's five southeast New Guinea birds came.

Specimens from Milne Bay, Cloudy Bay, and Wuroi have a warmer brown color in the back, similar to the Arfak birds, but the rump is more blackish, recalling the north New Guinea specimens. In one specimen (Cloudy Bay) the spots on the breast are large and plentiful, in the other two they are of medium size and less plentiful. The abdomen is darker in the south and southeast New Guinea birds, more grayish black, and lacks the distinct brownish tinge of the Arfak birds; the rump is also blackish, like the north New Guinea birds.

The Mafulu specimen differs very markedly from the rest of these birds. It suggests a mountain race, but without more material it is impossible to determine this. The crown is much darker, more blackish, than any of the other birds; the back is even paler olive-brown than the palest north New Guinea bird; the rump is much blacker than others of the series, and the abdomen is black, extending backward from the black of the chest, thus being much darker below than any of the others. The wing-coverts also are much blacker. The white spots of the chest are of medium size and are rather plentiful.

At the present time it seems inadvisable to do more than call attention to these differences.

One November and two December specimens are renewing their wings; none of the birds were in breeding condition.

This is evidently a rare bird in the areas we visited. The Kubuna specimen was brought in by a shooting boy. On February 3 at Wuroi I secured one and later saw another in the damp heavy forest along a little stream. They were close to the ground in the scanty shrubbery along the stream. I first heard them uttering protesting, scolding notes, but they were active and shy and I was unable to see them until I "squeaked." Then the birds came darting up near me. The first I

secured, but the second individual responded to my squeaking very quickly, then darted away before I could collect it and was not seen again. The next day Mr. Brass secured a specimen which was too damaged to save. These are the only records of its presence which I made.

Rhipidura leucothorax leucothorax Salvadori

Baroka: 2 ♂ ad., 1 ♀ ad.; April 5–20.—Kubuna: 1 ♀ ad.; December 11.

Found up to 100 meters.

Wing: ♂ ad. 77, 78; ♀ ad. 72, 74.

This series compares well with a small series from north and northwest New Guinea. The black feathers of the scapular and interscapular region are irregular in their arrangement and are lacking in one Ifaar male. One Kubuna female has pronounced black feathers in the back, while in a Baroka and a Wasior female there is only a tendency toward a few blackish feathers.

Both male birds had enlarged testes though one is molting its wing; the other specimens are not molting.

This bird appeared fairly common at Baroka. It was a shy, retiring bird of the low dense cover in the areas of rain forest along the swamp, and the tall dense areas of grass and bush along the swamp's edge. It was sometimes quite noisy, especially when disturbed, but it usually kept well concealed and was a difficult bird to secure. At Kubuna I found a pair of these birds in an area of tall rank grass and guava brush on the river bank.

Rhipidura leucothorax episcopalis Ramsay

Orangerie Bay: 1 ♂ ad.; December 12 (Zimmer).

Found near sea level.

Wing: ♂ ad. 81.

This specimen has a much paler, more rufous-brown back than *leucothorax;* there is little difference in the color of the flanks. A male and female from Finschhafen (collected by Beck) also belong to this race though the back is slightly darker. We also have two males and a female of this species collected near Madang by Beck. Of these, the two males are referable to *leucothorax*, though one is somewhat paler than typical birds, showing a tendency toward *episcopalis.* The female, however, is definitely *episcopalis.* Evidently the country about Astrolabe Bay is the meeting ground of these two races. The limits of

the ranges of these races on the south coast have to be determined; probably they meet near Kapa-Kapa. Aroa River specimens will undoubtedly prove to be the same as those from Baroka (i.e., *leucothorax*). The paler color of the flanks shows considerable variation in this series, and does not appear to be as definite a character as the lighter color of the back. None of the present specimens of *episcopalis* show any of the black feathers in the back such as are usually present in *leucothorax*.

Rhipidura rufiventris gularis Müller

Wuroi: 1 ♀ imm., 1 ♀ (?); January 18, 25.—Daru: 1 ♀ imm.; March 11.—Vanumai: 1 ♂ ad.; June 11 (Hamlin).—Baroka: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad., 1 sex (?); April 4–9.—Kubuna: 1 ♂ ad., 2 ♀ ad.; December 3–9.—Deva Deva: 1 ♀ ad.; June 21 (Hamlin).—Mafulu: 1 ♂ ad., 1 ♀ ad., 2 ♀ nestlings, 2 ♀ imm.; October 3–November 6.—Kanosia: 1 ♀ ad.; August 22 (Zimmer).—Orangerie Bay: 1 ♀ ad.; December 15 (Zimmer).

Found up to 1250 meters.

Wing: ♂ ad. 86, 87, 88, 90; ♂ imm. 84; ♀ ad. 81, 82, 82, 84, 87, 89; ♀ imm. 77, 77, 78, 81.

Summary: October specimens are worn and show no molt; December specimens are also worn but one of the four has started to molt its wing; a January specimen is in freshly molted plumage but is still molting its wing; the two April specimens are in fresh plumage but one is completing its wing molt; the June specimens are in fresh plumage showing no wing molt. This species appears to molt from December to April.

October is evidently part of the breeding season, as during that month we took specimens in breeding condition, a nest with eggs (October 23) and a nest with two well-feathered young (October 22).

This was the commonest flycatcher at Baroka; it was common at Kubuna, fairly so at Wuroi, not uncommon at Mafulu. Evidently its maximum abundance is at the lower altitudes. It frequented the lower part of the forest, sometimes coming close to the ground; one was seen in the mangroves at Daru. Though with the typical fantail attitude of tail raised above wing tips and somewhat restless in habits, this bird indulged in little of the spreading of the tail that characterized some of its relatives. Neither was it active as some of them and often chose some exposed perch on the edge of the forest or in a glade, from which it watched for insects to come within range. At Baroka and Wuroi one or sometimes two or three were almost always part of the mixed flocks of

small insectivorous birds. Curious and confiding, it was always ready to come up and inspect me, or to respond to squeaking.

Rhipidura fuliginosa buchanani Mathews

Delena: 2 ♀; June 19 (Hamlin).

Wing: 66, 68.

These two specimens agree fairly well with a series from Melville Island. They should thus be referred to *buchanani*, if *buchanani* is different from *phasiana* De Vis.

Rhipidura albo-limbata auricularis De Vis

Fane: 1 ♀; June 10 (Hamlin).—Mt. Tafa, west slope: 1 ♂, 4 ♀; August 24–September 17.—Mt. Tafa, east slope: 1 ♂, 1 ♂ imm., 3 ♀; May 10–30.—Murray Pass: 1 ♂, 2 ♀, 1 sex (?); July 17–August 6.—Mt. Albert Edward: 2 ♂, 1 ♀ imm.; June 16–29.

Collected from 2000 to 3680 meters; one seen near Mondo, 1500 meters, also one specimen from Fane, 1350 meters.

Wing: ♂ ad. 81, 81, 81, 82; ♂ imm. 76; ♀ ad. (10) 73–78 (75.8); ♀ imm. 77.

We also have for comparison a good series from the Huon Peninsula (Beck), a few specimens from the Cyclop Mountains, and a single bird from Arfak (Mayr).

Hartert referred birds from the Cyclop Mountains and the Schraderberg to *albo-limbata* (1932, Nova Guinea, XV, p. 462; 1930, Nov. Zool., XXXVI, p. 77) and Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 8) did the same; but our series from north New Guinea cannot be distinguished from southeast New Guinea specimens except that the females from the Huon Peninsula are very slightly paler, more ashy, than those from southeast New Guinea and from the Cyclop Mountains.

The single Arfak bird, however, is different. It is apparently adult, and is labeled a male, though it has a wing of only 76. The whole upper parts are sooty black with a slight brownish tinge, and the black areas of the under parts are similarly colored while all the specimens from the other parts of New Guinea are more grayish black. The black of the head is less different from that of the back than in the other specimens, and the white tips to the wing-coverts are much reduced. Until more material from Arfak is available to determine the validity of *auricularis*, it is admissable to restrict the name *albo-limbata* to Arfak birds, and call birds from the rest of New Guinea *auricularis*.

There is a slight variation in the blackness or grayness of the back in

this series, more noticeable in the females, but part of it appears due to wear, the fresh plumage tending to be grayer, becoming blacker with wear.

Summary of plumage condition and molt: The May specimens are in fairly fresh to somewhat worn plumage, none showing wing molt; June specimens are somewhat worn to worn and none shows wing molt; July specimens are worn, showing no wing molt; August specimens are all molting, and two of the three September specimens are renewing their wings, the third is in somewhat worn plumage. One male (May 10) in worn plumage and a male (August 28), molting, had enlarged gonads.

A common bird of the Subtropical and Temperate forests, frequenting the lower part of the forest. The three Rhipidura's, *atra*, *brachyrhyncha*, and *albo-limbata*, that are found in the Subtropical zone, have somewhat different habits and habitats, each occupying a part of the forest that is less frequented by the others; *atra* was usually found close to the ground and favoring the denser vegetation; *brachyrhyncha* also spent much of its time close to the ground but was less restricted to dense cover and ventured more up into the middle spaces of the forest; *brachyrhyncha* continually fluttered about, securing its prey both on the wing and from objects about it; it was usually unmindful of an observer; *atra* fed in somewhat the same fashion, but, while active, indulged in less fluttering and display and was shy. *Albo-limbata* was different again. Though inhabiting the lower part of the forest, the middle spaces were more its haunts, and it often mounted to the tops of the sub-stage trees. It often stayed for some time on a single perch and was the only flycatcher here that sat out on exposed perches, low pandanus leaves, dead stubs, or in the dead twigs of fallen tree tops along the trail. Some such places were either favorable localities or else used day after day by the same bird, as in a bare, dead fallen tree top near the upper Mt. Tafa camp, a bird was seen almost daily. Sometimes solitary, two were frequently seen together, but never fluttering about close to each other as with *R. brachyrhyncha;* sometimes one of these birds was with one of the little mixed flocks of warblers.

It was a dainty little bird, sitting up with tail raised above the wing tips, but it rarely indulged in the fantail display so characteristic of *brachyrhyncha*. Though sitting on one perch for some few moments at a time, and after flying out to capture passing insects, returning to the same or a nearby perch, it did not sit still, then betraying its relationship to the restless *Rhipiduras*. It was always twitching its wing and tail, moving its body, and twirling and turning its head.

It was a familiar bird, responding readily to squeaking, as do the others of this genus, but often came up to look at an intruder who was standing quietly in the forest, then going unconcernedly about its feeding. From this habit of coming up to inspect us we gave it the title of "friendly fantail."

My first encounter with this bird was when first crossing Mt. Tafa. I stopped to rest the carriers and I saw one of these friendly flycatchers come flying up, from perch to perch, from more than 50 yards away, apparently just to look at us. In habitat, general habits, and familiarity, this bird recalls *R. rufiventris* of the Tropical zone and may, perhaps, be considered as replacing it, ecologically at least.

Apparently all its food was secured on the wing. I saw one fly out and capture a small white moth. On another occasion I was watching two adults, apparently male and female, attending a full-grown young one which still retained some of the rusty colored rump feathers of the nestling plumage. The young bird on a pandanus leaf along the trail clamored, with fluttering wings, to be fed. Several times an adult crammed a moth into the mouth of the young, the moth escaping to be pursued and brought back by the parent. Two days later I saw another such family party.

Seldom did I hear a note from the bird, and the song of the friendly flycatcher was heard only occasionally. It was a short song somewhat recalling that of *R. brachyrhyncha* but finer, higher, more whistled, and less warbled.

The native (Fuzuge) name which we learned for this common and conspicuous bird may be correct. It was "Vida."

Rhipidura hyperythra castaneothorax Ramsay

Mafulu: 5 ♂, 2 ♀; October 8–November 12.—Kubuna: 1 ♂, 1 ♀; December 1, 9.

Found from 100 to 1250 meters.

Wing: ♂ (6) 74–78 (75.6); ♀ 69, 73, 73.

These birds belong to this race with the extent of white on the outer web of the outer tail-feathers of the males, 15–18 mm. extent, measured along the shaft.

The other character mentioned by Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 7) for this subspecies, namely, the greater extent of white on the throat, is not substantiated by our material. There is a great deal of individual variation, some birds having more white than the Arfak specimens, the average, however, having even

slightly less. Two of the three males from northeast New Guinea have still more white on the tail than southeast New Guinea birds (Huon Peninsula (Beck), 16, 22; Mt. Lamington (Hamlin), 22).

Two of the October males are the only specimens showing wing molt. One female, October 17, had slightly enlarged gonads; all the males showed some enlargement of the gonads and one, October 8, had its testes enlarged, though it was also molting.

The chestnut-bellied *Rhipidura* was common at Kubuna and fairly so at Mafulu. It was a bird of the middle part of the forest and the forest edge. It continually moved about through the second story trees and the shrubbery with tail raised and spread, wings slightly drooping and body nearly horizontal, turning its body this way and that and hopping from twig to twig. Despite its activity there was usually something deliberate in its movements, but it was always on the alert for food, as its frequent sallies after some passing insect proved. It was sometimes very tame and I have heard it give single squeaky calls and occasionally a very low soft trill when within a few feet of one. This fantail was usually seen singly, but was also found in mixed parties of small birds.

Rhipidura hyperythra mülleri Meyer

Wuroi: 5 ♂; January 18–February 8.

Found at about sea level.

Wing: ♂ 74, 77, 77, 79, 80.

This series has the white on the outer web of the outer tail feathers, measured along the shaft 6–12 mm. in extent. The respective figures for three Arfak males are 7, 11, 12, and for two birds from the Cyclop Mts., 10 and 13. This record extends the known range of this race in south New Guinea eastward from the Snow Mountains. For measurements of birds from the Sepik Mountains which also belong to this form see Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 8, p. 7).

Only one specimen (February 8) shows wing molt. Four of these birds, including the molting individual, have enlarged testes.

Rhipidura rufidorsa Meyer

Kubuna: 3 ♂, 4 ♀; December 1–9.—Mafulu, 580 m.: 1 ♀ (?); November 14.—Veimauri: 1 ♀; August 16.

Found up to 580 meters.

Wing: ♂ 64, 65, 66; ♀ 57, 60, 60, 61.

Compared with two Arfak birds, a male and a female (Mayr coll.),

these birds are duller, darker brown on the back and especially the rump, instead of brighter, lighter rufous; the thighs are paler and lighter brownish white instead of tinged much deeper, brighter rufous. The top of the head also averages somewhat darker gray instead of brownish. Possibly there are two races in New Guinea (see Hartert, 1930, Nov. Zool., XXXVI, p. 76).

Rhipidura brachyrhyncha devisi North

Mt. Tafa, west slope: 4 ♂ type I, 4 ♂ type II, 3 ♀ type I, 2 ♀ type II; August 29–September 23.—Mt. Tafa, east slope: 1 ♂ type I, 2 ♀ type II, 1 sex (?) type I; May 10–25.—Murray Pass: 2 ♂ type I, 1 ♂ type II, 1 ♀ type I; July 21–August 3.—Mt. Albert Edward: 2 ♀ type I, 2 ♂ type II, 1 ♀ type I, 1 ♀ type II; June 17–28.

Found from 2000 to 3680 meters.

The large series collected in the mountains of southeast New Guinea, between 2000 and 3680 meters, enables us to settle finally the question of dimorphism in this species.

Although this species has been known for more than half a century, it was not realized until very recently that it possesses two amazingly different color phases. The reason for this was that the majority of the collectors brought back only one of the two phases, or else the describer of the collections considered the two phases as two species, as did De Vis. It will be convenient in the following discussion to designate as type I that color phase of this species to which the type of *brachyrhyncha* belongs, and as type II the alternate phase.

Type I (to which the names *brachyrhyncha* Schlegel, *rufa* Salvadori, and *montana* Mathews refer) has the greater part of all tail feathers black, only the base and a broad terminal band are rufous. The top of the head and upper back are dark brown, changing to dark mahogany on the back and bright rufous on the rump and upper tail-coverts. There is a small whitish area on the chin, partly veiled by dusky tips to the feathers, the sides of the head are light rufous brown, the throat is dark sooty brown, changing to dusky yellowish brown posteriorly, strongly tinged with rufous on the abdomen. The under tail-coverts are deep rufous. The females average lighter in general color than the males, but there is some variation in both sexes and some females are as dark as the males.

Type II (to which the names *devisi* North, *albicauda* De Vis, and *laetiscapa* De Vis refer[1]) has the tail uniformly grayish fuscous to gray-

[1] None of this phase found their way into European museums, prior to 1928.

ish white, without a dark central area. The general color of the body plumage is similar to that of type I, but averages paler above and much paler below, though there is considerable individual variation. The males average much paler, especially below, than males of type I, and average somewhat paler than females of type I, though some specimens of each are similar. The females of type II average paler than males of type II, and in the majority of cases the female has plain olive-brown wing-coverts and the male has rufous-tipped wing-coverts, but this is not always true.

The variation in the depth of color of the tail within this phase is considerable, and is correlated with depth of color in the body plumage; detailed descriptions of the tails of the 7 males and 5 females in this phase are as follows:

In two males (with enlarged gonads) the central tail feathers are almost fuscous, tinged rufous at the base and gray toward the tip. The white shaft is also tinged rufous for its basal half. The outer rectrices are much paler, more gray, and with white shafts and no rufous tinge. The body plumage of one of these birds is as dark as the paler male of type I, the other is slightly paler. Three males and four females (one female has its tail too badly mutilated to be used in comparison) have the central tail feathers dusky gray with white shafts, the rufous tinge restricted to the very base of the tail on both the vane and the shaft. The outer rectrices are paler and without a rufous tinge. One of these birds has the gonads somewhat enlarged so this tail coloration is evidently not a question of age. The body plumage of these averages somewhat paler than in the two previous males, and in these seven birds there is little difference in general color between males and females, though the males are slightly darker below. Two males have the tail very pale, the rufous tinge on the base of the white shaft only, and that very pale, and the outer rectrices whitish (the palest is rather worn and perhaps faded). The body plumage is about the same as the average of the specimens, with a medium-colored tail. These two specimens had their testes somewhat enlarged and one had the skull recorded as granular so that the light tail is not correlated with age. From this, one sees that the birds with the lightest and darkest tails are males, and the females average slightly paler in body plumage than males with the same type of tail.

Mayr has recorded (1931, Mitt. Zool. Mus. Berlin, XVII, p. 685) that this paleness of the tail is a character of the first-year plumage, which is not the case in the present series. We have a bird in the first-year

plumage from Zakaheme, Huon Peninsula, April 4th, 1922 (R. H. Beck). It is easily distinguished from the adult by the looser softer plumage. This plumage is of type I, with the characteristic tail markings. The plumage resembles that of the adult, differing in the browner color of the tail, the upper parts being somewhat brighter rufous and the under parts pale rufous, except the throat which is dusky.

All the specimens in European museums up to 1928 belonged to type I. Hartert was therefore greatly puzzled at the receipt of two specimens of type II from the Arfak Mts. (Mayr) and left the question open as to whether the difference between these phases was due to sex, age, or what other factor. Mayr, who had studied this species in the field and had dissected ten specimens of both types, advanced for the first the theory that this difference was entirely individual and not in any way connected with age or sex. The wonderful series, and study in the field, of the Archbold-Rand Expedition substantiates this theory in every respect.[1]

The following are the measurements of this series:

	Male		Female	
	Type I	Type II	Type I	Type II
Wing	(9) 71–75 (72.5)	(7) 69–74 (71.5)	67, 68, 68 68, 68, 70	63, 64, 67 70, 70
Tail	(9) 87–101 (93.7)	(7) 88–99 (93.3)	86, . . , 89 91, 93, 94	85, 86, 86 . . , 97

There is already one remarkable case of color dimorphism known in the genus *Rhipidura*, which concerns melanism in the New Zealand species, *flabellifera*. It was not realized for more than a century that *Rhipidura fuliginosa* Sparrman was only a black phase (see Stresemann, 1923, Jour. für Ornith., p. 515). The inheritance seems to be strictly alternative in that species with the black phase probably dominant (see Moncrieff, 1934, Emu, XXXIV, p. 138, and Stresemann, 1926, Jour. für Ornith., p. 385). Stresemann points out (1926, ibid., p. 383) that *fuliginosa* is not only a blackening of *flabellifera* but that a change in the pattern of the white marks on the head has taken place. Where *flabellifera* has white marks (superciliary, etc.) they have disappeared, and in their place a new white spot appears back of the eyes, in a place where a related subspecies (*albicauda* from Central Australia) has a white spot.

Still more remarkable than this are the differences between the two tail patterns in *brachyrhyncha*. The inheritance is apparently strictly

[1]We disagree altogether with Paludan (1936, Ornith. Monatsber., XLIII, p. 181).

alternative, since we have not seen any intermediates, although several pairs were observed with one mate belonging to type I and the other to type II. Only the Arfak bird described below (p. 167) shows at all a tendency to overbridge the gap. Both phases seem to be about equally common, as the present series shows (type I: 9 ♂, 6 ♀; type II: 7 ♂, 5 ♀). Mayr collected in the Arfak Mts. equal numbers of both types, and in the Saruwaged Mts. two of type I and five of type II; Beck in the same region found two of type I and three of type II. Bürgers found in the Sepik Mts. only type I.

Since there are populations in distant parts of the island in which both phases seem equally common, it is improbable that the factors underlying either phase are dominant. One of the phases probably appeared as a mutant, but it is now impossible to determine which phase represents the original type of coloration.

Comparing a male (type I) and a female (type II) from Arfak with this series, the female falls within the range of individual variation of the southeast New Guinea series, with the edgings of the remiges darker, more rufous brown, than in many of this series. The male is slightly paler than the palest southeast New Guinea male of that type, and the edges of the remiges are less rufous, more dull brownish. This Arfak male also differs in the coloration of the tail, the black central portion is strongly tinged brownish and this dark area is not as sharply set off from the narrower terminal brown band and from the rufous band as in the southeast New Guinea birds. This has somewhat the appearance of a slight tendency toward the other phases (type II). However, this coloration of the tail is probably typical for the Arfak bird, since our large series from southeast New Guinea is very constant in this character and not a single specimen shows any tendency toward an intermediate type. We therefore consider the Arfak bird as different from the southeast New Guinea bird, for which we use *devisi*, the oldest valid name.

One August and two September specimens show wing molt. One May and three September males had enlarged testes, one May and one September female had ovaries slightly enlarged.

De Vis' fantail was a common inhabitant of the Subtropical and Temperate zones. It lived in the lower part of the forest, especially nearer the ground, but unlike *R. atra*, it haunted the dense cover and the more open forest alike. It responded readily to squeaking, but usually went about its affairs quite unmindful of me as I watched it. With its pretty antics it was rather a conspicuous forest bird.

Its fantail display was the most pronounced and continued of that of

any of the genus I have seen. With body horizontal, tail almost always raised and widely spread, and with drooping wings, it was continually moving about through the forest, perching on twigs, fluttering to pick an insect off a leaf or tree trunk, clinging to the base of a tree or darting out after a passing insect; it was never still a moment, except as it sometimes paused to sing. At all the high mountain camps its song was often heard, and it was especially pleasing to hear it in the occasional sunshiny weather on Mt. Albert Edward.

Prefaced by a few short calls, it started rather deliberately, quickening to a silvery tinkling warble as the bird's throat pulsed and its tail twitched. Some singing males that were collected were found to be in a non-breeding condition; one was a young male with incompletely ossified skull.

Sometimes seen singly, these fantails often went about in couples, sometimes both of one phase of plumage, but as often as not one was of each color phase; the actions of the birds in each color phase were identical.

Rhipidura atra atra Salvadori

Matsika: 1 sex (?); November 24.—Deva Deva: 1 ♂ imm.; May 25 (Hamlin).—Mafulu: 3 ♂ ad., 4 ♂ imm., 3 ♀ imm., 1 sex (?); October 6–November 17.—Iola: 1 ♂ imm.; June 4 (Hamlin).—Mt. Tafa, west slope: 2 ♂ ad., 1 ♀ ad.; September 1–12.—Mt. Tafa, east slope: 6 ♂ ad., 3 ♀ ad.; May 10–30.

Found from 1000 to 2400 meters, also one specimen from Deva Deva 770 meters (Hamlin).

Wing: ♂ ad. (11) 75–81 (79.1); ♂ imm. 71, 73, 73, 74, 75, 76; ♀ ad. 73, 75, 77, 77; ♀ imm. 68, 69, 69, 70, 71.

We have for comparison two females from the Arfak Mountains, one female from Wandammen Peninsula, two females from the Cyclop Mountains, and seven females from the Huon Peninsula (males show no geographical variation).

Comparing the two Arfak specimens with the southeast New Guinea series, both of which show some variation, the color of the under parts of the Arfak birds falls within the range of variation of the latter. The southeast New Guinea series contains both extremes, the bird with the darkest and with the lightest colored under parts. In the color of the upper parts one of the Arfak birds falls within the range of variation of the southeast series, though most of the latter are slightly more deeply colored; the other Arfak bird is slightly paler, less rufous above than of

the southeast series. Hartert (1930, Nov. Zool., XXXVI, p. 77) has already pointed out that birds from northwest and southeast New Guinea cannot be separated, and we arrive at the same conclusion from a study of the present material.

The two Cyclops birds (*vulpes* Mayr) are considerably darker both above and below than Arfak and southeast New Guinea specimens. The Wandammen bird is dark above like the Cyclops bird and, though about as pale below as the Arfak specimens, had best be called *vulpes*. The Huon Peninsula specimens (6 from Zakaheme and one from Hompua) show considerable variation, so that while three birds can be referred to *vulpes*, the darkest being as dark as the darker Cyclops bird, three others fall within the range of variation of Arfak and southeast New Guinea birds, while one is intermediate.

Thus it is advisable to separate this bird in New Guinea into only two races, *atra* in the Arfak Peninsula and southeast New Guinea, and *vulpes* in central New Guinea, intergrading with *atra* in the Huon and Wandammen peninsulas. Possibly the bird from the southern slopes of the Snow Mountains is also *vulpes*.

The first-year plumage is distinguished from that of the adult by its looser, softer texture. The first-year female closely resembles the adult female. Of seven immature males (southeast New Guinea and Huon Peninsula), one resembles the adult female, while five of the others have the throat and breast mixed with particolored brown and slate, and slate feathers, also apparently of the first-year plumage, giving a mottled appearance to the breast. Several of these immature birds have also started to molt on the throat and breast, black feathers of the adult plumage coming in, without any wing molt showing yet. One bird (October 31, Mafulu) is in the midst of a complete molt, including wings and tail, from the brown immature plumage to the black dress of the adult.

May and June birds showed no wing molt and two May males had enlarged gonads; one of the three September specimens is molting its wing, one of the six October specimens is molting its wing, and the three November adult males are molting their wings.

During our short stay at Matsika we recorded this bird; at Mafulu it was not uncommon in the ground cover and the lower part of the forest. On the way from Mafulu to Mondo occasional individuals were seen in the secondary brush along the trail. About our 2000 meter camp on Mt. Tafa it apparently reached its maximum abundance. The black fantail was a fairly common species here. It was usually found in the

undergrowth in the forest but favored especially the thickets and tangled masses of vegetation, such as had been made by the cutting of the Mission road, and was often seen about fallen tree tops. A male and female were often together, though elsewhere it was a solitary bird, occasionally in company with a loose, mixed flock of small birds.

In action it was quick and active, continually moving about; its tail was often somewhat raised and spread and its wings drooping, but this display was not nearly as common nor as exaggerated as it was with *R. b. devisi*. This fantail was not as tame and confiding as the other members of the genus found here. Somewhat curious it often came darting up within a few feet of me, then away again, uttering its sharp, metallic chip or a two syllable note of alarm as it tried to keep just out of sight in the bush, making it difficult to collect. The male especially showed the conspicuous orange lining to its mouth, contrasting sharply with the black plumage as it gave its alarm calls. The song, which I occasionally heard at the camp on the east slope of Mt. Tafa in May, apparently the breeding season, was a short, pleasing warble.

The 2400 meter camp on Mt. Tafa was above the range where the black fantail was common, only occasional individuals being seen.

Peltops montanus Stresemann

Deva Deva: 3 ♀ ad., 1 ♀ imm.; May 25, 30 (Hamlin).—Mafulu: 2 ♂ ad., 4 ♀ ad., 1 ♀ imm.; October 1–November 13.—Fane: 1 ♂ ad., 1 ♀ ad.; May 4.—Fane: 1 ♂ ad.; June 18 (Hamlin).—Mt. Tafa, east slope: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad.; May 26.

Collected from 770 to 2000 meters; also three seen at 2400 meters.

Altitude	Male Adult	Female Adult
2000 m.	112, 113	114
1300 m.	..., 112	111
1250 m.	110, 110	104, 105, 108, 109
770 m.		102, 104, 105, 110

This shows a slight increase in size with altitude.

Three May, one June, and one October bird are renewing their wings; the other specimens, including some May and October birds, show no wing molt. A laying female, taken October 23, was the only bird that had enlarged gonads.

Peltops blainvillii (Lesson and Garnot)

Orangerie Bay: 1 ♀ ad.; December 16 (Zimmer).

Found near sea level.

Wing: ♀ ad. 93.

This specimen is molting its wing.

The smaller white spot on the back and the average smaller size are the characters which best set off this species. The size of the bill in both species of *Peltops* varies geographically to some extent.

Eulacestoma nigropectus nigropectus De Vis

Mt. Tafa, west slope: 4 ♂ ad., 1 ♂ (?) imm., 3 ♀ ad., 2 ♀ imm.; August 19–September 25.—Mt. Tafa, east slope: 2 ♀ imm.; May 15, 16.—Murray Pass: 2 ♂ ad., 1 ♂ imm., 2 ♀ ad., 1 ♀ imm.; July 26–August 7.

Found from 2000 to 2840 meters.

Wing: ♂ ad. 70, 70, 72, 72; ♂ imm. 69; ♀ ad. 70, 72, 73, 73, 73; ♀ imm. 69, 70, 73, 73.

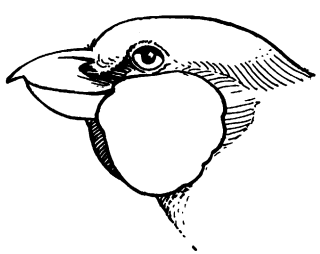

Fig. 1—Head of *Eulacestoma nigropectus* showing natural size and shape of the wattles (from photographs of fresh specimens).

One immature specimen, a female, still retains part of the juvenile plumage, which is dark chestnut on the back and rump and dusky grayish, tinged with chestnut, on the breast. The first-year plumage is acquired by an incomplete molt; in the female it generally resembles the adult female but is duller, darker, more olive above, and largely lacks the yellowish forehead. Below, it lacks the yellowish tone of the adult, the breast being more whitish, and the obscure barring usually extending more onto the lower breast. One specimen, however, is rather dull olive-gray below, with little trace of barring. The brownish-edged remiges, the inner secondaries with chestnut edges, the chestnut lesser and median and the broadly chestnut-edged greater upper wing-coverts, and the rectrices are those retained fr theom nestling plumage. The first-year male is similar, but perhaps somewhat brighter; our only immature male is molting into adult plumage.

Several of the immature birds have a few chestnut-tinged body feathers in the first-year plumage, probably an indication of a retarded

condition of plumage. The adult plumage is acquired by a complete molt. This sequence of plumage is the same for both sexes.

Color of soft parts: immature female (and male?), iris brown, bill blackish gray, mandible paler, feet grayish flesh; breeding female, iris brown, bill grayish black, base of mandible gray, rudimentary wattle pink, feet pinkish gray; male molting into adult plumage, bill grayish black, mandible paler, developing wattle (about 6 mm. long) pinkish yellow, feet pinkish gray; breeding male, iris dark, bill grayish black, wattle pink (about 17 mm. × 17 mm. in size), feet dull gray.

One August and two September females are renewing their wings. A July male had enlarged testes and a July female was breeding.

Pachycare flavogrisea subpallida Hartert

Deva Deva: 2 ♂, 1 "♂" [= ♀]; May 29, 31 (Hamlin).—Mafulu: 8 ♂, 4 ♀; September 29–October 25.—Ononge: 1 ♂; August 14.

Found at 770 and 1250 meters; the Ononge specimen, brought in by natives, may not have come from higher.

Wing: ♂ (8) 64–66 (65.2), one 62; ♀ 61, 62, 62, 63.

Only one specimen, an October female, shows wing molt. One female taken October 3 was laying; none of the other specimens had enlarged gonads.

Rhagologus leucostigma (Salvadori)

Mafulu: 1 ♂ ad.; October 23.—Mt. Tafa, west slope: 1 ♀ ad.; September 4.—Mt. Tafa, east slope: 1 ♂ ad.; May 14.—Irulu: 1 ♂ ad.; August 15.

Found from 1250 to 2400 meters.

Wing: ♂ ad. 87, 89, 89; ♀ ad. 88.

The May specimen is completing its wing molt. None of the specimens had enlarged gonads.

Pachycephala pectoralis spinicauda (Pucheran)

Delena: 1 ♀ ad.; June 16 (Hamlin).

Pucheran's description (1853, Voy. Pole Sud, Zool., I, p. 58) of a specimen from Warrior Island has been considered unidentifiable by most authors but it is obviously a description of a young *pectoralis*, and as the Warrior Island bird is the same as the bird form from Cape York and the coast of New Guinea that name must be used.

Pachycephala soror bartoni Ogilvie-Grant

Deva Deva: 2 ♂ ad., 1 ♂ imm.; May 31 (Hamlin).—Iola: 1 ♂ imm., 2 ♀; June 4–9 (Hamlin).—Mafulu: 6 ♂ ad., 2 ♂ imm., 4 ♀; October 5–November 13.

Collected from 770 to 1250 meters.

Wing: ♂ ad. (8) 87–91 (88.6); ♀ (6) 84–90 (86.6). Tail: ♂ ad. (6) 60–67 (63); ♀ 60, 61, 61, 63.

Two adult males of *soror* from Arfak (Mayr coll.) measure somewhat larger (wing, 92, 95; tail, 70, 70). In the character of the tail coloration they differ little from *bartoni*.

We also have a large series from the Huon Peninsula (Beck coll.) and though some male specimens approach males of *bartoni*, they average considerably more black on the terminal portions of the tail and had better be kept separate as *klossi*.

None of the May specimens show wing molt while all but one of the October and November specimens are molting; none had enlarged gonads.

Pachycephala schlegelii obscurior Hartert

Iola: 2 ♀ ad., 1 ♀ imm.; June 5, 6 (Hamlin).—Mafulu: 1 ♂ ad.; November 18.—Bella Vista: 1 ♂ imm.; November 8.—Mt. Tafa, west slope: 1 ♂ ad., 2 ♂ imm., 1 ♀ ad., 1 ♀ imm.; August 24–September 12.—Mt. Tafa, east slope: 4 ♂ ad., 1 ♂ imm., 4 ♀ ad., 1 ♀ imm., 2 sex (?) imm.; May 10–30.—Murray Pass: 7 ♂ ad., 3 ♀ ad., 1 ♀ imm.; July 17–31.—Mt. Albert Edward: 5 ♂ ad., 1 ♀ ad.; June 20–July 12.

Found from 770 to 3680 meters.

There is considerable difference in size correlated with altitude, especially in the males, as the following data show:

	Male Adult	Female Adult
Mt. Albert Edward, 3680 m.	91, 91, 92, 93, 94	87
Murray Pass, 2840 m.	86, 89, 90, 90, 92, 92, 94	87, 88, 89
Mt. Tafa, west slope, 2400 m.	87	88
Mt. Tafa, east slope, 2070 m.	86, 86, 87, 88	83, 85, 86, 86
Mafulu, 1250 m.	86	
Iola (770 m.)		83, 86

Mayr's specimens from the Saruwaged Mts. show this same principle as the following data (taken from 1931, Mitt. Zool. Mus. Berlin, XVII, p. 672) show:

	Male Adult
Junzaing, 1600 m.	82
Ogeramnang, 1800–2000 m.	84, 85, 85, 85, 87, 87
Mongi-Busu, 2600 m.	88, 88, 90, 90

The immature birds are in first-year plumage, with most of the specimens retaining some of the reddish nestling plumage. Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 7, p. 70) states he can see no difference between the first-year and the adult plumage. The condition is quite different with the males of our series, in which the immature males resemble in general the adult females. This species shows many conditions in the first-year plumage which illustrate progressive and retarded conditions. Possibly a progressive first-year plumage would be indistinguishable from the adult male. The hen-feathered male described by Stresemann (*loc. cit.*, p. 70) is probably a male in a retarded adult plumage.

Two May, one July, and one August adult are molting their wings. A July and an August male had enlarged testes.

Pachycephala griseiceps dubia (Ramsay)

Cloudy Bay: 1 ♀; January 8 (Zimmer).—Orangerie Bay: 1 ♀; December 19 (Zimmer).—Samarai: 1 ♂, 1 ♀; March 23, September 18 (Hamlin).—Samarai: 1 ♂; February 2 (Beck).

Taken only near sea level.

Wing: ♂ 81, 81; ♀ 78, 79, 80.

This form ranges as far westward on the south coast as the Laloki River, which is the type locality.

The February specimen is in fresh plumage, the others are molting their wing-feathers.

Zimmer records one corimelaemidae bug in the stomach of the Orangerie Bay specimen.

Pachycephala griseiceps perneglecta Hartert

Wuroi: 7 ♂, 2 ♂ imm., 6 ♀, 1 ♀ imm.; January 18–February 10.—Baroka: 3 ♂, 1 ♂ imm., 3 ♀, 1 ♀ imm.; April 2–11.—Delena: 1 ♂; June 21 (Hamlin).—Kubuna: 1 ♂, 3 ♂ imm.; 3 ♀; December 1–13.—Mafulu: 6 ♂, 2 ♀; October 1–November 11.—Lolorua: 2 ♂; August 26, 28 (Zimmer).—Veimauri: 2 ♀; August 14, 16 (Zimmer).

Found from near sea level to 1250 meters.

Wing: ♂ ad. (19) 80–85 (82); ♀ ad. (15) 76–83 (80).

Hartert (1930, Nov. Zool., XXXVI, p. 56) and Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 153) record *griseiceps* from southeast New Guinea. Our study of the present material shows that the birds from southeast New Guinea are not *griseiceps*.

Comparing the present series with six specimens of *griseiceps* from Arfak (Mayr coll.), they differ from the Arfak birds by the more pronounced streaking of the under parts, the stronger brownish breast-band, the yellow of the under parts averaging slightly paler, and the short superciliary stripe averaging more grayish, less whitish. Since these characters are those of *perneglecta*, the present series should be included in that form whose range thus appears to extend from the southern Snow Mountains eastward to Galley Reach.

Within the present series there is some variation. The Mafulu specimens (taken at 1250 meters) differ slightly from the lowland birds in having a grayer crown, but this difference is not great enough to justify separating the mountain birds as a different subspecies.

A few of the specimens from the lowlands of southeast New Guinea are a slightly browner shade on the back than the rest of the series. This suggests that the present form, *perneglecta*, intergrades with *dubia* which has a brown back. The area of intergradation is probably to the east of Galley Reach. Our specimens of *dubia* all come from the extreme eastern end of the southeast New Guinea coast, but the type specimen of *dubia* (which from the description appears to show no tendency toward *perneglecta*) came from the Laloki River or the vicinity of Port Moresby (Proc. Linn. Soc. New South Wales, I, p. 391) indicating that this area of intergradation may be very narrow.

From the above data it appears that we have the two forms, *griseiceps* and *dubia*, meeting and intergrading in southeast New Guinea. This removes the objection raised by Hartert (*loc. cit.*) to considering *dubia* a race of *griseiceps*.

The summary of molt and condition of gonads is as follows:

January and February: Plumage fairly fresh or wing molt in progress; no enlargement of gonads.

April: Plumage fairly fresh, the only molting example is a laying female that is renewing its wing; the males had enlarged gonads.

October: No wing molt; the males had enlarged gonads, the females not.

November: Of the two males, one was molting and had gonads not enlarged, the other showed no molt and had enlarged gonads.

December: Wing molt and no enlargement of gonads.

Pachycephala modesta modesta (De Vis)

Mt. Tafa, west slope: 5 ♂, 1 ♂ imm., 4 ♀, 1 ♀ imm.; August 28–September 18.—Mt. Tafa, east slope: 4 ♂, 3 ♀; May 13–23.—Murray Pass: 1 ♂; August 2.—Mt. Albert Edward: 1 ♂, 1 ♀; June 23.

Found from 2000 to 3680 meters.

Wing: ♂ (11) 85–88 (86.2); ♀ (8) 81–85 (82.8).

We have for comparison four specimens from Sevia and Zakaheme (Huon Pen.) collected by R. H. Beck. Two of these specimens are very worn, the other two are only slightly worn. Compared with our series they average somewhat darker, more grayish brown, less light olive-brown, though some specimens are very similar. Until we have more material for comparison, it is advisable to regard *hypoleuca* as distinct.

The two immature birds are in first-year plumage, retaining traces of the nestling plumage. This first-year plumage is apparently acquired by an incomplete molt, the rectrices, remiges, and some at least of the wing-coverts being retained. The plumage of the immature female resembles that of the adult but the tertials are edged with rufous and the greater upper wing-coverts and some of the primary-coverts are broadly edged rufous. A few of the rufous nestling feathers persist in the crown, nape, throat, and upper tail-coverts, and the ear-coverts are rufous.

The first-year male has a somewhat different plumage, the upper parts, including crown, are olive-green, as are the edgings of the secondaries; the under parts are somewhat buffy. Rufous nestling feathers persist in the crown, upper tail-coverts, and ear-coverts. Except for the greenish color of the outer webs of the secondaries, the wing is similar to that of the immature female. This first-year plumage of the male is probably the same as that of the two first-year birds mentioned by Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 716).

Some of the specimens taken in May, June, August, and September were molting. One male taken May 23 had enlarged testes, though it was molting.

Pachycephala rufiventris leucogaster Salvadori and D'Albertis

Baroka: 1 ♂ ad., 1 ♀ ad., 1 ♀ imm.; April 3–8.—Mafulu: 1 ♂ imm.; November 2.—Lolorua: 1 ♂ ad.; August 26 (Zimmer).—Port Moresby: 1 ♂ ad.; April 24 (Zimmer).—Rona: 2 ♂ ad., 2 ♀ ad.; March 15, 17.

Found from sea level to 1250 meters.

Wing: ♂ ad. 87, 87, 88, 88, 89; ♀ ad. 85, 86, 89.

The immature female in first-year plumage differs from the adult

female in the horn-colored bill, black only along the culmen, instead of all black; the upper parts are less clear gray, tinged with brownish, the under parts are tinged with buffy with a less distinct gray breast-band, the throat and breast are distinctly streaked with brownish black, there is a distinct white eye-ring and the sides of the head are brownish. The upper wing-coverts and the remiges, except the tertials, are brownish, margined with brownish white instead of black, margined with gray. The bill of this female is somewhat longer (about 1 mm.) than that of the next longest billed individual in this series.

The immature male, with a black bill, is in a plumage similar to that of the adult female, but differs in having some very worn, brownish feathers mixed with the fresher gray feathers in the upper breast, and in having brownish ear-coverts. The remiges are brownish, edged with whitish, except the tertials which are nearly like those of the adult; the upper wing-coverts are similar to those of the immature female except for a few of the greater series which are edged with rufous. At first glance this specimen appears to be molting, but upon examination there is no molt in evidence. The present plumage appears to be the first-year plumage, still retaining a few nestling feathers in the upper wing-coverts, and with some feathers of the next plumage in the crown and the tertials acquired by a partial molt.

In the adult female the amount of streaking below, the grayness or whiteness of the throat, and the buffyness or whiteness of the abdomen varies somewhat individually.

In the adult male the width of the black breast-band varies, encroaching more or less on the white throat; in one specimen the white of the chin and throat is very restricted and is also mixed with black.

Pachycephala rufinucha gamblei Rothschild

Deva Deva: 1 ♂ ad.; May 31 (Hamlin).—Mt. Tafa, west slope: 3 ♀ ad.; August 25–September 15.—Mt. Tafa, east slope: 2 ♂ ad., 1 ♂ imm., 1 ♀ ad., 1 ♀ imm., 1 ♀ nestling; May 12–29.—Ononge: 1 ♂ ad.; August 18.—Murray Pass: 1 ♂ ad.; August 8.—Mt. Albert Edward: 1 ♀ ad.; July 6.

	Adult Male	Adult Female
(770 m.)	83	..
2000 m.	85, 85, 87	83
2400 m.	..	80, 83, 83
2840 m.	90	..
3680 m.	..	87

Found from (770?) to 3680 meters.

There is some difference in size correlated with altitude, as the accompanying table shows.

The nestling bird was not long out of the nest but has probably lost some of the down through wear. Natal down is present on the tips of the feathers of the crown, rump and lower back, and abdomen, and on the humeral and femoral feather tracts and on the median and greater wing-coverts. The down is longest on the crown and rump; though short, it is fairly plentiful on the abdomen. The down of the upper parts is gray, tinged chestnut, that of the under parts whitish, tinged buffy.

The nestling plumage which completely covers the specimens except for the chin, upper throat, and forehead, which are covered with pin feathers, differs somewhat from published descriptions. The crown is olive-green with faint black tips to the feathers, the upper back is olive-green with dark chestnut brown tips to some of the feathers, changing to more uniform brownish chestnut on the lower back, and the chestnut, nearly like the under parts, on the rump. The under parts are completely chestnut, slightly paler below. The question of subsequent plumage presents complications which we will not treat here, only mention that in one immature male (first-year plumage) there is no rufous spot on the nape, and in the first-year female it is just appearing as part of the adult dress.

Three of the four May adults, one July, and one September adult are molting their wing. None of the specimens had enlarged gonads, but the nestling, not long out of the nest, was taken on May 12.

Myiolestes megarhynchus despectus Rothschild and Hartert

Baroka: 2 ♂, 1 ♀; April 5–11.—Kubuna: 1 ♂, 2 ♀, 1 ♀ imm., 1 ♀ nestling; December 1–15.—Vanumai: 1 ♀; June 6 (Hamlin).—Matsika: 1 ♂ nestling; November 24.—Deva Deva: 2 ♂; June 3, 21 (Hamlin).—Iola: 1 ♀; June 4 (Hamlin).—Mafulu: 5 ♂, 1 ♂ imm., 1 ♂ nestling, 7 ♀, 3 ♀ nestling, 1 nestling (sex ?); September 30–November 15.—Veimauri: 1 ♀, 1 ♀ imm.; August 14, 16 (Zimmer).—Cloudy Bay: 1 ♂; January 7 (Zimmer).—Orangerie Bay: 2 ♂, 1 ♀; December 14, 19 (Zimmer).—Samarai: 1 ♂, 1 ♂ imm., 2 ♀; February 2, March 23, 25 (Hamlin and Beck).

Found from sea level to 1250 meters.

Wing: ♂ (14) 88–94 (91.8); ♂ imm. 87, 88; ♀ (16) 86–95 (90.7); ♀ imm., 82, 83.

Kubuna and Baroka specimens are very similar to Samarai specimens. The Mafulu series differs in the males being darker, more earthy colored below, but this difference is not great enough to warrant naming the population.

The seven nestlings, all apparently belonging to this species, show considerable variation in their plumage. They are uniformly colored above, and individuals vary from dark brown to brighter earthy brown and to olive-brown, more like the adult. The under parts are rather uniformly colored, but perhaps slightly darker on the breast. Individuals vary from dark brownish to dull earthy brown and light brownish. The wing feathers of the different birds show the same variation as the upper parts, so that some closely resemble in color the adult, and in first-year plumage it would be difficult to distinguish birds in this phase from adults. The specimens listed above as immature are those in first year plumage with reddish-brown edges to the remiges and wing-coverts.

Summary of molt and condition of gonads: One November male, all December specimens, one February specimen, the single March adult, and one June female show wing molt; the single January example, one February specimen, all April specimens, most June birds, all August, September, and October birds, and most November specimens show no wing molt.

Birds with enlarged gonads were recorded in April (2 males), September (female laying), October (1 male), November (2 males).

Nestling birds were taken in October, November, and December.

The breeding season evidently occurs between April and November, inclusive, being most pronounced toward the end of that period.

Myiolestes megarhynchus wuroi Mayr and Rand

1936, Mitt. Zool. Mus. Berlin, XXI, p. 247 (Wuroi, Oriomo River).

Wuroi: 4 ♂, 4 ♂ imm., 4 ♀, 1 ♀ imm.; January 22–February 10. Dogwa: 1 ♂; February 21.

Found near sea level.

Wing: ♂ ad. 91, 96, 96, 97, 101; ♂ imm. 87, 88, 89, 91; ♀ ad. 87, 90, 91, 94; ♀ imm. 84.

Immature specimens taken January 28 and 31 still retain part of the nestling plumage. The other immature birds are in first-year plumage distinguished by the reddish-brown edges to the quills and coverts. All the adult birds are molting their wings and none have enlarged gonads.

Colluricincla harmonica tachycrypta Rothschild and Hartert

Wuroi: 1 ♀ ad.; February 5.—Dogwa: 1 ♂ ad., 2 ♂ imm., 2 ♀ ad.; February 19–28.—Yule Island: 1 ♂ ad., 1 ♂ imm.; June 22 (Hamlin).—Baroka: 1 ♂ imm., 1 ♀ ad., 1 ♀ imm.; April 3–10.—Kubuna: 1 ♂ ad., 1 ♀ ad.; December 11, 28.—Port Moresby: 2 ♂ ad., 1 ♀ ad.; June 20, October 10 (Zimmer).—Rona: 1 ♀ imm.; March 8.

Found up to 450 meters (at Rona).

Wing: ♂ ad. 119, 120, 122, 123, 124; ♂ imm. 118, 118, 122, 124; ♀ ad. 119, 119, 124; ♀ imm. 115, 115, 119.

The south New Guinea birds are slightly darker above and below; the females have more pronounced ochraceous on the flanks, and the streakings of the breast slightly more pronounced than the southeast New Guinea birds. But the two series are not in quite comparable plumage, the former being fresh and the latter worn. The differences may be due somewhat to wear and at present it seems inadvisable to separate the south New Guinea birds.

An immature female from Rona still retains part of the nestling plumage, which is light sandy gray on the back of the head and neck, and white on the abdomen. The first-year plumage of the female differs from the adult in having the under parts more definitely streaked with black, and extending farther down onto the abdomen, in having the edges of the breast feathers broadly edged with cream, the throat, abdomen, and eye-stripe more or less tinged with cream, and the outer web of the secondaries, excluding tertials, and the greater wing-coverts strongly washed with rufous.

The males show the same differences in the first-year plumage.

Adult males differ from adult females in being slightly less streaked below and in being slightly darker, more clear gray. There is also a difference in the color of the bill, correlated with age and sex. Young males have a grayish-horn bill, becoming black in the adult. The youngest female, still retaining some of the nestling plumage, has the bill brownish blackish with whitish markings on the mandible. Another, evidently older, first-year female has the bill whitish gray, blackish along the culmen. The dried skins of the adult females have a similarly colored bill but Mr. Zimmer has recorded the bill as black on the label of one example that is now horn-color.

November and December adults were molting; February specimens were either molting or in fresh plumage, having recently completed their molt; April and June specimens were in worn plumage showing no wing

molt, indicating a breeding season about March, though none of the specimens collected had enlarged gonads.

Pitohui kirhocephalus brunneiceps (D'Albertis and Salvadori)

Deva Deva: 2 ♂ ad.; June 3 (Hamlin).—Milne Bay: 1 ♂ [= ♀]; April 2 (Hamlin).

Deva Deva is at an altitude of 770 meters; the Milne Bay specimen probably comes from lower.

Wing: ♂ 122, 123; ♂ [= ♀] 123.

We have no comparative material, but from a survey of the literature it seems that *Rectes meridionalis* Sharpe (1888, Ibis, p. 437) and *Rectes phaeocephalus* Reichenow are synonyms of *brunneiceps*.

Sharpe (*loc. cit*) in the original description of *meridionalis*, based on two males and a female from Astrolabe Mountains, writes that the female is evidently *brunneiceps* of D'Albertis and Salvadori but the male is undescribed, so he described it as *meridionalis*. Salvadori (1891, Ann. Mus. Civ. Genoa, (2) X, p. 813) in comparing a female from Bara Bara (Milne Bay) with a Fly River female says that they are identical except for the tail of the former being a little darker.

Stresemann, in the most recent review of this genus (1925, Mitt. Zool. Mus. Berlin, XI, pp. 413–416), recognizes *meridionalis*, but until some difference between the Milne Bay and the Fly River birds is demonstrated they must all be considered *brunneiceps*. Mayr also examined a specimen of this form from Chads Bay [= Awaiama Bay] in the British Museum.

One of the Deva Deva males is molting its wing.

Pitohui dichrous monticola Rothschild

Hall Sound: 1 ♂ ad.; June (Hamlin).—Baroka: 1 ♀ ad., 1 ♀ imm.; 1 sex (?) imm.; April 7, 11.—Vanumai: 1 ♂ ad., 2 ♀ ad.; June 9, 11 (Hamlin).—Mafulu: 3 ♂ ad., 1 ♂ imm., 4 ♀ ad.; October 3–23.

Found near sea level and at 1250 meters.

Wing: ♂ ad. (near sea level) 111, 111; (at 1250 m.) 106, 108, 109; ♂ imm. (1250 m.) 104; ♀ ad. (near sea level) 109, 109; (at 1250 m.) 106, 106, 107; ♀ imm. (sea level) 103.

It is interesting to note that the birds from the higher altitudes have a shorter wing than birds from lower altitudes.

The immature birds are in first-year plumage, distinguished by the duller wing and the brown edgings to the outer rectrices.

R. H. Beck collected two nestlings of *P. d. dichrous* at Hompua, Huon

Peninsula, February 16, 1929. These two nestlings still retain much of the natal down. Stresemann (1923, Arch. für Naturgesch, LXXXIX, Heft 7, p. 78) has already pointed out that the nestling plumage resembles that of the adult. It is much firmer in texture than the nestling plumage of a *Pachycephala.* The natal down is white in color. It is long, reaching more than 20 mm. in length on the upper parts, and is particularly abundant on the nape and the sides of the crown. On the under parts there are only a few short downy feathers on the throat and abdomen.

One April and three June specimens are molting; one June but no October specimens show wing molt. Two of the October males had enlarged testes, and one female, taken October 20, was laying.

Pitohui ferrugineus clarus (Meyer)

Wuroi: 2 ♂, 1 ♀; February 4–11.—Baroka: 1 ♀, 1 ♀ imm.; April 8.—Vanumai: 1 ♀; June 12 (Hamlin).—Kubuna: 1 ♂; December 7.—Deva Deva: 1 ♂; May 29 (Hamlin).—Hisiu: 1 ♂, 2 ♀; September 5, 7 (Zimmer).—Veimauri: 1 ♂; August 15 (Zimmer).—Orangerie Bay: 1 ♂; December 15 (Zimmer).—Milne Bay: 1 ♀; April 1 (Hamlin).

Found up to 770 meters.

Wing: ♂ 134, 135, 136, 137, 138, 142, 146; ♀ 128, 132, 140, 141, 145, 146.

We have for comparison three specimens from northeast New Guinea (Wareo, Salamaua, and Finschhafen) (Beck coll.). The birds from southeast New Guinea agree fairly well with them, though perhaps averaging very slightly paler.

The south New Guinea specimens average slightly darker than the northeast specimens but these differences are minute and all these birds are referable to the present form. A series of eleven birds (Beck coll.) from the vicinity of Astrolabe Bay also belong to this form. Though two specimens are somewhat darker, the other nine of the series are indistinguishable from the three northeast New Guinea specimens. Birds from the Humboldt Bay are *heurni;* the intergradation between *clarus* and *heurni* probably takes place in the Sepik region.

Pitohui cristatus arthuri Hartert

Wuroi: 3 ♂; January 21–February 8.

Taken near sea level.

There is some variation in the brownishness or oliveness of these

birds, but the type of *arthuri,* which we have for comparison, is in color about that of the average of these three birds.

Two birds from Arfak (*cristatus*) are much darker, more rufous, both above and below. The birds from southeast New Guinea are distinguished by being much paler below. Mayr examined four specimens from the Snow Mountains in the British Museum and found that two had the upper side more olivaceous, and two more rufous, but as a whole agreeing rather well with two Arfak birds, so that the Snow Mountain birds should be called *cristatus.*

This gives, as far as is known, a peculiar distribution for *arthuri;* in the Cyclops and Sepik Mountains and in south New Guinea.

All three specimens are molting their wings.

Pitohui nigrescens schistaceus (Reichenow)

Urun: 1 ♂ imm., 1 ♀ imm.; June 27, 28.

Found at 1800 meters.

Wing: ♂ imm., 127; ♀ imm., 122.

We also have in the American Museum an adult male of this form collected on Mt. Victoria, April–June, 1896, and an adult female from Mt. Cameron collected September 23, 1896 (the latter collected by A. S. Anthony).

The immature male is apparently in first-year plumage. It is paler slaty than the adult and the wing-coverts are tipped with rufous. In the under parts and ear-coverts are a few blackish feathers with reddish-brown tips which perhaps may be interpreted as retarded feathers rather than the remains of a nestling plumage. Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 7, p. 77) has already described the nestling plumage of the male of *P. n. bürgersi.* The immature female is also in first-year plumage. It resembles in general the adult female but has the wing-coverts tipped with rufous, and a few retarded, rufous-tinged feathers in the ear-coverts, wings and under parts. A few rufous feathers in the under tail-coverts are probably remnants of the juvenile plumage.

Lanius schach stresemanni Mertens

Mafulu: 2 ♂ ad., 1 sex (?) [= ♀] ad., 1 ♀ imm.; October 3–November 2.—Urunu: 2 ♂ ad.; June 9, August 16.

Found from 1250 to 1900 meters.

Wing: ♂ ad. 98, 98, 99; sex (?) [= ♀] ad. 97; ♀ imm. 94.

This is the first time this species has been recorded from southeast

New Guinea. The nearest locality at which it had been recorded hitherto was the Herzog Mountains (Mayr, 1931, Mitt. Zool. Mus. Berlin, XVII, p. 715).

We have for comparison two adult females from Sevia, Huon Peninsula (Beck coll.).

The Mafulu female differs slightly in having paler rufous flanks but this may be individual. In the female the back of the head and back of the neck is gray instead of black as in the male.

The June specimen is molting, the other specimens are somewhat to very worn. The August, October, and November males had somewhat enlarged testes; the immature male, in full juvenal plumage, was taken October 13.

Artamus leucorhynchus leucopygialis Gould

Daru: 2 ♂ ad., 2 ♀ nestlings; January 10, March 6, 7.—Yule Island: 1 ♂ ad., 1 ♀ ad.; May 17, June 24 (Hamlin). Vanumai: 2 ♂ ad.; June 10 (Hamlin).—Baroka: 1 ♀ ad.; April 19.—Kubuna: 1 ♂ ad.; June 13.—Port Moresby: 1 ♂ ad., 1 ♀ ad.; April 10, 17 (Zimmer). —Rona: 2 ♀ imm.; April 7, 14.

Found up to 450 meters.

Wing, southeast New Guinea: ♂ ad. 127, 128, 130, 130, 134; ♀ ad. 130, 132; Daru: ♂ 129, 132.

Compared with four adult Ifaar (north New Guinea) birds (Mayr coll.), wing, ♂, 128, 131, 132; ♀, 129, the bills of the present series average slightly smaller, but one of the Daru specimens has a bill nearly as large as the north New Guinea birds and several southeast New Guinea have bills quite as large. Of six adults from Baniara, north coast of southeast New Guinea, wing, 127, 128, 129, 131, 133, 136, one bird has a small bill, but in the others the difference between them and the north New Guinea birds is slight. One male from Wamea Island, Amphlett group (Hamlin coll.) has a wing of 126 and a small bill. The throat is not consistently darker in the south and southeast New Guinea birds. In the Leiden Museum, Mayr examined the two cotypes of *papuensis*, a male from Utanata River and a female from Aiduma Island (Triton Bay) (Müller collection). The following measurements were taken:

	Wing	Tail	Culmen	Exposed Culmen
Male	133	61	22.5	17
Female	130.5	57	22.0	17

Stresemann (1913, Nov. Zool., XX, pp. 292, 293) in a consideration of the forms of *A. leucorhynchus* separated *leucopygialis* Gould (wing 121–135 mm., average about 129) from Australia, southeast New Guinea and Fergusson Island, and *papuensis* Bonaparte (wing 128–139, and bill averaging larger) from the Moluccas, West Papuan Islands, and New Guinea with the exception of the southeast. Aru Island birds, with wing measurements of 128–134, he calls intermediates. Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 7, p. 82) lists the measurements of 11 adults from the mouth of the Mamberano which fall between 126–138 mm.

Hartert (1930, Nov. Zool., XXXVI, p. 41) discussing seven adults from Ifaar says that it is advisable to await more material before separating these two races. Later (1932, Nova Guinea, XV, p. 477) he assigns eight adults from Mamberano, 1 adult from Idenburg River, and three specimens from Hollandia, with wing 128–135 mm., to *papuensis* and four adults from the Digul River, wing 119.5–127 mm., to *leucopygialis*. The bills of some of these Digul birds are also smaller than those of the north New Guinea specimens and the throat is somewhat darker.

If these two "races" were to be retained, less than half the specimens could be definitely assigned to one or the other sub-species. There is so much overlapping in the character of the wing measurements and the size of the bill that it does not seem possible to divide the New Guinea population.

All the March and April adults, and one June adult are molting; the May, most of the June, and the October adults are not molting. No specimens had enlarged gonads. The two nestlings were taken January 10.

Artamus maximus Meyer

Matsika: 1 ♀ ad.; May 1.—Deva Deva: 1 ♀ ad.; May 20 (Hamlin).—Mafulu: 2 ♀ ad.; June 11 (Hamlin).—Mafulu: 1 ♂ ad., 1 sex (?) ad.; October 15.—Mt. Tafa, east slope: 1 ♀ ad.; May 26.

Found from 950 to 2070 meters.

Wing: ♂ ad. 167; ♀ ad. 163, 167, 169, 172.

These measurements compare well with those of a series of seven adults from the Huon Peninsula (Beck coll.) which are 160, 160, 162, 169, 172.

A Madang bird measures 157, and Mayr (1931, Mitt. Zool. Mus.

Berlin, XVII, p. 676) has pointed out that the Arfak birds are somewhat smaller than Saruwaged specimens, having a wing of 144–166.

Two May specimens show wing molt; no specimens had enlarged gonads.

Aplonis metallica metallica (Temminck)

Yule Island: 1 ♀ nestling, 1 sex (?) imm.; December 21, 23.—Kubuna: 3 ♂ ad., 1 ♀ ad.; December 10–14.—Veimauri: 1 ♂ ad.; 2 ♀ ad.; August 14 (Zimmer).

Found up to 100 meters.

Wing: ♂ ad. 109, 110, 112, 112; ♀ ad. 105, 105, 107.

None of the adults is molting.

A laying female was taken December 10 at Kubuna and on December 21 at Yule Island a large number of nests containing young were seen in the possession of the natives.

Aplonis cantoroides (Gray)

Daru: 1 ♀ imm.; March 8.—Baroka: 1 ♂ imm., 1 ♀ (?) imm.; April 11.—Kubuna: 2 ♂ ad.; December 6, 14.—Veimauri: 1 ♀ ad.; August 15 (Zimmer).—Port Moresby: 1 ♂ ad.; September 25 (Zimmer).

Found up to 100 meters.

Wing: ♂ ad. 103, 104, 105; ♀ ad. 102; ♂ imm. 99; ♀ imm. 99.

None of the adults show wing molt.

Melanopyrrhus anais orientalis (Schlegel)

Oriropetana: 1 ♀ ad.; June 5 (Zimmer).—Kubuna: 1 ♂ ad., 1 ♀ ad.; November 27.—Veimauri: 1 ♀ ad.; August 15 (Zimmer).

Collected up to 100 meters, seen up to 300 meters.

Specimens of the present series from southeast New Guinea all have a black spot on the nape and more or less yellow in the auricular and malar regions. There is in the Rothschild collection one specimen from southeast New Guinea with but a single black feather in the nape, while another has as much black in the nape as many north New Guinea birds. There appear to be no records for this bird from the Huon Peninsula nor from the North coast of southeast New Guinea.

The June specimen was molting.

Mino dumontii dumontii Lesson

Dogwa: 1 ♂ ad., 1 ♀ ad.; February 25.—Wuroi: 2 ♂ ad.; January 21, February 4.—Inawi: 1 ♀ ad.; June 4 (Zimmer).—Hall Sound: 1 ♂ ad.; June 14 (Hamlin).—Baroka: 1 ♂ ad.; March 8.—Kubuna: 1 ♂

ad., 1 ♀ ad.; November 29, December 7.—Rona: 1 ♂ ad., 3 ♀ ad.; March 10–16.

Found up to 450 meters.

Wing: ♂ ad. 145, 147, 147, 147, 149, 150; ♀ ad. 142, 142, 143, 144, 145, 147.

We have for comparison three adults from Manokwari, Wasior, and Ifaar (Mayr coll.); 8 adults, Madang, and 2 adults, Keku, Astrolabe Bay (Beck coll.); 2 from Huon Peninsula (Beck coll.) and 6 adults from the north coast of southeast New Guinea taken at Baniara, Buna, and Mt. Lamington (Hamlin coll.).

Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 219) recognize *violaceus* Berlepsch, from Jobi and north New Guinea (Taua, Sepik, Stefansort, Sattelberg) and *dumontii* from Manokwari. The characters of *dumontii* are given as greenish instead of bluish iridescence, paler yellow abdomen, and shorter wing and tail; (*dumontii*, wing, ♂ 141–149; *violaceus*, wing, ♂ 150–162).

From the present series we get the following data. The gloss changes with wear from bluish, or greenish to purplish; fresh feathers may be greenish, bluish, or of an intermediate iridescence. The number of each type in population examined by us is given in the following table.

	Gloss		
	Green	Greenish Blue	Blue
Manokwari	1	..	..
Wasior	..	..	1
Ifaar	..	1	..
Keku and Madang	..	1	9
Huon Peninsula	1	1	..
S. E. New Guinea (north coast)	2	1	3
S. E. New Guinea (south coast)	1	4	4
South New Guinea	..	1	3

The wing measurements we have are as follows:

Manokwari	143
Wasior	149
Ifaar	149
Keku and Madang	152, 154, 154, 156, 157, 160, 160, 160, 161, 167
Huon Peninsula	152
S. E. New Guinea (north coast)	143, 153, 155, 156, 159, 160
S. E. New Guinea (south coast)	142–150 (for details see above)

In the color of the abdomen specimens from Ifaar, Madang, and Keku, are considerably richer colored than birds from the rest of New Guinea.

The above data show that the iridescence is too variable to be used in separating *violaceus* and *dumontii*. The brighter yellow of the abdomen of north New Guinea birds is not satisfactory enough to be used alone. The difference in the measurements of the wings is probably the best character on which to separate the two races. Thus we have *dumontii*, extending from northwest New Guinea along the south coast to Rona, and probably to Milne Bay, distinguished by the shorter wing (142–150). All these birds also have pale bellies. *M. d. violaceus* occupies north and northeast New Guinea, distinguished by the longer wing (149–167); the birds in the western part of this range have a darker yellow abdomen.

M. d. violaceus also appears to have a somewhat larger bare space on the side of the head, though this may be due to the difference in the manner in which the skins were made, and the bill is somewhat longer.

In the south and southeast New Guinea series there are fresh, nonmolting birds from March (1), June (2), and December (1); one nonmolting November specimen is in worn plumage. Molting specimens were taken in January (1), February (2), March (3), April (1), June (3).

None was in breeding condition.

Oriolus szalayi szalayi (Madarasz)

Wuroi: 1 ♂, 1 ♀; February 2, 4.—Delena: 1 ♂; May 28 (Hamlin).—Baroka: 1 ♂; April 10.—Kubuna: 1 ♂; December 4.—Deva Deva: 1 ♀; June 21 (Hamlin).—Mafulu: 1 ♂, 1 ♀; October 31, November 14.—Port Moresby: 3 ♂; June 28, July 24, September 18 (Zimmer).—Annie Inlet: 1 ♂; January (Hamlin).

Found from sea level to 1250 meters.

Wing: ♂ 140, 143, 144, 144, 145, 146, 146, 147; ♀ 135, 137, 142.

There is considerable individual variation in this species as has been pointed out by various authors (Hartert, 1932, Nova Guinea, XV, p. 480).

Rothschild (1931, Nov. Zool., XXXVI, p. 256) considers the brownish tinge of some skins due to the fading of old specimens. This, however, is not always the case as some of our freshly collected specimens are browner than skins more than ten years old. These brownest birds, however, are in worn plumage and the brownness may be the result of wear.

There seems to be no pronounced difference between southeastern and Arfak (Mayr coll.) birds.

Molting birds were taken in January, February, June, and December; non-molting individuals in April, May, June, July, September, October, and November.

Oriolus sagittatus magnirostris van Oort

Dogwa: 3 ♂ ad., 5 ♂ imm.; 1 ♀ ad., 5 ♀ imm.; February 16–28.

Found at about 40 meters.

Wing: ♂ ad. 143, 145; ♂ imm. 140, 141, 141, 142, 142; ♀ ad. 145; ♀ imm. 134, 137, 140, 147. Culmen: ♂ ad. 33, 33, 32; ♂ imm. 32, 33, 34, 32, 33; ♀ ad. 34; ♀ imm. 32, 32, 32, 32, 34.

The number of immature birds as compared with the adults is unusual for New Guinea. These immature birds are in the first-year plumage in which the general color of the upper parts is duller, more grayish green, the throat does not show the grayish tinge, nor the sides of the breast the yellow of the adults. The rufous margins to the upper wing-coverts are also much more pronounced in the immature plumage. The broad outer web of the outer primary is a good character of the juvenal wing in this species.

All the specimens were taken in February; the adults were all molting.

Sphecotheres vieilloti salvadorii Sharpe

Port Moresby: 2 ♂ ad., 1 ♂ imm.; June 26, October 2 (Zimmer).

Wing: ♂ ad. 137, 147; ♂ imm. 141.

Color of soft parts (as recorded by Zimmer on label): adult male, iris dark brown, face deep crimson, papillae overlying creamy white, the white only visible when skin is stretched (one specimen); face crimson anteriorly, orange-yellow behind eye (one specimen); bill black, lores and nasal grove as face, feet livid flesh, or flesh, slightly purplish, nails brownish black; immature male, bill corneous, face dull pinkish flesh, feet pale pinkish gray.

The immature male appears to be molting from the dull, brownish streaked first-year plumage (?) to another more yellow plumage which, however, is still streaked.

Neither of the adults is molting.

Dicrurus bracteatus carbonarius Bonaparte

Daru: 1 ♂; March 6.—Wuroi: 1 ♂, 1 ♀, 1 ♀ imm.; January 31, February 10.—Kubuna: 2 ♀, 1 sex (?); November 30, December 1.—

Kanosia: 1 ♂; August 22 (Zimmer).—Hisiu: 1 ♂; September 7 (Zimmer).—Rona: 1 ♀, 1 ♀ imm.; March 13.—Cloudy Bay: 1 ♂ imm.; January 2 (Zimmer).—Orangerie Bay: 1 ♂; December 12 (Zimmer).—Milne Bay: 2 ♂; April 1, 2 (Hamlin).

Found up to 450 meters.

Wing: ♂ 147, 153, 154, 155, 155, 156, 158; ♂ imm. 144; ♀ 141, 147, 148; ♀ imm. 137, 143 (the Wuroi ♂ measures 147, the Daru ♂ 156).

The slight differences this series show when compared with a Wandammen bird and birds from north New Guinea are probably largely individual (see Hartert, 1932, Nova Guinea, XV, p. 478, and Mayr, 1931, Mitt. Zool. Mus. Berlin, XVII, p. 653), though a series from the vicinity of Astrolabe Bay (Beck coll.) indicate, if they are correctly sexed, that the females from that area are somewhat larger than those from south and southeast New Guinea. The measurements of the Astrolabe Bay birds are: ♂ 154; ♀ 142, 142, 149, 152, 152, 153, 162.

January (2), March (2), and April (2) birds are molting; August (1), September (1), November (1), December (2) are not molting.

Chaetorhynchus papuensis Meyer

Deva Deva: 2 ♂; May 26, 29 (Hamlin).—Mafulu: 2 ♂, 3 ♀; September 29–November 8.

Collected at 1250 meters; Hamlin's locality was at 770 meters.

Wing: ♂ (9) 116–122 (18.3); ♀ 103, 108, 109.

Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 653) has pointed out the geographical variation in this species, but decided that individual variation was too great to separate any subspecies. Comparison of our series with Arfak material supports these findings.

One May specimen was molting. Five of the males taken September, October, and November had enlarged testes, and one female, taken October 21, had its ovary enlarged.

Cracticus quoyi quoyi (Lesson)

Daru: 1 ♂ imm.; March 8.—Mafulu: 1 ♂ imm.; October 18.—Fane: 1 ♀ ad.; June 10 (Hamlin).—Hisiu: 1 ♂ ad.; September 5 (Zimmer).

Found from sea level to 1250 meters; one seen at 1450 meters.

Wing: ♂ ad. 190; ♀ ad. 181. Bill: ♂ ad. 62; ♀ ad. 54.

We have for comparison an adult male from Hollandia (Mayr coll.), wing 193, bill 57, and an adult male from Madang (Beck coll.) wing 184,

bill 61. Mayr measured a series of males from the southern Snow Mountains, in the British Museum, and recorded the following:

Wing: 172, 174, 178, 180, 186, 186, 188, 188. Bill: 50, 52, 53, 53.5, 55, 55, 57, 58, 58.

Apparently all these birds are *quoyi;* the Australian form *spaldingi* differs in the average longer wing and more slender bill. *Cracticus rufescens* De Vis is apparently a different species with reddish females and smaller bill.

Cracticus cassicus (Boddaert)

Wuroi: 1 ♂ ad., 1 ♂ imm., 1 sex (?) ad.; January 19–31.—Delena: 1 ♂ ad.; May 23 (Hamlin).—Inawabui: 1 ♀ ad.; June 6 (Zimmer).—Auga River, Mafulu: 1 ♂ ad.; November 13.—Port Moresby: 2 ♂ ad., 1 ♀ ad.; July 4, 7, September 18 (Zimmer).—Rona: 1 ♂ imm., 2 ♀ ad., 1 ♀ imm.; March 7–14.—Milne Bay: 1 ♀ ad.; April 3 (Hamlin).

Found from sea level to 580 meters.

Wing: ♂ ad. 164, 172, 174; ♀ ad. 162, 165, 165, 168.

There is considerable variation in the amount of black in the backs of fully adult birds. In one male from Delena the black area on the back is large and conspicuous, in a male from Port Moresby the white tips to the back feathers nearly hide their bases so that there is only a scanty mottling of black on the back. This is apparently only individual variation.

Molting adults were taken in January (2), March (2), April (1), May (1), November (1); non-molting in June (1), July (2), and September (1). No specimens were in breeding condition.

Cracticus mentalis mentalis Salvadori and D'Albertis

Dogwa: 1 ♀ ad., 1 ♀ imm.; February 20, 22.—Wuroi: 1 ♂ ad., 1 ♀ ad., 1 ♀ imm.; January 28, 30.—Delena: 1 ♂ ad.; June 18 (Hamlin).—Port Moresby: 1 ♂ ad.; April 23 (Zimmer).—Rona: 3 ♂ ad., 1 ♂ imm., 1 ♀ imm.; March 8–17.

Found up to 450 meters.

Wing: ♂ ad. 144, 148, 150, 154; ♂ imm. 149; ♀ ad. 144, 145, 149; ♀ imm. 138, 141, 141.

Exposed culmen: 37, 43, 42, 42; ♀ ad. 40, 38, 35.

Birds from south New Guinea appear the same as those from southeast New Guinea.

The immature birds are molting out of the streaked nestling plumage.

Molting adult specimens were taken in January (2), February (1), March (4); non-molting adults in April (1), and June (1). None was in breeding condition.

Gymnorhina tibicen papuana Bangs and Peters

Dogwa: 1 ♂ imm., 1 ♀ imm.; February 19.

Wing: ♂ imm. 236.

The female is undergoing a complete molt into adult plumage. The male is finishing an incomplete molt from the nestling to the first-year plumage.

Gymnocorvus tristis (Lesson and Garnot)

Mafulu: 1 ♂ ad., 1 ♂ imm., 1 ♀; November 7, 11.—Cloudy Bay: 1 ♀; January 1 (Zimmer).

Found up to 1250 meters.

Wing: ♂ ad. 327; ♂ imm. 306; ♀ 328.

These are all in light-colored, faded plumage. The three adult birds which are molting are acquiring a slaty gray plumage which when faded and worn would probably have been as pale as the present whitish plumage. Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 216, 217) have already pointed out that the color variation in this species is individual variation, not due to age.

Corvus macrorhynchus salvadorii Finsch

Rona: 1 ♂ ad.; March 15.

Found up to 450 meters.

Wing: ♂ ad. 340 mm.

This specimen is molting.

Manucodia chalybatus (Pennant)

Deva Deva: 2 ♀ ad., 1 ♀ imm.; June 3, 21 (Hamlin).—Mafulu: 1 ♀ ad.; October 9.—Cloudy Bay: 1 ♂ imm., 1 ♀ imm.; January 6, 8 (Zimmer).—Milne Bay: 1 ♂ ad.; April 4 (Hamlin).

Found at 770 (Hamlin locality, Deva Deva) and at 1250 meters.

	Male Adult
Kapaur	172, 177, 181, 183
Siwi, Arfak	177, 177
Wondiwoi	189
Snow Mountains	165, 166, 169, 175
Hydrographer Range	176, 177, 181
Kumusi River	172, 173
Milne Bay	175, 178
Port Moresby	175
Brown River	171
Mt. Cameron (Owen Stanleys)	177 (sex ? = ♂)

Wing: ♂ imm. 165; ♀ ad. 165, 166, 168; ♀ imm. 154, 160. Tail: ♂ ad. 138; ♂ imm. 127; ♀ ad. 132, 129, 138; ♀ imm. 118, 125.

The race *orientalis* has been considered distinct from *chalybatus* on the basis of its smaller size, and to range over all New Guinea except the Arfak peninsula where *chalybatus* occurs (and the latter also on Misol). From the measurements given below, however, it will be seen that the measurements are not decisive, and that *orientalis* cannot be recognized.

Stresemann (Arch. für Naturgesch., LXXXIX, Heft 7, p. 42) has listed measurements showing that the Sepik males have a wing from 165 to 183, and two Misol birds have wing measurements of ♀ 183, sex (?) 186.

Two of the immature birds are molting from the black (= nestling ?) plumage to the iridescent first-year plumage. The incomplete molt by which the first-year plumage is attained includes the lesser and median upper wing-covert but the greater wing-coverts are retained along with the primary coverts, remiges, and rectrices.

One is molting into adult plumage.

Manucodia ater subalter Rothschild and Hartert

Dogwa: 1 ♂ ad.; July 26.—Wuroi: 1 ♀ ad., 1 ♀ imm.; February 10.—Yule Island: 1 ♀ ad.; May 20 (Hamlin).—Hisiu: 2 ♀ ad.; September 2, 7 (Zimmer).—Port Moresby: 2 ♂ ad.; July 25, September 26 (Zimmer).—Orangerie Bay: 1 ♀ ad.; December 19 (Zimmer).

Found near sea level.

Wing: ♂ ad. 180, 190, 191; ♀ ad. 176, 183, 187, 188, 189; ♀ imm. 168. Culmen: ♂ ad. 36, 41.5, 40; ♀ ad. 36, 37, 39, 39, 38.5; ♀ imm. 35.

We have two adult females from Tagula [= Sudest Island], Louisiade Archipelago, collected by Hamlin. Their measurements are: wing, ..., 181; culmen, 42, 40.

The females of the present series differ from the two Tagula females in possessing a smaller bill, and having more greenish, less purplish-blue color on the abdomen, as Rothschild and Hartert (1929, Bull. Brit. Ornith. Club, XLIX, p. 110) pointed out in the original description of *subalter*. Our smallest birds are from south New Guinea (wing 180, 176; culmen 36, 36 in above series of measurements) but the smaller size of south New Guinea birds is apparently not constant. Van Oort (1909, Nova Guinea, IX, p. 104) gives the measurements of birds from Noord River as: wing 170–191, culmen 33–40. The specimen recorded

by Hartert (1932, Nova Guinea, XV, p. 480), with a wing of 194, is probably also this form.

M. a. subalter thus occupies all south New Guinea and the south coast of southeast New Guinea at least, as well as the Aru Islands; *alter* is restricted to Sudest Island.

The immature specimen is molting out of the dull black nestling plumage. One specimen from Wuroi (February) is molting. None had enlarged gonads.

Phonygammus keraudrenii jamesi Sharpe

"*jamesi*"—plumage (adult).

Baroka: 1 ♂ ad.; April 7.

Taken at 30 meters.

Wing: 169. Tail, 135. Tail-wing index,[1] 79.9.

"*purpureoviolaceus*"—plumage (all adults).

Deva Deva: 1 ♂, 1 ♀; June 13, 21 (Hamlin).—Mafulu: 4 ♂, 4 ♀; (1933 expedition and Hamlin).—Fane: 1 ♂; June 7 (Hamlin).

Found from 770 (Hamlin locality) to 1350 meters (Hamlin locality).

Wing: ♂ 167, 168, 169, 169, 171, 172; ♀ 160, 161, 165, 166, 170.

Tail: ♂ 124, 123, 127, 128, 126, 125; ♀ 119, 120, 122, 126, 130.

Tail-wing index[1]: ♂ 72.7, 73.3, 73.7, 74.2, 75.2, 75.7; ♀ 74, 74.4, 74.6, 75.9, 76.5.

Neither type of plumage.

Wuroi: 1 ♀ imm. (first year plumage); January 29.

Wing: 149. Tail: 120. Tail-wing index: 81.

We are leaving the question of the relationships of *jamesi* Sharpe and *purpureoviolaceus* Meyer for later discussion when more material will be available, but will mention here a few points shown by our material.

Both plumages *jamesi* and *purpureoviolaceus* differ from the other recognized subspecies in New Guinea (see Stresemann, 1923, Arch. für Naturgesch., LXXXIX, Heft 7, p. 43). The *jamesi* plumage differs from *keraudrenii* in the bluer gloss of the body plumage, its longer wing and longer tail, and the more developed lanceolate feathers of the head and throat.

The single specimen from Wuroi, a female in immature plumage, should be *keraudrenii* on geographical grounds (Hartert, 1930, Nov. Zool., XXXVI, p. 40). The body plumage is black, glossed with bluish black, the head with a slightly greenish gloss, the lanceolate head-

[1] Index = $\frac{\text{tail} \times 100}{\text{wing}}$.

feathers and ear-tufts little developed. The median and lesser upper wing-coverts are uniform with the back; the greater coverts are dull black; the remiges and rectrices are black with a slight gloss.

Hartert (*loc. cit.*) accepts the view that *jamesi* is the young of *purpureoviolaceus*. However, our specimen of *jamesi* appears adult and one of our specimens in typical "*purpureoviolaceus*" plumage has the skull incompletely ossified indicating that the *purpureoviolaceus* plumage is attained at an early age.

Mayr examined three "*jamesi*" and eight "*purpureoviolaceus*" in the British Museum and, though unable to come to any conclusion regarding them, recorded their measurements which are as follows:

"*jamesi*"

Wing: ♂ 158, 160, 160.

Tail: 121, 124, 130.

Tail-wing index: 76.6, 77.5, 81.3.

"*purpureoviolaceus*"

Wing: ♂ 165, 175; ♀ 155, 158, 159, 160, 156; sex (?) 169.

Tail: ♂ 123, 131; ♀ 114, 111, 118, m, 124; sex (?) 120.

Tail-wing index: ♂ 74.6, 74.8; ♀ 73.6, 74.2, . . , 75.2; sex (?) 71.

Both of these measurements and those of the present series indicate that "*jamesi*" has a proportionately longer tail as compared with the wing, which is shown by the indices:

"*jamesi*," 76.6–81.3.

"*purpureoviolaceus*," 70.3–76.5.

Thus, in addition to the difference in color between these two types, there is also this difference in size. Several other southeast New Guinea birds have been found to vary altitudinally and possibly this is another case. Whether or not this is so requires to be confirmed by a study of more extensive material but it is possible that the two types of birds are subspecies representing each other at different altitudes.

One April specimen (Baroka) and one October specimen (Mafulu) show wing molt. Three of the October males had enlarged testes, and one October female was laying.

Ptiloris magnifica magnifica (Vieillot)

Wuroi: 1 ♂ ad.; January 31.

Taken near sea level.

Wing: 196. Culmen: 57.5.

The basal part of the ridge of the culmen is not concealed with feathers, thus agreeing with *magnifica*. Two adult males from Hol and

one from Siwi (Mayr coll.) of this race have the following measurements: wing 184, 188, 193; culmen 59, 60, 61.

The Wuroi specimen is in the midst of a complete molt.

Ptiloris magnifica intercedens Sharpe

Kubuna: 1 ♀ ad.; December 15.—Milne Bay: 1 ♀ ad.; April 3 (Hamlin).—Samarai: 1 ♀ ad.; February 18 (Beck).

Found up to 100 meters.

Wing: ♀ ad. 165. Culmen: 47, 48, 50.

The Milne Bay and Samarai birds are from practically the type locality of *intercedens*. We have no females of *magnifica* for comparison. One adult male from Finschhafen and six from the vicinity of Astrolabe Bay (Keku, Madang) (Beck coll.) are *intercedens*, having the basal part of the ridge of the culmen concealed by feathers; an adult female from Mt. Lamington (Hamlin coll.) and two from Astrolabe Bay (Beck coll.) may also be referred to this race on a geographical basis. Their measurements are: wing, ♂ ad. 188, 190, 192, 195, 196, 196; ♀ ad. 155, 161, 168; culmen, ♂ ad. 54, 55, 55, 57, 55, 55; ♀ ad. 47.5, 49, 50.5. These measurements (see also Stresemann's measurements, 1923, Arch. für Naturgesch., LXXXIX, Heft 7, p. 32) show that while *intercedens* does not have a shorter wing than *magnifica*, it does have a shorter bill (at least in the males).

There is considerable individual variation in the color of the females.

The three females from southeast New Guinea are all molting.

Drepanornis albertisi cervinicauda Sclater

Deva Deva: 1 ♂ ad.; June 13 (Hamlin).—Iola: 1 ♂ ad., 1 ♀ ad.; June 4, 8 (Hamlin).

Collected by Hamlin at about 770 meters.

Wing: ♂ ad. 158, 159; ♀ ad. 148.

Culmen (measured with dividers): ♂ ad. 72, 75; ♀ ad. 79.

None of these show wing molt.

Epimachus meyeri meyeri Finsch

Iola: ♂ imm., ♀ ; May 29–June 19 (Hamlin).—Fane: 1 ♂ ad., 1 ♂ imm.; June 8, 10 (Hamlin).—Mt. Tafa, east slope: 1 ♂ ad., 1 ♂ imm.; 1 ♀ ; May 14, 17.—Murray Pass: 1 ♂ imm.; August 5.

Found from 2000 to 2840 meters. Hamlin's specimens from Iola and Fane, probably taken by natives, may have come from slightly above his camp.

Wing: ♂ ad. 185, 187; ♂ imm. 151, 169, 189; ♀ 155, 161, 173. Tail: ♂ ad. .., .. ; ♂ imm. 263, 363, 355; ♀ .., .., 370.

Rothschild (1931, Nov. Zool., XXXVI, p. 253, 254) has shown that *meyeri* is specifically distinct from *fastosus*, since both *E. m. albicans* and *E. f. atratus* occur together in the Weyland Mountains and the Snow Mountains.

One immature male still retains part of the nestling plumage on the upper back. This nestling plumage is brown, the feathers tipped with rufous; the lower back and rump are dark earthy brown. The feathers of the throat are sooty black, those of the breast and abdomen are similar to those of the immature male plumage in color, except for being slightly tinged buffy, and are easily distinguished by their fluffy texture. The upper wing-coverts are distinctly margined with rufous. Crandall (1932, Zoologica, XI, p. 82) has shown that the male of this species assumes at least two immature plumages before acquiring the adult dress.

Both adult males (May and June), one immature male (June), and one female (May) are molting. The other immature males, May, June. August, and females, May (1), June (1), show no wing molt.

Astrapia stephaniae stephaniae (Finsch and Meyer)

Iola: 1 ♂ ad., 4 ♂ imm., 2 ♀ ; May 29–June 21 (Hamlin).—Fane: 2 ♂ ad., 1 ♀ ; June 1, 8 (Hamlin).—Duro: sex (?) [= ♂] ad.; 1918 (R. W. Grist, Zimmer coll.).—Mt. Tafa, west slope: 1 ♀ ; September 22.—Mt. Tafa, east slope: 1 ♂ ad., 1 ♀ ; May 11, 12.—Murray Pass: 1 ♂ nestling; August 1.

We found this species from 2000 to 2800 meters; Hamlin's specimens from Iola and Fane may have come from the nearby higher altitudes.

Wing: ♂ ad. 166, 168, 169, 172; ♂ imm. 162, 165, 167, .. ; ♀ 151, 152, 152, 154, 156. Tail: ♂ ad. 642, 615, .., .. ; ♂ imm. 365, 387, 384, 312; ♀ 305, 323, 331, 333, 334.

The male in nestling plumage has the wings nearly full-grown but the tail is only about 100 mm. long. The upper parts are black, except the top of the head which is tinged rufous in the center of the crown. The throat is sooty black; the rest of the under parts are barred black and pale fulvous. The wings are dull black; the tail is also dull black, and the rather narrow rectrices are somewhat pointed. Color of soft parts: iris grayish brown, bill black, inside of mouth grayish green, feet gray, nails black.

Two males are in a plumage resembling that of the adult female.

Both wing- and tail-feathers as well as the body-plumage differ from that of the nestling.

Two other immature males, which are not molting, appear to represent another plumage. This also resembles that of the female except for the head, including the throat, which has the iridescent colors of the adult rather well developed. This might be explained on the basis of an "advanced" plumage, but the similarity of pattern in the two birds suggests it may be a regular immature plumage.

One adult male has a few brownish-tipped feathers in the abdomen, apparently a retarded condition.

Molting adult males were taken in June (2); immature males in May (1); females in May (1), June (2), and September (1). Non-molting adult males were taken May (1), June (1); immature males June (3); female June (1). None of the specimens from May and September were breeding, but the immature male taken August 1 indicates breeding in June!

Parotia lawesi lawesi Ramsay

Deva Deva: 1 ♂ sub-ad., 3 ♂ imm., 1 ♀; May 26–June 14 (Hamlin). —Iola: 2 ♂ ad.; May 29, June 8 (Hamlin).—Mafulu: 3 ♂ imm.; September 30–November 15.—Fane: 2 ♂ sub-ad., 1 ♂ imm.; June 1–10 (Hamlin).—Mondo: 1 ♂? [= ♂] ad.; November.

We found this species only at 1250 meters; Hamlin's localities are from 770 to 1300 meters.

Wing: ♂ ad., 151, 152, 155; ♂ sub-adult, 149, 150, 152; ♂ imm., 142, 149, 150, 150, 152, 152, 155; ♀ 143.

The three adults and the three sub-adults all have the white on the forehead, characteristic of this race. The adult males are in full plumage. The males called sub-adult are in the curious mixed plumage, partly like that of the adult, partly like that of the immature. In all three the head, including the long tufts, is like that of the adult and the wings and tail are similar to those of the adult. The breast shield, while with more or less developed iridescence, has a coppery sheen, rather than the clearer green of the fully adult bird. One of these specimens is in nearly complete adult plumage, except for some brown feathers in the abdomen; another has considerable brown mixed with the black of the lower breast, abdomen, and back; in both these the barring has tended to disappear from the brown feathers. The third specimen has the lower breast and the abdomen like that of the immature male, and the back is largely brown, mixed with some black.

Molting birds are recorded as follows:

Adult male, May (1); immature males, September (1), October (1), November (1); specimens not molting their wings are as follows: adult male, June (1) November (1); male sub-adult, June (3); male immature, May (2), June (2); female, May (1).

Lophorina superba minor Ramsay

Deva Deva: ♂ ad.; ♂ imm.; May 25–June 10 (Hamlin).—Iola: ♂ ad., ♂ imm., ♀ ad.; May 31–June 20 (Hamlin).—Mafulu: 1 ♀ ad.; September 29.—Fane: ♂ ad.; June 6, 17 (Hamlin).—Ononge: 1 ♀ ad.; August 18.—Ivulu: 1 ♂ imm.; August 15.

Found from 770 (Hamlin) to 2000 meters.

Wing: ♂ ad. 126–135 (131); ♂ imm. 118, 124, 128; ♀ ad. 110, 113, 116

Since Mayr (1930, O. M. B., XXXVIII, pp. 178–180) reviewed the forms of this species, three additional forms have been described; *L. s. lehunti* Rothschild (1932, Ann. and Mag. Nat. Hist., (10) X, p. 126), from Mekeo in southeast New Guinea; *sphinx* Neumann (1932, O. M. B., XL, p. 121) based on the unique type of unknown origin but extreme southeast New Guinea suggested as the possible locality; and *L. s. pseudoparotia* Stresemann (1934, O. M. B., XLII, p. 144) from the Sepik region.

L. s. lehunti is obviously the same as *minor*. None of our specimens show any tendency toward *sphinx* which is apparently quite distinct.

One male is apparently in retarded plumage. Clothed largely in the adult male plumage, it is not molting, but nevertheless has some of the flank feathers barred like those of the immature male, while others, though still showing some barring, are more heavily pigmented than the immature male type of feather. Some of the upper wing-coverts are tinged rufous, and two secondaries on each side are more like those of the immature male plumage than like adult male feathers.

Two other males in immature plumage, not molting, show some feathers of an advanced plumage in a plumage otherwise similar to that of the female. There is little white in the head, the black of the head is more velvety black than in the female, and there is more black in the throat. Some iridescent black feathers are present in both the throat and top of the head of one specimen, while the other has some blackish feathers in the abdomen. The other two males resemble the females in plumage.

One specimen from Ivulu (August) is molting; none had enlarged gonads.

Macgregoria pulchra De Vis

Murray Pass: 1 ♀ ad.; July 27.—Mt. Albert Edward: 2 ♂ ad., 1 ♀ ad.; July 5, 11.

Common at 3680 meters; two seen at 2840 meters.

	Male Adult	Female Adult
Wing	202, 205	185, 185
Tail	162, 158	145, 148
Culmen (from base)	35, 37	35, 34
Culmen (from lateral feathering)	25, 25	24, 21
Tarsus	61, 64	58, 55
Extent of the black on tip of first primary measured on outer web along shaft	32, 32	35, 35
Wattle (dry) distance from eye to posterior edge	22.5, 22	21, 18

Except for the difference in size, the sexes are alike. The colors of the soft parts are the same in both sexes: iris reddish brown, wattle orange, bill black, feet bluish gray.

The female taken July 5 is molting its wing.

None of the specimens was in breeding condition.

Macgregor's bird of paradise was fairly common in the forest about our Mt. Albert Edward camp, while but two were seen in Murray Pass. It is a conspicuous bird that moves about in the tree tops in couples, rarely singly or in three's, and is not at all shy. Once I collected both of a couple and found them to be males. Another time I shot one, a female showing no enlargement of the ovary, and the other bird followed me some distance through the forest. These birds are rather active, hopping from limb to limb, often flitting their wings and tail, which may be raised above the wings, appearing grotesquely nervous for so large a bird. The flight is heavy, with noisy wing beats interrupted by short glides, and their call, frequently heard, is a wheezy, not very loud "cheu" several times repeated.

The fruit of a taxad, very common in the forest here, was apparently their principal food though in one stomach I found remains of a fruit of another sort from a low tree or shrub of the forest edge, and the specimen taken in Murray Pass had the fruit of an angiosperm in its stomach. While we were on Mt. Albert Edward the taxad favored by this bird was in fruit, but in Murray Pass the same tree, though present, was not fruiting. Possibly there may be a local movement dependent on the fruiting season of this tree. The Fuyage name is said to be "Mo."

Diphyllodes magnificus hunsteini Meyer

Deva Deva: ♂ ad., ♂ imm., 1 ♀, 1 ♀ imm.; May 25–June 13 (Hamlin).—Iola: 1 ♂ ad., 1 ♂ sub-adult; June 2, 7 (Hamlin).—Mafulu: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad.; September 29–October 10.—Fane: 1 ♀; June 5 (Hamlin).

We found this bird at 1250 meters; Hamlin secured specimens from camps at 770 and 1300 meters.

Wing: ♂ ad. 111, 113, 116; ♂ sub-ad. 112; ♂ imm. 111, 114; ♀ adult 104; ♀ age (?) 107, 108; ♀ imm. 106.

The sub-adult male, which appears to be non-molting, has the plumage of the head approaching that of the adult male, while the rest of the plumage is similar to that of the immature bird, except for scattered body feathers of the adult male type, or intermediate in character. Stresemann (1923, Arch. für Naturgesch. LXXXIX, Heft 7, p. 38) has given the characters of immature males. The males have at least three immature plumages before reaching that of the adult: the nestling plumage, the first-year plumage acquired by an incomplete molt, another immature plumage closely resembling in color that of the adult female, but more olive-yellow on the back and edges of the remiges, acquired by a complete molt. The condition in which the head is more or less of the adult type may be a variation of this last rather than a distinct plumage.

None of these specimens are molting. The male taken September 29 had enlarged testes, and the female taken October 1 was laying.

One of Beck's specimens shows extensive "patch molting"; the nape and back of neck, forehead, cheeks, and throat are covered by areas of short pin feathers that have not yet broken their sheaths.

Astrolabe Bay birds are intermediate in character between *hunsteini* and *chrysopterus*. In males the secondaries are like the former, crown and back approach the latter. Females approach the former. Astrolabe Bay birds are smaller than the Cyclop birds.

Cicinnurus regius claudii Ogilvie-Grant

Wuroi: 1 ♂ imm.; February 5.—Delena: ♂ ad., 1 ♀; May 24, 25 (Hamlin).—Kubuna: ♂ ad., 1 ♂ imm.; June 23, November 28, December 9, (Hamlin and the 1933 expedition).—Orangerie Bay: 1 ♂ ad., 2 ♀; December 1–12 (Zimmer).—Milne Bay: ♂ ad., 1 ♂ imm.; April 2–4 (Hamlin).

Taken up to 100 meters.

Wing: ♂ ad. 93–100 (96.4); ♂ imm. 97, 97, 98; ♀ 98, 99, 100.

Molting specimens are as follows: April, adult male 3; May, adult male 1; June, adult male 1; November, adult male 1; December, female 1. Non-molting: February, immature male 1; April, adult male 3, immature male 1; May, adult male 1, female 1; June adult male 4, female 1; August, adult male 3; December, adult male 1, immature male 1, female 1.

Paradisaea apoda raggiana Sclater

Orangerie Bay: 1 ♂ ad.; December 9 (Zimmer).—Milne Bay: 6 ♂ ad.; April 2–4 (Hamlin).—Annie Inlet: 1 ♀; January 29 (Hamlin).

Wing: ♂ ad. 184, 189, 190, 191, 193, 194; ♀ 190.

In the present series the six April males are in full plumage, though one is just completing its wing molt. The December male has no ornamental plumes; the January female is molting.

This race apparently has a very restricted range in extreme southeast New Guinea and is known only from the area between Orangerie Bay and Milne Bay. (Also see 1935, American Museum Novitates, No. 814, p. 11.)

Paradisaea apoda salvadorii Mayr and Rand

1935, American Museum Novitates, No. 814, p. 11.

Wuroi: 2 ♂ ad., 1 ♂ imm., 1 ♀; January 18–February 4.—Vanumai: 2 ♂ ad.; June 11, 13 (Hamlin).—Deva Deva: 1 ♂ ad.; May 25 (Hamlin).—Veimauri: 1 ♂ imm.; August 17 (Zimmer).—Cloudy Bay: 1 ♂ imm.; January 6 (Zimmer).

Found from sea level to 1250 meters (seen commonly at Mafulu).

Wing: ♂ ad. 180, 183, 186, 187, 193; ♂ imm. 182, 184, 189.

The adult males taken in May and June are in full plumage, showing no molt; the two adult males from Wuroi taken in January have the flank tufts about half grown.

The two immature males taken in January are molting, as is the February female. The race *novaeguineae* was not found on the Oriomo River and the Wuroi specimens, which come from west of the Fly River, show no trace of hybridism with *novaeguineae*.

Paradisaea rudolphi rudolphi (Finsch)

Iola: 1 ♂ imm.; June 7 (Hamlin).—Mafulu: 1 ♀; November 11.

The Mafulu specimen came from a few hundred meters above the 1250 meter camp.

The immature male resembles, in general, the female, except for the head, which is nearly like that of the adult male, the darker, more brownish black upper breast, and the slightly longer and more pointed central pair of tail-feathers.

Neither specimen shows wing molt. The female had the ovary slightly enlarged.

Loria loriae loriae Salvadori

Fane: 1 ♂ imm.; June 10 (Hamlin).—Mt. Tafa, west slope: 1 ♂ ad.; September 16.—Mt. Tafa, east slope: 1 ♂ ad.; May 28.

We found this bird at 2000 and 2400 meters. Hamlin's specimen is recorded at 1300 meters.

Wing: ♂ ad. 100, 102; ♂ imm. 102.

None of these specimens is molting. The September male had its gonads somewhat enlarged.

Stresemann has recently described the Sepik bird as *L. l. amethystina* (1934, O. M. B., XLII, p. 144) distinguished by the violet sheen on the secondaries. He put the Weyland Mt. birds in with those from southeast New Guinea. This agrees with our findings in comparing three males from the Weyland Mountains with the present series. Two specimens were identical and one was slightly more greenish than the southeast New Guinea specimens.

Xanthomelus aureus ardens D'Albertis and Salvadori

One skin, made into a native ornament, was purchased from a native at Daru. This skin was said to have come from the upper Fly River, and the bird was said to be absent from the vicinity of the coast in south New Guinea. Both Mr. Woodward and Mr. Beach also told me that the golden bower bird was absent from the coastal area. Mr. Woodward told me its skin was a common ornament among the people on the Fly River about the Everill Junction, and skins seen on the coast had been secured through trade channels.

Cnemophilus macgregori De Vis

Duro: 1♂? = ♂ ad.; (1918, R. W. Grist, Zimmer coll.).—Murray Pass: 1♂ ad., 2♂ imm., 1♀; July 16–27.

Taken at about 2900 meters, also seen fairly commonly at 2400 meters.

Wing: ♂ ad. 106, 111; ♂ imm. 111, 115; ♀ 108.

One male in adult plumage has the back rather dull yellow, with a few brownish feathers rather than the bright orange-yellow of the other,

and this specimen also has a few brownish feathers in the abdomen. This is apparently another instance of the strange "mixed garb" which appears frequently in this family.

None of these specimens is molting its wing.

The adult male taken July 27 had enlarged testes.

At both Murray Pass and Mt. Tafa, 2400 m., this bird was fairly common. It was a rather shy bird of the lower part of the forest, often found in the tangled ground cover where even the male with its striking, inverted color pattern was difficult to see. It fed on the small fruits of shrubs and low second-story trees of the forest and when feeding could sometimes be closely approached. The rudimentary crest of the female, giving the effect of a part or groove on the forehead, easily distinguishes the female bird from the somewhat similar *Amblyornis* which also occurs in the same localities.

MacGregor's bower bird has a variety of calls, a low, harsh, hissing call, a loud, dull clicking call repeated a number of times, and a loud call that I can only describe as being similar to the sound of two timbers being rubbed together under considerable stress. This last call was startling in quality and its author was long a puzzle to me.

Amblyornis macgregoriae macgregoriae[1] De Vis

Deva Deva: 1 ♂ imm.; May 30 (Hamlin).—Iola: 1 ♂ ad.; May 28 (Hamlin).—Mt. Tafa, east slope: 1 ♂ imm.; May 31.—Mt. Tafa, west slope: 1 ♂ ad.; August 23.—Murray Pass: 1 ♂ imm., 1 ♀; July 21, August 2.

We found this bird from 2000 to 2800 meters; Hamlin's locality is at 770 meters.

Wing: ♂ ad. 132, 138; ♂ imm. 130, 132, 134; ♀ 131. Tail: ♂ ad. 84, 92; ♂ imm. 92, . . , 85; ♀ 131.

It is advisable to consider the birds from the Arfak Mountains (*A. inornatus*) as a separate species since the male is never crested, and it lacks the bright yellow under wing and the yellow of the under surface of the shafts of the remiges and rectrices. The bowers are also quite different (see Fig 2). The other forms that have been kept in this species belong to the species *macgregoriae* (see Hartert, 1930, Nov. Zool., XXXVI, pp. 29, 30).

A. m. longicristatus Mayr is a synonym of *A. m. mayri* Hartert, which inhabits the Weyland and Snow mountains.

[1] This name, published on Feb. 13, 1890, in the Ann. Rept. Brit. New Guinea, 1888–1889, p. 61, has priority over *A. musgravi* published April 1, 1890 (Proc. Zool. Soc. London, 1889, p. 451).

An immature specimen of *A. m. germanus* from Sevia, March 10, 1928, Beck coll., retains part of the soft, downy nestling plumage. This is grayish brown on the breast and abdomen, darker brown on the sides of the breast and flanks, and dark seal brown on rump, back, and scapulars.

The first-year plumage is acquired by an incomplete molt. The first-year plumage can be distinguished by the juvenile wing with the

Fig. 2—Bower of *Amblyornis inornatus*

There is a runway under the large hut-like structure of twigs, but no platform. A small tree which grows in the center supports the bower.

broad outer web to the first primary, and the juvenile loose-textured upper wing-coverts, some of which are retained.

The three immature males from southeast New Guinea vary somewhat among themselves but all differ in color from the female in being slightly warmer brownish below, and in having a slightly more distinct breast-band.

Only one specimen, an immature male, taken May 20, shows wing molt.

Amblyornis inornatus has been considered as ranging over the whole of New Guinea and Beccari's description of the bower made by the Arfak bird has been widely reproduced and considered as applicable to the structures made by the various representative forms in other parts of the island (1929, Verh. VI. Intern. Ornith. Congress, 1926, p. 308). De Vis, however, in 1890 had correctly described the bower of *A. macgregoriae* (1890, Ann. Rep. Brit. New Guinea, 1889, p. 61), but

Fig. 3—Bower of *Amblyornis m. macgregoriae*
The platform is conspicuous. The break in the central column of sticks is unusual. A deadfall for capturing the bird is seen to the left.

the description is rather inaccessible and has been overlooked even in the most recent review of the subject (*loc. cit.*). Goodwin (Ibis, 1890, p. 154) has given a figure of the bower and a few words of description.

While collecting on Mt. Tafa I saw between twenty and thirty of these bowers. These bowers were usually on ridge crests, consequently usually on or by native trails which also follow the ridges. Possibly this is because ridge crests are about the only places where comparatively level ground is available, with a clear view about.

All the bowers were very similar in general structure, though, of course, some were much more elaborate than others. Since De Vis' description is relatively unknown, it may be advisable to redescribe the bowers. It consists of a circular, saucer-shaped runway 3–4 ft. across, and more or less built up with moss, around a sapling about which is built up a tower of sticks, making a central column or tower. This differs considerably from the roofed, hut-like bower of the Arfak bird, and there was no ornamented playground or "garden" as with the Arfak bird.

The most elaborate bower I saw had the saucer-shaped platform of moss ten to twelve inches deep on its outer edge, with the track sunk four to six inches in the upper surface. Moss was banked up on the central column to about the level of the outer rim of the runway. The central column had been built about a slender sapling about six feet high. For the lower eighteen inches it was densely packed with small twigs placed horizontally, and many of these had the ends decorated with bits of animal silk. Above that for another foot the sapling was more loosely surrounded with longer twigs so that the central column enlarged as it went up and was perhaps eighteen inches across at the top. This does not seem to be a covering for the bower nor for protection, as De Vis suggests, nor does it appear to be an approach toward the wigwam structure of the Arfak bird. On the outer margin of the platform, just outside the runway, were scattered black pieces of vegetable matter (fungus ?) and small pieces of charcoal, probably from native camp fires and which the bird must have gone some distance to secure. This and the animal silk were the only decorations. This bower was not as elaborate as the one De Vis described but was the most elaborate one I saw. The simplest I found was simply a runway on the forest floor, from which some leaves had been removed, around a little sapling with a few twigs laid about it; possibly it was only in construction as most of the bowers seen more nearly approached the description of the first.

The bowers on Mt. Tafa were being visited and kept in repair in May, and in August and September, as I found by dropping twigs and leaves into the runway, returning and finding them gone. They appeared to visit the bowers at almost any time of day.

I watched the bowers from a blind for several hours on a number of days. Several times the bower birds came into the trees overhead. After the heavy whirring of wings as the birds flew into the trees, they usually sat quietly for a time, then started to call. Their repertoire was amazing. It ranged from low growls and whines to hoarse whistles,

sharp "kuk's" and softer "kup's," a sharp "cheeek," and a noise like the light tapping of dry bamboos. One of the commonest calls was a loud "wha" followed by a rolling "ha ha ha" which sounded especially mocking as I waited for them to come down to the bower.

But they were very shy and though warblers and flycatchers perched on the blind, and babblers whistled from the ground at my feet, only once did the bower birds visit the bower while I was there. One flew to the rim of the platform and looked into the runway, the other flew to a nearby log, then hopped to the bower. Confused shapes darted about in the runway for a moment, then the birds paused, one with its breast against the central column. Perhaps an incautious movement of mine alarmed the birds, for both flew up into the trees. It was drawing toward evening and I left the blind. The natives hunt these birds for the sake of their orange-colored crest-feathers which are used in making headdresses for dances.

The 2400 meter camp on Mt. Tafa was on the border between the hunting ground of the Delava Valley and the Vanapa Valley people and it was interesting to see the difference between the methods of these two peoples, of the same tribe, to secure these birds. To the east of camp many bowers had little brush blinds or hides built near them, from which the watching native shot the dancing birds with their curious four-pronged bird arrows. To the west of camp were dead falls made beside the bowers to capture the birds.

The birds fed through the forest singly or more often in two's or small parties, eating the small fruits of the second-story trees as well as visiting the tree tops. They were often quite noisy.

Amblyornis subalaris Sharpe

Iola: 5 ♂ ad.; June 1–5 (Hamlin).—Deva Deva: 2 ♂ ad.; May 31, June 15 (Hamlin).

These localities are at about 770 meters.

This species apparently inhabits the mountain slopes below *A. macgregoriae.*

Wing: ♂ ad. 123, 123, 124, 124, 125, 125, 129.

The length of the crest varies from 34 to 47 mm. The color varies from deep orange to yellowish orange, and the amount of brown spotting on the tips of the crest-feathers also varies greatly. In one specimen there are brown tips to all the crest feathers, and those of the lateral feathers are so large as to conceal the orange color beneath. In most of the other specimens the spotting is rather scanty. The streaking on the

throat and breast is usually very pronounced but in one specimen it is much reduced.

None of these specimens is molting.

Chlamydera cerviniventris Gould

Wuroi: 2 ♀ ad.; January 27, February 7.—Baroka: 1 ♂ ad.; April 11.—Port Moresby: 3 ♂ ad., 1 ♀ imm.; April 17, May 1, July 4, 10 (Zimmer).—Rona: 1 ♀ ad.; March 13.—Samarai: 1 ♂ ad.; February 20 (Beck).

Found up to 450 meters.

Wing: ♂ ad. 148, 149, 150, 151, 154; ♀ ad. 141, 145, 150; ♀ imm. 139.

A series from Ifaar, north New Guinea (Mayr coll.) does not appear to average larger than the present series (see Hartert, 1930, Nov. Zool., XXXVI, p. 28). The north New Guinea birds appear to average slightly paler below and to have a brownish tinge and less conspicuous spotting above than the present series. However, this Ifaar series is in much more worn plumage and the difference may be due to that.

An immature male in the American Museum collection retains a few fluffy feathers of the nestling plumage. These are whitish, edged with brown on the upper back, grayish brown, with a white shaft streak on the hind neck, and fulvous, lightly edged with brown, on the sides of the breast.

The first-year plumage is acquired by an incomplete molt. This plumage resembles that of the adult but may be distinguished by the rounded outer web of the first primary, more spotting on the crown, and the more fulvous color of the spotting on the back.

Molting adults are recorded from January, February, March, April, and May; non-molting adults in July. Birds with gonads enlarged were taken March and April, including two breeding females that were molting.

Ailuroedus buccoides stonii Sharpe

Kubuna: 1 ♂ ad.; December 9.

Wing: 138.

This specimen was shot from a low shrub in the heavy forest.

Ailuroedus melanotis melanocephalus Ramsay

Deva Deva: 1 ♂; May 26; Hamlin.—Iola: 1 ♀; June 4 (Hamlin).—Mafulu: 2 ♂; October 2, November 12.

Found at 770 meters (Hamlin) and 1250 meters.

Wing: ♂, 153, 157, 158; ♀, 149.

A November male had enlarged testes and was the only specimen molting its wing.

Ailuroedus melanotis melanotis (Gray)

Wuroi: 1 ♀; February 5.

Wing: 156.

This specimen appears identical with a series from the Aru Islands.

Daphoenositta miranda miranda De Vis

Mt. Tafa, west slope: 3 ♂ ad., 2 ♂ imm., 4 ♀ ad., 1 ♀ imm.; August 27–September 4.—Mt. Tafa, east slope: 2 ♂ ad., 1 ♂ imm., 1 sex (?) (= ♂) imm.; May 21, 28.

Found at 2000 and 2400 meters. De Vis records that the other four known specimens were taken at 12,700 feet (= 3750 meters).

For an account of this species, see: Rand, 1936, Auk, pp. 306–310.

Climacteris placens meridionalis Hartert

Deva Deva: 1 ♂; May 31 (Hamlin).—Mt. Tafa, west slope: 2 ♂, 2 ♀; August 27–September 18.—Mt. Tafa, east slope: 2 ♂, 2 ♀, 1 sex? [= ♂]; May 10–20.

We found this creeper only from 2000 to 2400 meters.

Wing: ♂, 81, 83, 84, 86, 87; ♀, 80, 81, 81.

Two of these specimens were molting; none was in breeding condition.

Cinnyris jugularis valia Mathews

Dogwa: 2 ♂ ad., 1 ♀; February 15, 16.—Yule Island: 1 ♀; June 24 (Hamlin).—Delena: 1 ♂ ad.; June 19 (Hamlin).—Baroka: 1 ♂ ad., 1 ♀; April 18, 20.—Kubuna: 2 ♂ ad., 1 ♀; December 2, 8.—Lolorua: 1 ♀; August 28 (Zimmer).—Port Moresby: 2 ♂ ad., 1 ♀; April 24, October 2 (Zimmer).—Rona: 1 ♂ ad.; March 13.

Found up to 450 meters.

Wing: ♂ ad. (9) 54–56 (55); ♀ (6) 51–54 (53).

On comparing the present series with *flavigaster* from New Britain we find that they are not the same. The New Britain birds are clearer, more citrine green on the upper parts, the southeast New Guinea birds are much darker and with a golden olive tinge on the upper parts.

Four specimens from Goodenough Island, one from Fergusson Island, and four from Dobu Island, D'Entrecasteaux group, agree with southeast New Guinea birds in the golden olive tinge on the upper parts so that Mathews' name *valia* (1929, Bull. Brit. Ornith. Club, L., p. 11) must be used for this form. Two specimens of *frenata* from Astrolabe Bay (Beck coll.) and two from Manokwari (Mayr coll.) differ from *flavigaster* in being darker olive above, and they differ from *valia* in lacking the golden olive tinge to the upper parts.

These characters are pronounced in fresh specimens but are difficult to distinguish in worn skins.

Summary of Molt

February	2 ♂ molting, 1 ♀ not molting
March	1 ♂ not molting
April	2 ♂, 2 ♀ not molting
June	1 ♂, 1 ♀ not molting
August	1 ♀ not molting
October	1 ♂ not molting
December	2 ♂ molting, 1 ♀ not molting

One male taken on April 20 with testes enlarged was the only specimen showing signs of breeding.

Cinnyris sericeus sericeus (Lesson)

Wuroi: 2 ♂ ad., 2 ♂ sub-ad., 1 ♀; January 18–23.—Dogwa: 1 ♂ sub-ad., 1 ♀; February 15, 17.—Kubuna: 1 ♂ ad.; December 8.—Veimauri: 1 ♂ ad., 1 ♂ sub-ad., 2 ♀; August 13, 14 (Zimmer).—Lolorua: 1 ♀; August 28 (Zimmer).—Baubauguina: 1 ♂ ad.; May 16 (Zimmer).

Found up to 100 meters.

Wing: ♂ ad. 59, 60, 61, 61, 61, 62; ♂ sub-ad. 57, 57, 58, 58; ♀ 52, 54, 55, 55, 56, 57.

The sub-adult males are molting from the first-year plumage into that of the adult. The part of the first-year plumage retained by three examples indicates that it is grayer, less greenish on the back and paler, less yellowish on the abdomen than the female plumage. One male specimen has almost completed its body molt into adult plumage, including tertials; the tail has been completely renewed, but the remiges have not started to molt and only a few wing-coverts have been replaced by adult feathers. The other three are molting normally (see Stresemann, 1923, Arch. für Naturgesch, LXXXIX, Heft 7, p. 65).

Summary of Conditions of Molt and Gonads

January	2 ad. ♂, 2 sub-ad. ♂ molting, 1 ♀ not molting; 2 ♂ with enlarged testes.
February	1 ad. ♂, 1 sub-ad. ♂ molting, 1 ♀ not molting; no enlargement of gonads.
May	1 ♂ ad. not molting.
August	1 ♂ ad., 1 ♂ sub-ad., 3 ♀ not molting.
December	1 ♂ ad., 1 ♀ molting; no enlargement of gonads.

Timeliopsis griseigula fulviventris (Ramsay)

Orangerie Bay: 1 ♂, 2 ♀; December 10, 14 (Zimmer).—Milne Bay: 1 ♂; April 2 (Hamlin).

Found near sea level.

Wing: ♂ 90, 100; ♀ 92, 94.

Mayr has examined the types of *griseigula* and *flavigula* Schlegel and has come to the conclusion that they were the same species. It is not clear whether the differences are individual or are a matter of age.

One of the December females is breeding; all the other specimens are molting.

Timeliopsis fulvigula meyeri (Salvadori)

Deva Deva: 1 ♀ imm.; May 31 (Hamlin).—Iola: 1 ♂ ad.; June 8 (Hamlin).—Bella Vista: 1 ♀ (?) ad.; November 7.

Collected at 1450 meters and Hamlin's specimens from 770 meters.

Wing: ♂ ad. 76; ♀ (?) ad. 70; ♀ imm. 67.

These specimens from near the type locality (Moroka) should be typical *meyeri*. A specimen from Bihagi, head of the Mambare River (Meek coll.), evidently shows a slight approach to *fuscicapilla* (of which we have no specimens) in the lighter green of the back and the darker under parts.

The immature bird is in the first-year plumage, which is very similar in color to that of the adult but is grayer below, almost lacking the fulvous tinge; the plumage is also of a looser texture and the tip of the first primary is very rounded.

Glycichaera fallax fallax Salvadori

Wuroi: 1 ♂ ad.; January 27.—Baroka: 2 ♂ ad., 1 ♀ imm.; April 9.—Kubuna: 1 ♀ imm.; December 13.—Lolorua: 1 ♀ ad.; August 27.

Found up to 100 meters.

Wing: ♂ ad. 57, 60, 61; ♀ ad. 58; ♀ imm. 55, 56.

Compared with a series of four adult males and three adult females from Astrolabe Bay (Beck coll.) the latter differ slightly in the average smaller wing, smaller bills (except one male), and average darker, more olive, upper parts. The single south New Guinea male is slightly duller, less greenish than the southeast New Guinea birds but this may be due to wear. These differences are insignificant, and all these birds must be grouped under one name. For a discussion of the nomenclature of this species see: 1936, Ornith. Monatsber., XLII, p. 43.

The first-year plumage is very similar to that of the adult, but is yellower below, especially on the throat.

The January and April adults are all molting, but one of the males was breeding!

Oedistoma pygmaeum pygmaeum Salvadori

Wuroi: 1 ♂ ad., 1 ♀ ad., 1 ♀ imm.; January 28–February 10.—Mafulu: 5 ♂ ad., 4 ♂ imm., 1 ♀ ad., 1 ♀ imm.; September 30–November 17.—Lolorua: 1 ♀ ad.; August 28 (Zimmer).

Found from sea level to 1250 meters.

Wing: (south New Guinea) ♂ ad. 48.5; ♀ imm. 45; (southeast New Guinea) ♂ ad. 48, 49, 49, 49, 51; ♂ imm. 47, 47, 48, 48; ♀ ad. 46, 47; ♀ imm. 46.

The first-year plumage is similar to that of the adult but the feathers are of somewhat looser texture, the yellow of the under parts is much less intense, and the tip of the first primary is more rounded. Adult females are very similar to adult males but are slightly paler below.

Molting adults were taken in October (1), November (2), January (1); non-molting in August (1), September (1), October (2), February (1). Three males with enlarged testes were taken in October and November, and a laying female on October 30.

Melithreptus lunatus albogularis Gould

Dogwa: 8 ♂, 3 ♀; February 22–28.—Wuroi: 1 ♀; February 7.—Baroka: 1 ♀; April 2.—Port Moresby: 1 ♂, 1 ♂ imm., 4 ♀; May 30, July 25, Oct. 2 (Zimmer).—Rona: 9 ♂, 3 ♀; March 7–17.

Found up to 450 meters.

Wing: (south New Guinea) ♂ (8) 68–73 (70.1); ♀ 63, 65, 66, 66; (southeast New Guinea) ♂ (10) 71–77 (74.2); ♀ (7) 66–70 (67.8).

The bare circumocular area is orange-red.

The south New Guinea series averages slightly duller, less yellowish

green, the obscure streakings on the breast are often somewhat more pronounced, and it averages smaller, but these differences are not sufficient to separate the two populations as subspecies.

The immature male is in nestling plumage, with the tail about three-quarters grown. The plumage is somewhat soft and fluffy. The top and side of the head are dark brown; the white markings of the adult indicated by white streaks back of the eye joined across the nape by a brownish-white band. The rest of the upper parts are light olive-brown; the under parts are white. The tail and wings differ but little from those of the adult except in the more rounded tip to the first primary.

One molting bird was taken in May and two in February. Three males with enlarged testes were taken in March and the nestling, not long out of the nest, was taken October 2.

Gliciphila modesta modesta Gray[1]

Dogwa: 1 ♂ imm., 1 ♀; February 14, 17.—Wuroi: 1 ♂, 7 ♀; January 20–February 5.—Baroka: 1 ♂, 3 ♀; April 17, 18.—Hisiu: 2 ♂, 1 ♂ imm.; September 1 (Zimmer).

Found only near sea level.

Wing: ♂ 66, 66, 68, 68; ♂ imm. 64, 64; ♀ (10) 60–63 (61.8).

The two immature males are in a plumage resembling that of the adult except for the longitudinal brown streakings of the breast instead of the broken barring of the adult, the more olive-brown edges to the remiges, and the more conspicuous, pale rufous edges to the upper wing-coverts. The lower part of the back and rump is also more marked with rufous than in the adult.

The four April birds were the only specimens showing wing molt. Four breeding females were taken at Wuroi in January and February and one nest was found.

Conopophila albogularis mimikae Mathews

Baroka: 1 ♀; April 20.

Taken near sea level.

Wing 62.

Compared with five males and two females of *albogularis* from Melville Island and the Northern Territory of Australia, the present specimen is paler brown above, has a less rufous breast-band, and is smaller. The Australian birds measure: ♂ 66, 67, 67, 68, 68; ♀ 65, 66.

[1] *Gliciphila nisoria* is a *Myzomela*, see page 215.

Myzomela

The similarity of some of the females of the various species of *Myzomela* is confusing. The following key may be found useful in the identification of the adult females of New Guinea species.

1.—All black ..... *nigrita* (see also 7).
Not all black ..... 2.
2.—Upper breast and rump red ..... *rosenbergi.*
Not so ..... 3.
3.—Rectrices edged with red ..... *cruentata.*
Not so ..... 4.
4.—Brownish-white or grayish-white edgings on the outer web of the remiges ..... 5.
Olive edgings on the outer web of the remiges ..... 6.
5.—A red gular patch present ..... *eques.*
No red gular patch ..... *obscura.*
6.—Larger (wing more than 55 mm.) ..... *erythrocephala.*
Smaller (wing usually less than 55 mm.) ..... 7.
7.—Bill larger, about 16 mm ..... *nigrita.*
Bill smaller, about 13 mm ..... *adolphinae.*

Myzomela erythrocephala infuscata Forbes

Daru: 14 ♂ ad.; 4 ♀ ad., 1 ♀ imm.; March 7–11.—Delena: 1 ♂ ad.; June 20, Hamlin.

Found only in the mangroves near the sea.

Wing: ♂ ad. (14) 61–64 (62); the Delena bird is slightly smaller, with a wing of 59; ♀ ad. 57, 58, 58, 59; ♀ imm. 55.

Besides being slightly smaller, the southeast New Guinea bird also differs in being paler, more whitish below, especially on the flanks. More material is necessary to decide whether or not this difference is constant.

Glyciphila nisoria Salvadori, of which Mayr has examined the type in the Leiden Museum, is undoubtedly a *Myzomela* and is probably the young of this species. If this is so, the name *nisoria*, which was published in 1878, antedates *infuscata* of Forbes, which appeared in 1879.

The immature female is molting out of the first-year plumage, which appears very similar to the adult plumage except for the rounded tip to the first primary, the shorter wing, and slightly less red in the forehead and throat.

One of the March adults is completing its wing molt; the rest are in complete fresh plumage and while not in breeding condition, most of the males show some enlargement of the testes.

Myzomela adolphinae Salvadori

Mafulu: 6 ♂ ad., 1 ♀ ad., 1 ♀ sub-ad.; October 16–November 18.

Collected at 1250 meters where it was common; also seen at 1400 meters.

Wing: ♂ ad. 51, 52, 52, 52, 53, 53; ♀ ad. 51.

The specimens in the present series differ somewhat from four adult males and three females from the Huon Peninsula birds (Beck coll.). The males from southeast New Guinea have a blacker back, a darker, more blackish upper breast, and a lighter red head. The females also differ in being slightly darker colored above and on the breast than the Huon Peninsula females. One Arfak female (Mayr coll.) is also light-colored. The Huon Peninsula birds measure: wing, adult male, 52, 53, 53, 53; female, 49, 50, 51; the Arfak female, wing, 51.

More Arfak material is required to work out the geographical variation of this species.

One female still retained part of the first-year wing, distinguished by the more rounded tip of the first primary. None of the males is molting, and all but one had enlarged testes; one female was in fresh plumage, with a small ovary; the other was finishing a complete molt from the first-year plumage.

Myzomela rosenbergi rosenbergi Schlegel

Deva Deva: 1 ♀ imm.; May 25 (Hamlin).—Mafulu: 2 ♂ ad., 1 ♂ imm., 6 ♀ ad., 1 ♀ imm.; September 30–October 27.—Fane: 1 ♂ ad., 1 ♀ ad.; June 7 (Hamlin).—Mt. Tafa, west slope: 1 ♂ ad.; August 12.—Mt. Tafa, east slope: 2 ♂ ad., 1 ♂ imm., 2 ♀ ad.; May 13, 18.—Murray Pass: 3 ♂ ad., 1 ♂ imm., 1 ♀ ad., 1 ♀ imm.; July 18, 31.—Mt. Albert Edward: 1 ♂ ad., 2 ♂ imm., 2 ♀ ad.; June 18–29.

Common from 1250 to 3680 meters. Hamlin has a specimen from 770 meters.

Wing: ♂ ad. (11) 61–66 (63.2); ♀ ad. (12) 55–60 (58).

Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 656) has mentioned the slight geographical variation in this species in New Guinea.

Of the adults, males molting their wings were taken in June (2) and one molting female in October. Males with enlarged testes were taken in May (2), August (1), and October (1); a female with enlarged ovary was taken in October.

Two birds in nestling plumage, not long out of the nest and still being fed, were taken in Murray Pass, July 18.

Myzomela nigrita nigrita Gray

Wuroi: 2 ♂ ad., 2 ♂ sub-ad., 1 ♂ imm., 1 ♀ ad., 1 ♀ (?) imm.; January 27–February 8.

Found near sea level.

Wing: ♂ ad. 55, 55, 56, 56; ♂ imm. 54; ♀ ad. 51; ♀ (?) imm. 50.5. The small wing of this series indicates that they are of this form.

The adult female is in the typical olive and grayish-brown plumage; the immature male and female closely resemble the adult female but are distinguishable by the rounded tip of the first primary. The two sub-adult males are finishing the complete molt into the adult plumage. The adult wing and tail have already been completely acquired but considerable first-year plumage persists over the body and head.

The adults are not molting; the adult males had enlarged testes as did one of the molting sub-adults, but the adult female showed no enlargement of the ovary.

Myzomela nigrita meyeri Salvadori

Mafulu: 7 ♂ ad., 3 ♀ ad., 2 ♀ imm.; October 15–November 17.

Found only at 1250 meters.

Wing: ♂ ad. 58, 59, 59, 59, 59, 60, 61; ♀ ad. 51, 53, 54.

The large series of this honey eater collected in south and southeast New Guinea have aided us in understanding the variation in this species.

Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 220) have stated that the variation of the wing-length of New Guinea and Aru Island birds overlaps too much to allow *meyeri* to be recognized. Greenway (1935, Proc. New Eng. Zoöl. Club, XIV, p. 96) has listed the wing measurements of a considerable number of New Guinea specimens (apparently only males) from several localities, and also of eight Aru Island birds.

Briefly the wings of males are:

Mimika River and Arfak Peninsula	57–60.5 (8)
North New Guinea (Rubi, Sepik, and Huon Peninsula[1])	59–64 (15)
Southeast New Guinea (Morobe and Mafulu)	58–64 (20)
Aru Islands	55–58.5 (8)
South New Guinea	55–56 (4)

From this it seems advisable to consider the smaller birds from the Aru Islands and South New Guinea as *nigrita;* the large birds from the rest of New Guinea as *meyeri.*

[1] Wing measurements of two males from 1931, Mitt. Zool. Mus. Berlin, XVII, p. 655.

The plumage of these birds is interesting in that the females show a dichromatic condition in southeast New Guinea, both in the series from Mafulu and in those from the Morobe district (see Greenway, *loc. cit.*). In the present series from Mafulu all the males are in the adult black plumage, showing no molt. Of the three adult females one is in the black plumage resembling that of the male, but slightly duller; the other two females, which are also adult, judging by the condition of the wing, are in the olive and grayish-brown plumage with the red on the front of the head that has been considered the usual female plumage (see Stresemann, 1923, Arch. für Naturgesch., LXXXIX, p. 51).

That the black plumage is not acquired with age is shown by the two immature females both of which retain most of their nestling plumage. One is in a plumage similar to that of the nestling plumage described by Stresemann, except for being darker, more blackish on the back; the other is dull black above and sooty black below. Thus we have the dichromatism present in the nestling plumage of the female. The black phase does not appear to be as common as the normal judging by both the present series (2 black, 3 normal) and Greenway's series (2 black, 4 normal).

We have now an interesting chain of subspecies and plumages connecting *steini* Stresemann and Paludan from Waigeu, in which neither the male nor the female is black, with the *pammelaena* group having both male and female black; *M. n. nigrita*, with only the male black, and the southeast New Guinea population of *meyeri* in which the male is black and the female may or may not be black.

This black honey eater was common at Mafulu, where it was usually found feeding in the *Albizzia* trees along with the other members of its genus, which it much resembled in habits.

Myzomela eques nymani Rothschild and Hartert

Kubuna: 1 ♀ ad.; December 15.—Wuroi: 4 ♂ ad., 1 ♀ imm. January 18–February 5.

Found up to 100 meters.

Wing: ♂ ad. 69, 69, 71, 74; ♀ ad. 62; ♀ imm. 60.

Myzomela obscura fumata Bonaparte

Daru: 3 ♀ ad., 1 sex (?) ad.; March 6–11.—Wuroi: 8 ♂ ad., 4 ♀ ad., 1 ♀ imm.; 1 sex (?) ad.; Jan. 19–Feb. 10.—Dogwa: 2 ♂ ad., 1 ♂ imm., 2 ♀ ad.; February 15–18.—Baroka: 1 ♂ ad., 1 ♀ ad.;

April 2, 6.—Kubuna: 1 ♂ ad.; December 12.—Port Moresby: 1 ♂ ad.; October 9 (Zimmer).

Found up to 100 meters.

Wing: South New Guinea, ♂ ad. (13) 68–71 (69.5); ♂ imm. 66; ♀ ad. 59, 59, 59, 62; ♀ imm. 56.

Southeast New Guinea (Kubuna, Baroka, Port Moresby), ♂ ad. 69, 71, 71; ♀ ad. 61.

Kinnear (1924, Bull. Brit. Ornith. Club, XLIV, p. 68) recognizes three races of *obscura* in the Papuan region:

1.—*fumata* Bonaparte from the Mimika River, wing 71–73.

2.—*meeki* Rothschild and Hartert from the "highlands of British New Guinea," distinguished from 1 only by the smaller size of the male, wing 67–68. (In the original description, 1907, Nov. Zool., XIV, p. 480, measurements of two males were given as 69–70.)

3.—*aruensis* Kinnear from Aru Islands, distinguished by being darker and more brown, especially on the underside.

Five specimens of the typical series of *meeki* from the Aroa River (Rothschild coll.) give the following measurements: wing, ♂ 68, 69, 69; ♀ 59, 62. It is probable that this species is strictly a lowland form. The slight size difference between the birds from southeast and southwest New Guinea is not great enough to justify recognizing two subspecies, and all New Guinea birds should be called *fumata*. *M. o. aruensis*, with its darker color, is distinct.

In the present series there is considerable variation in color: the brownness or grayness, lightness or darkness of the plumage. Some of this may be due to wear and fading, but some appears individual.

One male in breeding condition has the throat patch tinged reddish.

The immature male is completing its molt into adult plumage; the immature female is in worn first-year plumage. This first-year plumage is very similar to that of the adult except for the general paler, more brownish tone, possibly the result of wear, the rounded tip to the first primary, and a reddish tinge to the chin, sides of face, and forehead. It is also somewhat smaller.

Adults were molting in January (2), February (10); one breeding male was taken April 6.

Myzomela cruentata cruentata Meyer

Mafulu: 7 ♂ ad., 1 ♀ ad.; October 4–November 18.

Found commonly at 1250 meters.

Wing: ♂ ad. 55, 56, 56, 57, 57, 58; ♀ ad. 51.

One male and two females from Arfak and one male from the Cyclop Mountains have the following wing measurements: male adult 59, 60; female 51, 52; compared with these specimens the males of the present series have a slightly deeper red color and there is more red on the remiges. These differences do not appear great enough to be used in separating the southeast New Guinea birds.

None of the series is molting; most of the males had enlarged testes; the female showed no enlargement of the ovary.

Toxorhamphus iliolophus flavus Mayr and Rand

1935, Amer. Mus. Novitates, No. 814, p. 13 (Wuroi).

Wuroi: 4 ♂, 2 ♀; January 25–February 7.—Kubuna: 1 ♀; December 1.—Mafulu: 5 ♂, 3 ♀, 1 sex (?); October 1–22.

South and southeast New Guinea birds are not identical but are best grouped together as *flavus*. For a review of the races of this species see 1935, Amer. Mus. Novitates, No. 814, p. 13.

Summary of Molt and Condition of Gonads

October	4 ♂ molting, 1 ♂, 2 ♀ not molting, one ♀ with enlarged ovary
November	1 ♀ not molting
December	1 ♀ molting
January	2 ♂, 1 ♀ molting
February	1 ♂, 1 ♀ molting, 1 ♂ not molting

Toxorhamphus poliopterus poliopterus (Sharpe)

Mafulu: 2 ♂ ad., 3 ♀ ad.; October 3–November 12.

Found only at 1250 meters.

	Adult Male	Adult Female
Wing	67, 68	59, 61, 62
Bill	33, 33	28, 28, 28

This series is very uniform.

All but one of the specimens are molting; one was in breeding condition.

Melilestes megarhynchus megarhynchus Gray

Wuroi: 1 ♀ ad.; February 1.—Mafulu: 1 ♂ ad., 1 ♀ ad.; October 12, 22.—Cloudy Bay: 1 ♂ ad.; December 30 (Zimmer).

Found up to 1250 meters.

Wing: ♂ ad. 98, 98; ♀ ad. 90 (Wuroi), 93 (Mafulu).

Arfak birds are more brownish above and below than the present series, but this difference is very slight.

The female from Wuroi compares well with the Mafulu female. The Cloudy Bay male is slightly more brownish on the back, flanks, and abdomen than the Mafulu male. We also have for comparison the type of *stresemanni* Hartert and eight adults from the vicinity of Astrolabe Bay (Beck coll.).

The Astrolabe Bay birds vary somewhat but average slightly more greenish below than the type of *stresemanni*, showing a slight approach toward the southeast New Guinea bird, but they can be definitely referred to *stresemanni*.

Both of the southeast New Guinea males are molting; none of the specimens from the south or southeast had enlarged gonads.

Melipotes fumigatus fumigatus Meyer

Deva Deva: 1 ♂; June 12 (Hamlin).—Iola: 1 ♂, 1 ♀; June 1, 6 (Hamlin).—Mafulu: 1 ♀; October 19.—Bella Vista: 1 ♀; November 7.—Fane: 3 ♀; June 9, 10 (Hamlin).—Mt. Tafa, west slope: 7 ♂, 8 ♀; August 25–September 22.—Mt. Tafa, east slope: 3 ♂; May 11–28.—Ononge: 1 ♂; August 17.—Murray Pass: 1 ♀; August 2.

Common from 2000 to 2400 meters; rare at 2800 and at 1250 meters. The specimens from 1450 and from 1250 meter camps were brought in by natives and may have come from higher in the hills.

Wing: ♂ (14) 108–117 (112.4); ♀ (10) 101–105 (103.6).

Molting birds were taken in May (1), August (2), September (7), and November (1); males with enlarged testes were taken May (2), August (1), September (3).

Melipotes is a bird of the second-story trees of the forest. A quiet, rather slow moving bird, it was rarely heard to utter a sound. Its usual food is small fruits which were swallowed whole, but occasionally a specimen had eaten the pulp of a larger fruit; one specimen had in addition to fruit a small beetle in its stomach. On Mt. Tafa I found one of these birds in a flowering tree placidly pecking at the blooms; it apparently was feeding on the insects attracted by the flowers as its stomach was filled with insects. This was the only example I saw feeding in a flowering tree and the only one that had eaten nothing but insects.

On Mt. Tafa, west slope, August 27, a native showed me a nest of this species. It was about eight meters up in a lateral fork of a branch

near the top of a second-story tree in the forest. At rather long intervals an adult appeared with food for the young, which squeaked loudly at the parent's approach. Once as the adult left the nest it flew to a nearby *Hydnophytum*, an epiphytic, woody plant with a bulbous, water-filled base, put its head into a hole in the side and appeared to drink from it. Then it appeared to search for insects among the twigs and leaves. The young were apparently ready to leave the nest, as when a boy climbed the tree he found the nest empty, the young having been frightened from the nest by the disturbance. The nest was a pensile cup-shaped affair with its edges woven about the sides of a flat fork. It was a rather bulky, loosely put together structure. It was composed largely of long, slender, green moss plants, with a long, black, rather tough fiber of a fungus used sparingly to bind it together. This and the moss were used to bind the nest to the fork. In the body of the nest was some small filmy ferns, a very common plant on the forest floor. They were dry but still green. A few dead leaves and pieces of two species of orchids were incorporated into the body of the nest, and fairly large pieces of rotten pandanus leaves were stuck on the outside of the nest. The lining was composed of dead leaves and pieces of dead fern, making a rather rough, hard lining. The nest measured outside 140 mm. across and 140 mm. deep; inside, 70 mm. across by 60 mm. deep.

Melidectes torquatus emilii Sharpe

Matsika: 1 ♂; November 22.—Deva Deva: 1 ♂; May 31 (Hamlin).—Mafulu: 6 ♂, 4 ♀; October 9–November 2.—Bella Vista: 1 ♂, 3 ♀; May 3, November 7, 8.—Fane: 1 ♂, 1 ♀; June 10 (Hamlin).—Mondo: 1 nestling; May 5.

Hamlin had one specimen from 770 meters; we secured it at 950 meters and found it fairly common from 1200 to 1500 meters.

Wing: ♂ 108, 109, 109, 109, 110, 113, 113, 115, 115; ♀ 98, 101, 102, 103, 103, 104.

Color of soft parts (ad.): iris dark brown; bill gray; bare skin about eye orange, changing to yellow close to eye; wattle at corner of mouth flesh-colored, wattle on throat orange; feet gray.

A nestling has no wattle on the throat, though that at the corner of the mouth is well developed. Of the full-grown birds, two females and a male lack the wattle on the throat; this is undoubtedly an age character, but these three specimens are not the smallest examples and there appears to be no constant difference between them and the birds

with throat wattles. The size of the wattle in the adults is also a subspecific character; one male and two females of *torquatus* from Arfak (Mayr coll.) have no throat wattle, eight specimens of *cahni* (males and females) from the Huon Peninsula (Beck coll.) all have a pair of throat wattles but it is considerably smaller than in *emilii*. We have no data on *polyphonus*.

The nestling, with quills just breaking from their sheaths, has a scanty crop of down on the upper parts only. The down, borne on the tips of the incoming feathers, is most plentiful on the sides of the capital tract and on the rump, but also occurs on the nape, greater and median series of upper wing-coverts, humeral and femoral tracts, all the posterior half of the dorsal tract, and on the upper tail-coverts and thighs. The down is seal brown on the head, duller, paler brown elsewhere.

Molting birds were recorded in October (3), November (4); males with enlarged testes were recorded in May (1), October (1); the single nestling was brought in by a native on May 5.

Melidectes belfordi brassi Mayr and Rand

1936, Mitt. Zool. Mus. Berlin, XXI, p. 247.

Iola: 1 ♀ [= ♂], 2 ♀; May 30, June 1 (Hamlin).—Fane: 3 ♂, 1 ♀; June 6, 10 (Hamlin).—Mt. Tafa, west slope: 2 ♀; August 28, September 21.—Mt. Tafa, east slope: 5 ♂, 3 ♀; May 10–30.—Murray Pass: 1 ♂, 2 ♀; July 17–August 8.

Found commonly from 2000 to 2800 meters. At just what altitude this form meets the race on Mt. Albert Edward is not known, but it is above 2800 meters.

Wing: ♂ 139, 140, 140, 140, 141, 143, 143, 144; ♀ 123, 127, 127, 127, 130, 131, 131, 137, 139. Tail: ♂ 123, 121, 121, 119, 122, 120, 120, 125; ♀ 109, 108, 112, 115, 113, 110, . . ., . . ., 123.

This subspecies has only one small wattle near the corner of the mouth.

This subspecies does not become increasingly larger at the higher altitudes. The Murray Pass (2800 m.) specimens measure wing ♂ 139, ♀ 127, 131. This demonstrates clearly that in this species the change to a larger high mountain form is not a gradual change with altitude but occurs suddenly where a critical level is reached.

Molting specimens were taken in May (4), June (2), and July (1); breeding specimens were taken May (♂ 3, ♀ 1); a nest in construction was found on July 25.

This is one of the commonest honey eaters when its range is reached and being very noisy its presence is very evident. It is a bird of the tree tops and favors especially the flower trees. It apparently feeds on the insects attracted to the flowers. It is rather deliberate in actions and one I watched was clinging upside down systematically probing into all the flowers within reach. Sometimes a bird was seen in a tree bearing small fruit. These birds do not congregate in any numbers about a flowering tree; however, one or two birds appear to take possession of a tree and not only drive away others of their own kind but also birds of other species.

Its flight is similar to that of several of the large honey eaters, starting from its flush with heavy flapping it then sails with foreward stretched wings to another perch.

It is a noisy bird and its wide variety of loud harsh calls are the commonest and most conspicuous bird calls where it occurs. Some of these I have recorded as a loud high "kee kee – –"; a hoarse "que que – –"; a sharp whistled call of alarm repeated several times; a loud "whit whit – –"; a soft "cremm"; a loud clear "pip pip – –"; but this by no means exhausts its repertoire. Sometimes it was very noisy during a rain as though it enjoyed the shower.

On July 25 in Murray Pass a bird was working on a nearly finished nest six meters up on the fork of a limb in a slender tree in the forest. The nest was a deep cup composed of some moss and a few twigs in the bottom of the nest, but largely of a very soft, golden brown material from the base of tree-fern fronds.

Of nine stomachs examined eight contained only insects; one contained but a few insects, being filled largely with fruits.

Melidectes belfordi belfordi De Vis

Mt. Albert Edward: 5 ♂, 1 ♀, 1 ♀ nestling; June 23–July 6. Wing: ♂ 147, 150, 150, 153, 153; ♀ 140. Tail: ♂ 135, 128, . . ., 135, 136; ♀ 123.

This is another of the interesting high altitude subspecies collected by the 1933–1934 expedition. The range of this bird is, as far as known, only on Mt. Albert Edward at an altitude of 3680 meters, where its range occupies only a few square miles, and Mt. Knutsford whence came the type. Possibly other mountain peaks in southeast New Guinea which rise to sufficient height will also be found to be inhabited by this large form.

The nestling bird, which was out of the nest but barely able to fly,

is in a loose textured but not fluffy plumage that resembles in general that of the adult. It differs from the adult in the upper parts, being more sooty black, with the pale crescent-shaped edges to the feathers of the back only slightly indicated. The under parts are more blackish gray, with fewer and smaller white tips to the feathers, and a rufous tinge to the abdomen. The black throat and white malar stripes are of less extent than in adult and there is less white in the ear-coverts. Traces of the natal down remain on the sides of the capital tract, the nape, and the rump feathers; this is seal brown in color.

Two of the July males were molting their wings; two June males had enlarged testes and the nestling bird was taken on June 30.

This bird was as common and noisy as its lower altitude representative; like it, frequenting flower trees and driving other birds from them. One call I recorded as "kee qui qui – –." On June 30 on Mt. Albert Edward I found a young bird barely able to fly. It was attended by two adults which became very excited over my presence. The male, which I shot, was much the bolder, coming down close to me, fluttering its wings and scolding.

Two stomachs contained only insects.

Melidectes ochromelas batesi (Sharpe)

Deva Deva: 1 ♂; May 30 (Hamlin).—Ononge: 1 ♂; June 26 (F. Dubuy). These localities are at about 770 and 1800 meters.

Wing: 128, 129. Both birds are completing their wing molt.

The specimen given the 1933–1934 expedition by Father Dubuy was our only record of the species.

Melidectes fuscus De Vis

Murray Pass: 1 ♂, 2 ♂ imm., 3 ♀, 1 ♀ imm.; July 18–August 8.—Mt. Albert Edward: 5 ♂, 1 ♂ imm., 4 ♀, 2 ♀ imm.; June 17–July 6.

Common from 2800 to 3700 meters.

Wing: ♂ 112, 114, 116, 117; ♂ imm. 104, 106, 113; ♀ 100, 101, 101, 101, 102, 104; ♀ imm. 98, 99, 102.

The immature plumage differs from the adult in being much looser in texture and more dull brownish black; the upper parts almost entirely lack the light edgings to the feathers, the under parts have grayer tips to the feathers and these do not form such definite crescent-shaped marks as in the adult. The under tail-coverts are much more fulvous and nearly uniformly colored. The rectrices of the adult are somewhat

pointed, but they are even more pointed in the immature bird, and the tip of the first primary is usually somewhat more rounded.

The adult female differs from the male only in the smaller size and the slightly grayer tinge on the abdomen.

This species is also known from the Snow Mountains (Ibis, 1915, Jub. Supp., p. 60). Of the adults only two June specimens were molting; a June and a July male had enlarged testes.

Oreornis subfrenatus salvadorii (Hartert)

Bella Vista: 1 ♀; November 6.—Mt. Tafa, west slope: 2 ♂, 4 ♀; August 28–September 22.—Mt. Tafa, east slope: 2 ♂, 1 ♀; May 28–31.—Murray Pass: 3 ♂, 5 ♀; June 12, July 23–August 5.—Mt. Albert Edward: 3 ♂, 3 ♀; June 24–July 2.

Common from 2000 to 3680 meters, one specimen taken at 1450 meters.

Wing: ♂ 96, 96, 98, 99, 100, 103, 104, 105, 105; ♀ 88, 90, 90, 91, 91, 91, 92, 93, 93, 93, 93, 94, 94, 95.

The variation in size is not correlated with altitude.

Xanthotis s. kingwalip Mayr, type locality Ogeramnang, Huon Peninsula (1931, Mitt. Zool. Mus. Berlin, XVII, p. 663), was described as a darker form with a more blackish forehead and throat. Comparing three specimens from Sevia, Huon Peninsula (Beck coll.), with the present series, the former are more brownish olive, less dark greenish olive in general color but are closely approached in this character by some of the southeast New Guinea birds. Fading is probably responsible for some of this difference. The chin and forehead of the Huon Peninsula bird may be slightly darker but these differences are so small that this race cannot be recognized and *kingwalip* must be considered a synomyn of *salvadorii*. This species, as many other *Meliphagidae*, fades badly, even when kept in light-proof museum cases.

Molting specimens were taken in July (1) and August (1); specimens with enlarged gonads were taken in May (2 ♂), June (1 ♂, 1 ♀), July (1 ♂, 1 ♀), August (1 ♂), and September (1 ♀).

Xanthotis chrysotis saturatior (Rothschild and Hartert)

Wuroi: 5 ♂ ad., 1 ♂ imm., 1 ♀ ad.; January 21–30.

Wing: ♂ ad. 99, 101, 101, 103, 105; ♂ imm. 96; ♀ ad. 94.

This series differs from the series of *giulianettii* in having lighter, less dark brown flanks, a paler breast, a duller back with more of a grayish, less of an olive tinge, and a more grayish black, less brownish rump.

The edgings of the wing-coverts and secondaries are also less bright rufous.

This series is closest to the dark form *saturatior*, described from the Aru Islands, but shows a tendency toward *filigera* in having the back lighter, more greenish, less brownish, and the under parts, especially the lower belly and the underside of the wing, less brownish. The top of the head is as dark as in *saturatior*. One specimen from Eilanden River (Rothschild coll.) is very similar to the Wuroi birds. Specimens from the southern Snow Mountains are slightly darker, more brownish than Aru Island birds but are also referable to *saturatior*.

In both the east and the west the races of this species are brighter. The Arfak bird is brighter yellow and olive, the Milne Bay bird is brighter olive and rufous. *X. c. giulianettii* from southeast New Guinea is intermediate between the south and the extreme southeast New Guinea bird.

None of this series was molting; a male taken on January 30 had enlarged testes.

Specimens were seen in the mangroves at Daru. One stomach examined contained fruits.

Xanthotis chrysotis giulianettii Mayr

Baroka: 2 ♂ ad., 1 ♀ ad.; April 6–20.—Kubuna: 2 ♂ ad., 1 ♀ ad.; December 10–28.—Deva Deva: 2 ♂ imm.; May 29, 31 (Hamlin).—Mafulu: 3 ♂ ad., 2 ♀ ad., 1 ♀ imm.; October 12–November 12.—Hisiu: 1 ♂ imm.; September 4 (Zimmer).

Found from sea level to 1250 meters.

Wing: ♂ ad. 102, 102, 102, 103, 104, 107; ♂ imm. 89, 97, 97, 104; ♀ ad. 93, 94, 96, 97; ♀ imm. 89.

One of the immature males, which is full-grown, is in the nestling plumage. This is looser in texture than the adult plumage and differs somewhat in color. The top of the head is brownish gray, the back is grayish brown, brightest on the rump which also has some indistinct darker bars. The throat is gray, breast and flanks fulvous, the abdomen fulvous gray. The sides of the head are gray, with a trace of white in the post auricular area and there is a small yellow line present on one side of the head, but this may be part of the first-year plumage. The tail is tipped with rufous and the wing-coverts and remiges are much more edged with rufous than in the adult plumage. The first-year plumage, acquired by an incomplete molt, is similar to the adult plumage, except for the wings and tail.

Molting adults were taken in October (1) and December (1); specimens with enlarged gonads were recorded in April (2 ♂, 1 ♀) and November (1 ♀).

Xanthotis chrysotis visi Hartert

Orangerie Bay: 2 ♂; December 12, 14 (Zimmer).—Milne Bay: 1 ♂; April 4 (Hamlin).—Samarai: 1 ♂ ad.; February 18 (Beck).

Wing: ♂ 99, 99, 99, 100.

One of the December specimens is molting.

This race in its bright coloration above and below is very different from *giulianettii*. It is another race which, like *Paradisaea a. raggiana*, is restricted to the extreme southeast of New Guinea.

Zimmer recorded the stomach contents of one specimen as insects, of the other as a green cicada.

Xanthotis polygramma lophotis Mayr

Iola: 1 ♂; June 7 (Hamlin).—Mafulu: 3 ♂, 6 ♀; September 30–October 31.—Kanosia: 1 ♀; August 21 (Zimmer).—Milne Bay: 1 ♂; April 1 (Hamlin).

Collected at 1250 meters in 1933; the other specimens suggest that it may go much lower.

Wing: ♂ 76, 78, 78, 79, 80; ♀ 69, 69, 69, 72, 72, 73, 74.

None of these specimens is molting; one of the October females had an enlarged ovary and two others had the ovary beginning to enlarge. Probably October was the beginning of the breeding season at Mafulu.

Xanthotis polygramma candidior Mayr and Rand

1935, American Museum Novitates, No. 814, p. 15.

Wuroi: 2 ♀ ad.; January 27–February 7.

Only known from Wuroi near sea level.

Wing: 69, 71.

Lichmera alboauricularis (Ramsay)

Baroka: 3 ♂ ad., 1 ♀; April 7–20.

Found near sea level.

Wing: ♂ ad. 70, 71, 72; ♀ 64.

We also have a male, wing 73, and a female, wing 62, from Doini Island near Samarai (Zimmer coll.). This is not far from the type locality (Heath Island). We also have a male, wing 69, from Ifaar, north New Guinea (Mayr coll.).

Iris brown, bill black or brownish black, feet dark gray, blue-gray, or blue, circumocular space gray.

It is difficult to compare these birds because of the difference in wear which they exhibit. The Baroka birds are in fresh plumage, the Doini Island birds are somewhat worn, and the Ifaar bird is very worn. The lighter edges of the feathers of the upper parts in the Baroka birds give a streaked appearance, and there is a grayish-olive tone to the back; this is almost lost in the Doini Island birds, which are considerably browner, and appear to have a slightly longer bill. The Ifaar bird in its very worn plumage is uniformly colored above and very brownish, possibly due to wear. The bill is somewhat shorter than with Baroka males.

The fresh-plumaged female from Baroka is in a plumage indistinguishable from that of the adult male, though it had a very small ovary and the skull was incompletely ossified, suggesting that it might be wearing a first-year plumage.

None of these birds is molting and two of the Baroka males had enlarged testes.

According to Hartert (1930, Nov. Zool., XXXVI, p. 48) this species heretofore was known from but three localities: Heath Island, the lower Ramu River, and Ifaar.

Meliphaga virescens versicolor (Gould)

Daru: 3 ♂ ad., 1 ♀ ad.; January 9, 10, March 10.

Wing: ♂ ad. 104, 104, 108; ♀ ad. 94.

Hartert (1932, Nova Guinea, XV, p. 474) suggested that the south New Guinea bird might be an undescribed subspecies very similar to *versicolor*. Our material does not substantiate this.

Compared with a series from Queensland, the present series differs in having a more slender bill, the under parts less rich yellow, the inner edges of the remiges paler, less ochraceous, and the upper parts more grayish, but these differences are not great enough to be used in separating the south New Guinea birds from *versicolor* to which race they must be referred.

The January female was laying and one January male had enlarged testes.

Daru Island was the only locality at which I found this bird. It was fairly common there about the shade trees of the town.

Meliphaga virescens intermedia Mayr and Rand

1935, American Museum Novitates, No. 814, p. 15.

Samarai Island: 2 ♂ ad., 1 ♂ imm., 2 ♀ ad.; July 5 (Hamlin).—Doini Island: 1 ♂ ad., 2 ♂ imm., 1 ♀ imm.; November 16–December 2 (Zimmer).

Wing: ♂ ad. 106, 107, 107; ♂ imm. 92, 99, 104; ♀ ad. 98, 104; ♀ imm. 92.

Meliphaga flavescens germana (Ramsay)

Port Moresby: 2 ♂, 2 ♀; April 11, May 9, July 11 (Zimmer).

Taken near sea level.

Wing: ♂ 73, 75; ♀ 72, 75.

Meliphaga orientalis orientalis (A. B. Meyer)[1]

Mafulu: 13 ♂ ad., 1 ♂ imm., 11 ♀ ad., 2 ♀ imm.; Oct. 2–Nov. 18.—Deva Deva: 1 ♀; June 21 (Hamlin).

Found commonly at 1250 meters; Hamlin's specimen comes from 770 meters.

Meliphaga mimikae granti Rand

Mafulu: 2 ♂, 4 ♀; October 8–November 11.

Found at 1250 meters.

Meliphaga montana auga Rand

Mafulu: 4 ♂ ad., 1 ♂ nestling; 3 ♀ ad., 1 ♀ imm., 1 ♀ nestling; October 11–November 8.—Bella Vista: 2 ♂ ad.; November 6, 8.

Found from 1250 to 1450 meters.

A nest containing young was collected October 30.

Meliphaga aruensis aruensis (Sharpe)

Dogwa: 1 ♂ imm.; March 21.—Wuroi: 1 ♂ ad.; January 23.—Kubuna: 1 ♂ ad.; 1 ♀ imm.; November 30.—Mafulu: 1 ♂ imm., 1 ♀ ad., 1 ♀ imm.; October 9–21.

From sea level to 1250 meters.

Meliphaga analoga analoga (Reichenbach)

Wuroi: 3 ♂, 2 ♀; January 19–February 1.—Kubuna: 1 ♂, 2 ♀; December 3–16.—Mafulu: 1 ♂, 1 ♀; October 9, 31.

Found from sea level to 1250 meters.

[1] For a discussion of this genus, see: 1936, American Museum Novitates, No. 872

Meliphaga gracilis gracilis (Gould)

Wuroi: 3 ♂ ad., 1 ♂ imm., 5 ♀ ad., 1 ♀ imm.; January 19–February 11.—Dogwa: 1 ♀ ad.; February 20.

In the American Museum Novitates, No. 872, it has already been shown that the bird from south New Guinea is slightly smaller than typical *gracilis* from Cape York, but that it belongs to this form; that *imitatrix* (Mathews) is valid; and that the following race must be recognized.

Meliphaga gracilis cinereifrons Rand

Baroka: 1 ♂ imm., 2 ♀ ad., 1 sex (?); April 8–18.—Port Moresby: 3 ♂ ad., 1 ♂ imm.; May 2, July 10, September 18, 19 (Zimmer).—Rona: 2 ♂ ad., 1 ♀ ad.; March 10–16.—Orangerie Bay: 1 ♀ ad.; December 15 (Zimmer).

Found up to 450 meters.

Ptiloprora guisei guisei (De Vis)

Iola: 1 ♀ ad.; June 6 (Hamlin).—Fane: 1 ♂ ad.; June 7 (Hamlin).—Mt. Tafa, west slope: 4 ♂ ad., 2 ♀ ad.; August 22–September 20.—Mt. Tafa, east slope: 4 ♂ ad., 2 ♂ imm., 2 ♀ imm.; May 10–24.—Murray Pass: 2 ♂ ad., 1 ♀ ad., 1 ♀ imm.; July 10–21.

Found commonly from 2000 to 2840 meters; the Iola specimen (770 m.) probably came from higher in the mountains; Fane (1300 m.) is also below its usual range.

Wing: ♂ ad. (9) 90–94 (91.9); ♂ imm. 86, 87; ♀ ad. 80, 81, 82, 82; ♀ imm. 81, 81, 81.

This is undoubtedly *guisei* with the rufous edges to the feathers of the back. Closely related to it are *umbrosa* Mayr, of the Sepik Mountains, and *mayri* Hartert of the Cyclop Mountains. The races *lorentzi* van Oort and *praedicta* Hartert are more closely allied to the form from the upper part of Mt. Albert Edward. Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 665) has described the first-year plumage.

Molting specimens are recorded in June (1), July (3), August (3), and September (1); non-molting birds, May (4), June (1), August (2). Males with enlarged testes were recorded May (2) and August (2).

Ptiloprora guisei perstriata (De Vis)

Mt. Albert Edward: 4 ♀ ad., 1 ♀ imm.; June 18–July 3.

Found only at 3680 meters.

Wing: ♀ ad. 89, 93, 94, 94; ♀ imm. 90.

De Vis' name *perstriata* has been considered a synonym of *guisei* but from his description there is no doubt that it refers to this very distinct high-altitude form. De Vis gives the locality as Wharton Range, and his specimen probably came from the southeastern end of the range, as Sir William MacGregor's party who collected it did not visit the Mt. Albert Edward section. Thus we may expect to find this race on the summits of Mt. Victoria and Scratchley and perhaps on other high peaks in southeast New Guinea. Its range is not continuous from mountain to mountain, as we collected on top of the Wharton Range in Murray Pass and found only *P. g. guisei.* Thus *perstriata* appears to have a disconnected range, and occupies only very small areas on the tops of the highest mountains.

P. g. perstriata is very close to *lorentzi* and *praedicta,* lacking the rufous on the back. From the former it differs in having a darker brownish rump, darker rufous flanks, and paler edgings to the remiges and upper wing-coverts. *P. g. praedicta* differs in the paler, more grayish-brown, less blackish-brown rump, the wider gray edgings to the feathers of the back, head, and under parts, the reduction of rufous in the flanks, and this rufous is also paler (females only compared).

The female in first-year plumage differs from the adult in having the edgings of the feathers of the upper parts olive, the rump more olive-brown, and the feathers of the under parts yellowish olive, with the rufous of the flanks only slightly evident.

None of these specimens showed wing molt, nor enlargement of the gonads.

Ptiloprora meekiana Rothschild and Hartert

Mt. Tafa, east slope: 1 ♂ ad.; May 13.

Taken at 2000 meters.

Wing: 82.

Compared with a male, wing 83, and a female, wing 73, from Sevia, Huon Peninsula (Beck coll.) there are no significant differences.

The Mt. Tafa specimen was not molting and had its testes somewhat enlarged.

Ptiloprora plumbea plumbea (Salvadori)

Bella Vista: 1 ♀ ad.; November 7.

Taken at 1450 meters.

Wing: 68.

It was molting and showed no enlargement of the ovary.

Pycnopygius stictocephalus (Salvadori)

Wuroi: 2 ♂ ad., 1 ♂ sub-ad., 1 ♂ imm., 2 ♀ ad.; January 21–February 11.

Found only near sea level.

Wing: ♂ ad. 109, 110, 114; ♂ imm. 108; ♀ 106, 108.

We have for comparison two adult females from Madang (Beck coll.) and one adult female from the Sepik basin (Bürgers coll.). None of the slight differences shown appear to be of taxonomic value.

The immature male is finishing the incomplete molt into the first-year plumage. The nestling plumage still retained on the abdomen, breast, and under tail-coverts is fluffy and pale ochraceous in color, more grayish on the breast. The first-year plumage is of looser texture than that of the adult and is more dull brownish on the back; the top of the head lacks the white spotting of the adult, being black, each feather tipped with gray. The sides of the head are dull black, the white malar streak much less pronounced. The throat is dull grayish black, the rest of the under parts fulvous gray; the upper wing-coverts are edged with rufous, and the rectrices are conspicuously edged and tipped with brownish white to pale rufous. The sub-adult male has nearly finished the complete molt from first-year to adult plumage.

The effects of wear and fading are very pronounced in this species.

All the adults are molting; none were breeding.

Pycnopygius cinereus marmoratus (Sharpe)

Matsika: 1 ♀ ad.; November 23.—Mafulu: 3 ♂ imm., 1 ♀ imm., 1 sex (?); October 18–November 1.—Bella Vista: 1 ♀ ad.; November 7.—Mt. Tafa, east slope: 1 ♀ ad.; May 22.

Found from 1000 to 2000 meters.

Wing: ♂ imm. 102, 103, 104; ♀ ad. 100, 101, 103; ♀ imm. 94.

Mayr has recorded the iris as brown on the labels of three adult and on immature specimens of *P. c. cinerea*. The present subspecies from southeast New Guinea always has a gray iris and Ogilvie-Grant (Ibis, 1915, Jub. Supp., p. 74) records the iris of south Snow Mountain specimens of *marmorata* as violet-gray.

Eight adults from Huon Peninsula (Beck coll.) belong to this race, despite minor differences (see Mayr, 1931, Mitt. Zool. Mus. Berlin, XVII, p. 666). We also have a nestling bird, with a very short tail, from Sevia, Huon Peninsula, March 10, 1929 (Beck coll.). The nestling plumage is soft and fluffy. It is grayish brown on the crown, hair brown on the rest of the upper parts. The upper wing-coverts are dull

brownish, without conspicuous edgings, except the primary coverts which, like the secondaries, are edged with rather bright brownish olive. The throat is light gray, the breast dark gray, abdomen grayish white, and the crissum is fulvous.

The first-year plumage, attained by an incomplete molt, is very similar to that of the adult but appears to be tinged slightly more greenish. It may be easily distinguished by the pointed rectrices, more rounded tip to the first primary and brighter edgings to the remiges.

One May adult was molting, two November adults showed no wing molt, and one had its ovary enlarged.

Philemon novaeguineae novaeguineae (Müller)

Dogwa: 2 ♂ ad., 1 ♀ ad.; February 15–24.—Wuroi: 2 ♂ ad., 1 ♀ ad., 3 ♀ imm.; January 27–February 9.—Delena: 1 ♂ ad.; May 28 (Hamlin).—Baroka: 1 ♂ ad., 1 ♀ imm.; April 9.—Hisiu: 1 ♂ ad.; September 4 (Zimmer).—Port Moresby: 1 ♂ ad., 1 ♀ ad.; April 17, July 24 (Zimmer).—Rona: 2 ♂ ad.; March 7, 11.—Samarai: 1 sex (?) [= ♂] ad.; February 12 (Beck).

Found up to 450 meters.

	Male		Female	
	Bill[1]	Wing	Bill[1]	Wing
South New Guinea	45, 45, 47, 47	153	43.4, 45	142
Southeast New Guinea	47.5, 47.5 48, 48.5, 51	152, 156	43	148

The Samarai bird, probably a male from its size, measures: bill, 47; wing, 158.

These measurements show that the south New Guinea birds are somewhat smaller than those from the southeast, but the two series approach each other so closely that it is inadvisable to separate them on this character. The south New Guinea series has the "knob" of the bill narrower, more compressed laterally, but this is slight and both series have this knob about equally developed; *subtuberosus* from the D'Entrecasteaux Archipelago is quite a different bird, with a much smaller "knob" on the bill; 2 specimens (Hamlin collector) examined.

Wear and fading produce such great changes in the color of the plumage of this species that it is difficult to compare any but specimens which are actually molting.

Two adults, one taken in July, the other in September, are in rather

[1] Measured from the posterior edge of the knob to the tip of the bill.

worn plumage and show no wing molt; all the other adults are molting and none had enlarged gonads.

Philemon corniculatus ellioti Mathews

Dogwa: 2 ♂ ad.; February 20, 28.—Wuroi: 1 ♀ ad., 1 ♀ imm.; February 4, 7.

Wing: ♂ ad. 140, 140; ♀ ad. 135; ♀ imm. 126. Bill (from tips of knob): ♂ 31, 29; ♀ ad. 28; ♀ imm. 30.

These birds may represent a darker New Guinea race but fading is so great in the genus *Philemon* that the criterion of color must be used with caution.

Mayr measured four specimens from north Queensland in the British Museum which gave the following measurements: wing: ♂ 149+x; sex (?) 146, 149, 150; bill: ♂ 31; sex (?) 32, 31.5, 33.

Four specimens of *ellioti* from the Rothschild collection measure: wing: ♂ 137, 147; sex (?) 145, 148; bill: ♂ 31.5, 34; sex (?) 28, 30.

Until birds in comparable plumages are examined, the south New Guinea specimens must be considered the same as those from north Queensland.

This is the first record of this species for New Guinea.

The adults are in fresh plumage and show no enlargement of the gonads; the immature female is molting into the first-year plumage.

Philemon citreogularis papuensis Mayr and Rand

1935, American Museum Novitates, No. 814, p. 15.

Dogwa: 3 ♂ ad., 2 ♀ ad.; February 19–28.

Wing: ♂ 124, 124, 127; ♀ ad. 118, 120.

This is another Australian species that was first recorded in New Guinea by the 1933–1934 expedition. It was not uncommon in the savanna at Dogwa. It has also been found by Nevermann in the Merauke district.

Philemon meyeri (Salvadori)

Kubuna: 1 ♂ ad.; December 10.

Taken at 100 meters.

Wing: 116.

In fresh plumage this species is very grayish; with wear the general tone becomes brownish. This is well shown by two males from the vicinity of Astrolabe Bay (Beck coll.). Our single specimen is somewhat worn and consequently intermediate in color. The two Astrolabe

Bay birds have wing measurements of 110 and 111 mm., thus being smaller than our specimen, but Stresemann (1923, Arch. für Naturgesch., LXXXIX, Heft 7, p. 63) gives measurements of a series of males from the Sepik regions as ranging from 107 to 117 mm.

Ptilotis fulvocinerea Finsch and Meyer (1886, Zeit. Ges. Orn., III, p. 24) from the Astrolabe Mountains, type in the Dresden Museum examined by Mayr, is a synonym.

This specimen had enlarged testes.

Dicaeum geelvinkianum rubrigulare D'Albertis and Salvadori

Daru: 1 ♂ (?) imm.; March 10.—Wuroi: 9 ♂ ad., 4 ♂ imm., 1 ♀ ad., 2 ♀ imm.; Jan. 19–Feb. 9.—Dogwa: 10 ♂ ad., 4 ♂ imm., 1 ♀ imm.; Feburary 14–25.

Found only near sea level.

Wing: ♂ ad. (19) 51–56 (53.4); ♂ imm. (9) 52–53; ♀ ad. 51; ♀ imm. 49, 50, 51.

Dicaeum albopunctatum D'Albertis and Salvadori described from the Kataw [= Oriomo] River, appears to have been an albinistic specimen.

All the immature males are acquiring the plumage of the adult by an incomplete molt. All but one of the adult males were molting their wings. The single male that was not molting had enlarged testes. The single adult female had a small ovary and showed no wing molt. From this it appears that in January and February most of these little flower peckers are not breeding but some may do so.

The large proportion of males suggests that the females may have somewhat different habits.

Dicaeum geelvinkianum rubrocoronatum Sharpe

Yule Island: 1 ♀ ad.; December 23.—Mafulu: 4 ♂ ad., 3 ♂ imm., 2 ♀ ad., 2 ♀ imm.; September 30–November 15.—Ononge: 1 ♂ ad.; August 17.—Lolorua: 1 ♂ ad.; August 28 (Zimmer).—Rona: 3 ♂ ad., 2 ♀ ad.; March 7–15.—Orangerie Bay: 1 ♂ ad., 1 ♂ imm.; December 15, 17 (Zimmer).

Found up to 1800 meters.

Wing: ♂ ad. (10) 51–55 (53.2); ♂ imm. 52, 54, 54, 54; ♀ ad. 49, 49, 49, 50, 51; ♀ imm. 53, 53.

The size of the southeast New Guinea birds is between that of the Huon Peninsula birds and those from the Sepik (see Mayr, 1931, Mitt.

Zool. Mus. Berlin, XVII, p. 667) so that on this character all must be included in the present race.

Two October adults and one December adult were molting. One August male had enlarged testes and one March and one October female showed some enlargement of the ovary.

Melanocharis nigra unicolor Salvadori

Kubuna: 4 ♂ ad., 1 ♀; December 5–14.—Deva Deva: 1 ♀; May 29 (Hamlin).—Mafulu: 6 ♂ ad., 7 ♀; October 10–November 16.—Milne Bay: 1 ♀ [= ♂] ad.; April 2 (Hamlin).—Orangerie Bay: 1 ♀; December 14 (Zimmer).

Found up to 1250 meters. Wing: ♂ ad. (11) 63–69 (65.7); ♀ (10) 56–68 (65.9). Tail: ♂ ad. (9) 45–49 (47.3); ♀ (8) 42–48 (45.6).

Stresemann and Paludan (1932, Nov. Zool., XXXVIII, p. 225) have shown that the form usually known as *bicolor*, inhabiting southeast New Guinea and the north coast as far as the Sepik, is indistinguishable from the form *unicolor* described from Jobi.

Three of the adult October males, and one May, two October, one November, and two December females are molting. One October male had enlarged testes.

Melanocharis longicauda orientalis Mayr

Mafulu: 3 ♂ imm.; October 9–29.

Wing: 63, 65, 65. Tail: 46, 48.

Taken at 1250 meters.

Melanocharis arfakiana (Finsch)

Matsika: 1 ♀; November 22.

This specimen was taken at 950 meters.

Wing: 62. Tail: 37.5.

For a discussion of this species see: 1936, Ornith. Monatsber., XLIV, p. 44.

Pristorhamphus versteri maculiceps (De Vis)

Mafulu: 1 ♂ imm.; October 8.—Mave: 1 ♂ ad.; September 7.—Mt. Tafa, west slope: 12 ♂ ad., 10 ♂ imm., 11 ♀; August 22–September 21.—Mt. Tafa, east slope: 1 ♂ ad., 2 ♂ imm., 3 ♀; May 14–30.—Murray Pass: 1 ♂ ad., 2 ♂ imm., 4 ♀; July 15–August 2.

Only the one specimen was secured at 1250 meters; at 2000 meters the species was not common; very common at 2400 meters; uncommon

at 2800 meters; one in female plumage seen but not collected at 3680 meters.

Wing: ♂ ad. (15) 61–66 (62.8); ♂ imm. (15) 64–67 (65); ♀ (15) 66–72 (69.8).

None of the adult or immature males show wing molt; the three females taken in May are the only molting birds in the series. Two females from August had enlarging gonads, as did all the August and September adult males, and one male, taken September 9, had its testes enlarged. Seven of the immature plumaged males taken in August and September showed slight to somewhat enlarged testes, suggesting that they breed in the dull garb. The breeding season probably starts in October or November.

It is interesting to note that adult males were common only at 2400 meters; adult males are not more wary than females and yet they were relatively scarcer at 2000 and 2800 meters, while the highest and lowest records were not adult males. This is especially noteworthy taken in connection with the conditions found in *Dicaeum g. rubrigula.*

Neneba striativentris striativentris (Salvadori)

Matsika: ♂; May 24 (Hamlin).—Urunu: ♂; June 28 (presented to the 1933 expedition by Father Dubuy).

These localities are at 950 and 1700 meters.

Wing: 71, 75.

The May specimen is molting.

Oreocharis arfaki (Meyer)

Mafulu: 1 ♂ ad., 1 ♂ imm., 1 ♀; October 4.—Mt. Tafa, west slope: 11 ♂ ad., 3 ♂ imm., 6 ♀; August 24–Sept. 17.—Murray Pass: 2 ♂ ad., 1 ♀; July 19, August 6.—Mt. Tafa, east slope: 1 ♀; May 30.

This species was common at 2400 meters; below that it was rare and the two specimens from Mafulu, shot by a native boy, may have come from some distance above camp. At 2840 meters this bird was fairly common.

Wing: ♂ ad. (14) 69–76 (73); ♀ (9) 69–74 (70.6).

Mayr (1931, Mitt. Zool. Mus. Berlin, XVII, p. 670) has pointed out some of the individual variations in this species but he did not mention the extent of the black on the head. We have, besides the series of southeast New Guinea birds, two from Arfak (Mayr coll.) and six

from the Huon Peninsula (Beck coll.). The males from the southeast tend to have the black of the crown extending farther down the back of the head than the other two series. But one male from Arfak resembles the southeast bird in this, and two southeast birds are like the Arfak and the Huon Peninsula specimens in having the green of the back extending up onto the nape. In the southeast New Guinea series some females have more whitish bellies, others more grayish bellies.

The four males called immature are in a strange mixed retarded male plumage. One is very like the adult male except for a tendency toward the female plumage below; the other three are similar to the female except for a few feathers on the head and throat which approach the adult male type of feather.

Only one specimen was molting, a female taken October 4. None of the females was breeding, though all the August, September, and October males showed some enlargement of the gonads; probably the breeding season was later, beginning in November.

This flower pecker was usually found in parties, sometimes of more than fifteen or twenty individuals. Its favorite habitat was the lower trees of the forest, on the small fruits of which it fed. Even when feeding in some fruiting tree along with other species, these birds were continually moving in and out of the tree so that the flocks may have been much larger than I suspected, and perhaps comparable with those of *Paramythia*. The food is apparently entirely small fruits, as sixteen stomachs contained nothing else. Several species of trees supply food for this bird, and the fruit is usually swallowed whole.

Paramythia montium montium De Vis

Mt. Tafa, west slope: 5 ♂, 4 ♀; August 22–September 23.—Mt. Tafa, east slope: 1 ♂, 1 ♀; May 28, 31.—Murray Pass: 3 ♂, 4 ♀; July 15–August 6.—Mt. Albert Edward: 5 ♂, 4 ♀; June 15–29.

The specimens from Mt. Tafa came from above 2300 meters. The species was very common from 2400 meters to timber line.

Wing: ♂ (14) 95–107 (101.5); ♀ (12) 91–102 (97.9).

There is a slight variation in size with altitude, especially noticeable in the females, the Mt. Albert Edward birds measuring: ♂ 99–107; ♀ 101–102; the Mt. Tafa birds: ♂ 95–104; ♀ 91–97.

Several birds that have their skulls incompletely ossified, and presumably are in first-year plumage, are indistinguishable from the adults, except for the slightly broader tip of the outer web of the first primary.

One male, however, with incompletely ossified skull showed some enlargement of the gonads.

The only molting specimens were four males taken in June and a female taken in July and another in September.

Two females with ovaries enlarged were taken in September; males showing some enlargement of gonads were taken in June (2), July (1), August (3). Probably at 2400 meters the breeding season starts in September.

The crested flower pecker was a common bird when its range was reached, i. e., 2300 meters to timber line, about 3800 meters. The altitude of 2300 meters, near our camp on Mt. Tafa, was a critical level in the downward distribution of this and other mountain species, such as *Turdus* and *Poecilodryas sigillata*. Below this they were not found. This may perhaps be correlated with the downward extent of the more mossy forests of the Temperate zone which stopped at the same level.

These birds were usually found moving about in parties of three or four up to ten or twelve and once on Mt. Albert Edward, when a flock crossed a small glade, I was able to count the individuals and found there were more than seventy-five birds in the flock.

On Mt. Tafa, in September, when the birds were beginning to breed, they were more often found in pairs. The flocks usually were made up entirely of this species but sometimes they were joined by a few other species of quite different food habits. On August 6, in Murray Pass, I saw a party of several *Paramythia* moving about in the tree tops and with them were three *Ifrita kowaldi*, one *Gerygone* sp.?, several *Oreornis subfrenata* and a *Rhipidura albolimbata*. These insectivorous birds had quite different feeding habits from the fruit-eating *Paramythia* but it is possible that the latter species, in their moving through the forest, disturbed food insects which their companions captured. But possibly the flocking was only an expression of a gregarious tendency.

These flocks were loose and scattered, moving about rather quickly through the forest, feeding on the berries of the trees and taller shrubs as they went. Very attractive birds they were, quick, active creatures, not at all shy but nervous and continually moving. They adopted a variety of poses; sometimes the tail was cocked up, the crest was sometimes raised when alarmed or excited, but was usually depressed. Often they were exploring the ends of twigs as though in search of insects, now right side up, now up side down, they appeared to peck at twigs, but they never ate anything but small berries (from stomach examinations). Extremely nervous, they snatched a berry here, another

there, and then moved on though there were still other berries within reach. Their flight was jerky and noisy, their calls low and short, and when I was in the midst of a flock the calls seemed to come from everywhere.

This bird apparently has a breeding season beginning in September for of the twenty birds collected from May to August inclusive, only one male showed enlarged gonads, while of the six birds collected the first part of September two females and a male were breeding.

Abundant and easily approached, the crested flower pecker was apparently one of the favorite food birds of the Kuama people who visited our camp at Mt. Albert Edward. They shot them with their curious four-pronged arrows, removed the entrails, and then strung them on a piece of fiber by threading it through their nostrils.

Their food was entirely small fruits of trees and shrubs of the forest edges. Twenty-one stomachs examined.

Zosterops novaeguineae crissalis Sharpe

Mafulu: 11 ♂ ad., 6 ♀ ad., 1 ♀ imm.; October 4–November 7.—Mt. Tafa, west slope: 1 ♂ ad., 1 ♀ ad.; September 13.—Ononge: 2 ♂ ad., 1 ♀ imm.; June 6, August 19.

Found from 1250 to 2400 meters.

Wing: ♂ ad. (14) 56–62 (58.5); ♀ ad. (7) 56–61 (57.7); ♀ imm. 58, 59.

A male taken October 6 and completing its wing molt was the only specimen showing molt. Most of the August, September, October, and November males had enlarged testes. A laying female was taken September 13, and all but one of the adult females showed some enlargement of the ovaries. The breeding season probably starts in August and lasts at least until November.

This white-eye was a very common bird at Mafulu and Ononge, where it was usually found in patches of forest and the second growth moving about in small parties and feeding on small fruits. On Mt. Tafa it was uncommon; a few were seen feeding on the fruits of substage trees in the forest. Their diet is not confined to fruits, however, as one stomach contained only a large spider.

Zosterops novaeguineae wuroi Mayr and Rand

1935, American Museum Novitates, No. 814, p. 16 (Wuroi).

Wuroi: 2 ♂, 1 ♀ (?); January 25, February 7.

Found near sea level.

Wing: ♂ 55, 54; ♀ (?) 53.

The three specimens are molting; none had enlarged gonads.

For a review of the New Guinea races see 1935, Amer. Mus. Novitates, No. 814, p. 17.

Elsewhere in New Guinea this species is a mountain bird, but here in south New Guinea it comes to sea level.

Zosterops minor delicatula Sharpe

Mafulu: 5 ♂ ad., 3 ♀ ad.; October 5–November 3.

Found at 1250 meters.

Wing: ♂ ad. (5) 59; ♀ ad. 55, 57, 57.

Z. m. tenuifrons Greenway, from Mt. Misim, Herzog Mts., is apparently intermediate between *gregaria* Mayr and the present form in the amount of black on the forehead.

No specimen was molting; breeding individuals were taken in October and November.

Oreostruthus fuliginosus (De Vis)

Mt. Albert Edward: 4 ♂ ad., 3 ♂ imm., 3 ♀ ad., 3 ♀ imm. June 19–July 11.—Murray Pass: 1 ♂ imm., 1 ♀ ad.; July 21.

Common about 3680 meters, seen on but one occasion at 2840 meters.

Wing: ♂ ad. 71, 72, 72, 73; ♂ imm. 69, 72, 72, 73; ♀ ad. 69, 71, 71, 71; ♀ imm. 70, 71, 72.

Color of soft parts: adult male, iris brownish red, bill orange-red, feet horn-color; adult female, iris reddish brown, bill blackish, lower edge of maxilla and mandible orange-red, feet horn; immature female, with incompletely ossified skull, iris brown, bill dark brown, mandible marked with orange, feet light horn-color, toes darker.

Giulianetti, who discovered this bird, collected one male, one adult, and two young females on Mt. Scratchley at 12,200 feet.

There are more sexual and age differences than the original description (Ibis, 1897, p. 389) implies.

The female is brown below, instead of sooty black, and with slightly less and lighter colored red than the male.

The immature male in first-year plumage differs but little from the adult male in the color of the upper parts. On the under parts it is more dusky olive-brown, though not as light brown as the adult female. The bright red of the adult is only indicated by an orange-red tinge. The first-year plumage of the females is similar to the immature male,

but is more brownish below, though darker than the adult female. In some specimens there is only a pale orange tinge to the feathers in the areas which will become red.

Two of the immature males are undergoing a complete molt into adult plumage. All the adults are molting.

This red mountain weaver finch is a bird of the Alpine zone but restricted to the vicinity of forest. Grassland is essential to it for it appeared to feed exclusively on grass seeds, but it was always found along the edge of the forest and in the little forest glades. Usually found singly, occasionally in couples, it was a silent bird, and when alarmed it flew into the forest, perching in the low shrubs.

Several birds examined had only grass seeds in their gullets.

Lonchura castaneothorax nigriceps (Ramsay)

Baroka: 1 ♀ ad.; April 5.—Port Moresby: 1 ♂ ad.; October 10 (Zimmer).—Samarai: 1 ♂ ad., 1 ♀ ad.; September 27, 28 (Hamlin).

Found only near sea level.

Wing: ♂ ad. 51, 57; ♀ ad. 50, 51.

None of these specimens is molting its wing.

The only individuals seen in 1933 were two at Baroka on April 5 and 19, where they were feeding, in company with a dozen *L. caniceps* in a little patch of rice on the edge of an extensive swamp. The gullet of the specimen collected contained grains of rice in the milk stage.

Lonchura grandis grandis (Sharpe)

Baroka: 1 ♀ imm.; April 19.—Mafulu: 1 ♂ ad., 1 ♂ imm., 3 ♀ ad., 1 ♀ imm.; October 25–November 4.

Found near sea level and at 1250 meters.

Wing: ♂ ad. 54; ♀ ad. 52, 53, 53; ♂ imm. 53; ♀ imm. 49, 55.

None of the adults is molting nor is any in breeding condition.

This finch was seen only at Baroka, where occasionally a few individuals came into a small plot of rice on the edge of the swamp. In the mountain-valley grassland at Mafulu, however, it was not uncommon, and single birds or small parties were occasionally seen. One specimen, shot on the rice patch, had eaten rice in the milk stage.

Lonchura caniceps caniceps (Salvadori)

Oriropetana: 1 ♂ ad.; June 5 (Zimmer).—Baroka: 3 ♀ ad.; April 2–7.—Kubuna: 2 ♂ ad., 1 ♂ sub-ad., 1 ♀ sub-ad.; December 12.

Found up to 100 meters.

Wing: ♂ ad. 49, 49, 50, 51; ♀ ad. 47, 49, 51.

The sub-adult specimens are molting into the adult plumage. None of the adults is molting; one female taken April 2 had the ovary enlarged.

No finch was found commonly in the lowlands of New Guinea, but this species was the most frequently encountered. On March 18, near Port Moresby, I saw several small flocks of these finches about a swampy area of savanna (near the Twelve Mile); a single bird was seen at Rona on March 16; at Baroka a dozen or so birds were often found in the little patch of rice on the edge of the swamp, where they were feeding on the grain, still in the milk stage. At Kubuna the shooting boys shot four and I saw two in the grass along the road through the forest.

At Port Moresby I was told that in September and October finches, perhaps of this species, appear in large flocks, presumably when the grass seeds are ripe. The mid-mountain valley representative of this species is sometimes found in flocks of hundreds.

There is the possibility of this species, and other species if they are common enough, assuming economic importance. The Government is attempting to introduce the growing of rice in the extensive Mekeo plain and it is possible that these rice-eating birds might congregate in sufficient numbers to have an effect on the yield. In Madagascar, where rice is extensively grown, a finch (*Foudia madagascariensis*) gathers in great numbers to feed on the ripening grain. There, watches are stationed to frighten away the birds by throwing stones or by shaking crude chimes made of dry bamboo. These chimes, set up in various parts of the field, are shaken by cords running to a central, elevated platform.

Lonchura caniceps scratchleyana (Sharpe)

Mafulu: 8 ♂, 12 ♀, 1 ♀ (?); October 1–November 17.

Collected at 1250 meters; seen commonly up to 1800 meters, evidently a mountain race of *caniceps*.

Wing: ♂ (8) 48–52 (49.3); ♀ (12) 47–50 (49).

L. c. scratchleyana is a very distinct race, distinguished by the much lighter brown back and upper wing, the light earthy brown under parts, the very restricted black abdomen, and the pale yellow rump, upper tail-coverts, and tail. There are specimens from the Angabunga River and the Aroa River in the Rothschild collection. The race *kumusii*, known only from the Kumusi River, is quite different from *scratchleyana*, being more like *caniceps*, but differing from it in being somewhat lighter, more

brownish on the back and upper wing. As with *caniceps*, the female is slightly duller than the male and has more rufous mottling on the crown.

One male and one female, both from October, are molting their wings. None of the specimens were in breeding condition though several of the October birds had slightly enlarged gonads.

This was a very common bird in the mountain-valley grasslands of the upper Tropical zone.

This species was a common bird in both the Auga and Vanapa Valley grasslands. It was usually encountered in small parties of two or three up to twenty, but in the Vanapa Valley, the first of June, I saw a flock of several hundred. They frequent the grass and mixed grass and brush areas and feed on grass seeds.

Lonchura monticola (De Vis)

Mt. Albert Edward: 6 ♂ ad., 1 ♂ (?), 7 ♀ ad., 2 ♀ imm., 1 sex (?) ad.; June 16–24.—Murray Pass: 2 ♂ ad., 2 ♀ ad., 4 ♂ imm., 5 ♀ imm.; July 20–Aug. 5.

Found commonly at 2800 and 3680 meters.

Wing: ♂ ad. (8) 62–64 (62.9); ♂ imm. 61, 62, 63, 63; ♀ ad. (9) 62–63 (61.3), ♀ imm. (7) 60–63.

The immature birds are in first-year plumage. A few birds in adult plumage are just finishing the molt from the first-year plumage. This molt occurs very early as several birds that have completed it still have their skulls incompletely ossified. De Vis (1897, Ibis, p. 388) has described the immature plumage of the female; that of the immature male is similar.

This was a common bird of the Alpine zone grassland on top of the Wharton Range, where we recorded a flock on Mt. Albert Edward itself at 3900 meters. Though sometimes seen in the open grass country far from timber, they appeared to prefer the vicinity of trees, shrubs, tree ferns, or rocky places, on which they perched unless alarmed. In Murray Pass they were fairly common in the tree-fern country. The adults were usually seen in flocks of twenty to fifty birds, these flocks rarely containing a few birds in immature dress. The immature birds tended to form smaller parties by themselves, sometimes of no more than three or four birds, though one flock contained about twenty immature birds.

These flocks fed on grass seeds, either on the ground or from the standing grass on which they perched. The flocks of adults were usu-

ally somewhat nervous, and when alarmed the flock flew up to perch closely grouped in nearby trees or shrubs, or on exposed rocks. The immature birds were less shy and nervous than the adults. With one shot I once killed eleven of these birds.

Lonchura leucosticta (D'Albertis and Salvadori)

Wuröi: 1 ♂ imm.; January 23.

Taken near sea level.

Wing 49.

This is an immature specimen with skull incompletely ossified. This species has been known only from the type collected by D'Albertis sixty years ago. Mayr has compared the type, now in the Genoa Museum, which was taken on the Fly River by D'Albertis. Salvadori has given a very good description of this specimen (1881, Ornit. Pap. Mol., II, p. 437). The white shaft-streaks of the head are denser on the lores and the superciliary line; they are also broader on the ear-coverts and cheeks, gradually merging into the white spotted feathers on the sides of the breast. The bird is just molting into a fresh plumage, some of the body-feathers, tertials, and the central tail-feathers being already renewed. It is adult and measures: wing, 50; tail, 36.5.

Our immature specimen belongs almost certainly to this species. It has the light throat of *leucosticta*, the unicolored abdomen, the indications of light marks on the breast, ear-coverts, cheeks, superciliary, and upper wing-coverts where they are in *leucosticta*. It has the same broad buffy edges on the inner web of the wing-feathers and dark upper tail-coverts. A new feather of the next plumage, growing in on the breast, has a white spot.

This specimen, shot by a native boy, who said he shot it from a large flock, was the only specimen of the genus *Lonchura* secured in south New Guinea. No other was seen!

Erythrura trichroa sigillifera De Vis

Deva Deva: 1 ♂ ad.; May 31 (Hamlin).—Mafulu: 2 ♂ ad.; November 2, 4.—Bella Vista: 1 ♀ imm.; November 7.—Mt. Tafa, west slope: 1 ♂ ad., 1 ♂ imm., 1 ♀ ad.; September 2–15.

We found this species from 1200 to 2400 meters; Hamlin's locality is at 770 meters.

Wing: ♂ ad. 63, 63, 64, 65; ♂ imm. 62; ♀ ad. 63; ♀ imm. 61.

One November male is molting; no specimens were in breeding

condition but a November male and a September female had slightly enlarged gonads.

This was a forest bird, feeding in the tops of the low sub-stage. Two stomachs examined contained small seeds.

Erythrura papuana Rothschild and Hartert

Mt. Tafa, east slope: 4 ♂ ad.; May 11–26.

Taken at 2000 meters.

Wing: ♂ ad. 66, 67, 68, 69.

None of the specimens is molting; the two taken May 25 and 26 have their testes beginning to enlarge.

Neochmia evangelinae evangelinae D'Albertis and Salvadori

Dogwa: 5 ♂ ad., 6 ♂ imm., 5 ♀ ad., 6 ♀ imm., 2 sex (?) imm., February 14–25.

Found only at Dogwa, which is about twenty miles inland and but little above sea level.

Wing: ♂ ad. 45, 46, 46, 47; ♂ imm. 45, 45, 46, 47, 47, 48; ♀ ad. 44, 45, 45, 45, 47; ♀ imm. 44, 45, 45, 46, 46, 47.

Color of soft parts: adult male, iris light brown, bill dull waxy red, gray about nostril and a very narrow gray base to sides of mandible, feet dusky yellow; immature male, iris light brown, bill dusky, strongly tinged with red on sides, and a narrow gray base to sides of mandible, feet grayish horn yellowish behind.

The immature birds are in first-year plumage; none shows wing molt but several are starting to change the body plumage for that of the adult. Four of the adult males and two of the adult females are molting. One female was laying.

The form *albiventer*, from north Queensland, is very similar to the New Guinea bird, and appears to differ from it only in its larger size. Measurements of adults from Watson River, Claudie River, and Archer Creek are: ♂ 49, 50, 50; ♀ 47. Until the distribution of this form and *phaeton*, which differs chiefly in having a black abdomen, are understood in Queensland, it is advisable to consider *evangelinae* a species with two races as follows:

N. e. evangelinae, south New Guinea
N. e. albiventer, north Queensland

This species was not found at Wuroi, and though a considerable number were found at Dogwa, it was not widely distributed, being

found in only a few places. Usually these birds were found in swampy places where there was tall grass. Pandanus often grew there and when alarmed these birds usually perched on the pandanus leaves. Once, however, I found a small party in a patch of tall, tussocky grass on a dry, open hill top, but they were not found in the savanna. These beautiful finches were found in parties of three or four up to twenty. They fed on grass seeds, and perched on the coarse grass stems. They were rather tame, allowing a close approach. When startled into flight, they behave as a scattered party, not a close flock as does *Lonchura caniceps*, for instance. They usually fly but a short distance and sit nervously twitching their rather long tails, hopping about, and calling a soft, musical "pit," frequently repeated. Birds of different ages and sex are found in the same flock.