A COLLECTION OF BIRDS FROM NORTH AND NORTH-CENTRAL CELEBES.

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When Dr. W. L. Abbott, the well-known explorer, reluctantly gave up his exploration in eastern Asia, on account of ill-health, he made arrangements with the Smithsonian Institution to have this work continued. H. C. Raven was selected to carry out his plans and started operations in northeast Borneo in 1912. After making a good collection there and becoming familiar with the Malay language and the handling of natives, he purchased a small sailing vessel and with a crew of natives sailed from Samarinda, Borneo, to Paloe Bay, Celebes, where he arrived on July 16, 1914, working northward along the west coast of the northern peninsula as far as Kwandang. He then retraced his course as far as Kampa, returned to Borneo, February 28, 1915, and came home to the United States for a well-merited vacation. On this trip Mr. Raven did not penetrate far inland and while he made a large collection of birds, it contained no novelties. He obtained material at the following localities on this voyage:

Dampelas.	Toli Toli.
Kapas Bay.	Kampa.
Kwala Besar.	Tandjong Penjoe.
Boesak.	Tandjong Tango.
Paleleh.	Soemalata.
Paleleh River.	Kwandang.

Mr. Raven next returned to Celebes and began work in the extreme northern tip at Likoepang, January 13, 1916. While in the north he collected birds at the following localities:

Likoepang.	Ayermadidi.
Teteamoet.	Goenoeng Kalabat.[1]

[1] Mr. Raven has furnished the following note on this mountain: "My camp was at about 1,700 meters (5,600 feet), where the forest is only semitropical in appearance. Practically all the trees are heavily coated with moss and are not tall. Kalabat is the highest mountain in Minahassa, having an altitude of 2,020 meters (6,617) feet).

Koeala Prang.
Batoe Hangoes.
Batoe Hangoes Baroe and near by at Roemoesoem.
Pulo Lembeh.
Manembo Nembo.
Toemaratas.
Temboan.
Langowan.

All the above localities are in Minahassa.

Mr. Raven then left the north and went to Parigi in middle Celebes, on the Gulf of Tomini, at the base of the northern peninsula, where he arrived August 27, 1916, and worked north along the coast to Tinomboe, collecting birds at the following stations:

Parigi.
Toboli.
Bumbaroedjaba (altitude about 915 meters (3,000 feet)).
Laboea Sore.
Kasimbar.
Manililí.
Toeriboeloe.
Tinomboe.

From Toboli he crossed the northern peninsula to Paloe Bay and started south up the valley of the Paloe River, collecting birds at:

Dolo.
Koelawi.
Goenoeng Lehio (altitude, 7,166 feet), to the southwest of Lake Lindoe.
Toewoeloe.
Winatoe.
Rano Lindoe.

Returning to the coast, he collected at Tamboe (north of Donggala), Dampelas, and Lende, when he started up the Paloe Valley again and collected birds at the following stations:

Kalaware.
Gimpoe.
Toare, Bada.
Doda, Besoa.
Taewo Mountain, Besoa.
Napoe, Watoetaoe.
Rano Rano (altitude, 1,800 meters).
Pinedapa.

On this last trip inland he passed to the west of Lake Lindoe (the unnamed lake to the northwest of Lake Posso on Meyer and Wiglesworth's map) and continued south to the district of Bada, which is west of the range of mountains to the west of Lake Posso and about at the same latitude as the southern border of this lake. He then turned north and northeast, keeping to the west of the mountains west of Lake Posso until he crossed the range just to the east of Rano Rano (on the west slope of the mountains near the summit) and continued to the Gulf of Tomini at Mapane. Pinedapa is inland a short distance from Mapane. Mr. Raven furnishes the following note:

Besoa is a large level plain, undoubtedly a former lake bed, surrounded by mountains, which are covered by heavy forests; the tops of most of the

mountains are above 2,000 meters, the level plain is said to be about 1,300 meters, or perhaps more. The plain is perhaps 2 or 3 miles wide by about 3 miles long and most or the area is covered with several varieties of long coarse grasses and reeds; in several places there are wet rice fields and the natives have made a few clearings on the lower slopes of the mountains. In some places the lower slopes are covered with grass.

When the United States entered the World's War, Mr. Raven placed himself at the disposal of the authorities at Manila, but continued to collect birds until early in 1918. While awaiting orders he made a scouting voyage around the south coast of Celebes, collecting no birds, however. He then returned home.

Some of the above localities were visited several times and he seems to have crossed the northern peninsula more than once. I had hoped that Mr. Raven would supply me with detailed information on the character of the country of his various collecting stations but before he could do so he left for Africa on a long collecting trip and then for Australia. Rather than delay the report upon his Celebes work any longer, I have decided to publish this catalogue of the birds collected on the island, relying for the localities upon his field catalogues, the specimens, and a large scale map upon which Mr. Raven has marked his route.

It is quite unnecessary to say that the collections were very large; most of the species in good series of well-prepared skins. All the skins were prepared personally by Mr. Raven, who had no other white man with him and found it too difficult to teach the Buganese to skin birds. His trip to Lake Lindoe was made by pack train of ponies with pack saddles devised and made by him. On his last trip into the interior his supplies from the United States were held in Singapore on account of the war, and he had to subsist upon the country, which he found in a deplorable condition on account of a prolonged and almost unprecedented drought.

In several preliminary papers[2] the following birds have been named from Mr. Raven's Celebesian collection:

Scolopax celebensis.
Anas superciliosa percna.
Rhamphococcyx centralis.
Collocalia vestita aenigma.
Caprimulgus affinis propinquus.
Dendrobiastes hyperythra jugosae.
Celebesia abbotti.
Cataponera abditiva.
Megalurus celebensis.
Cryptolopha nesophila.
Pachycephala pluviosa.
Coracornis raveni.
Zosterops atrifrons surda.
Pseudozosterops striaticeps.
Munia punctulata particeps.
Lamprocorax montosa.
Enodes erythrophrys centralis.
Dicruropsis montana.

[2] Proc. Biol. Soc. Wash., vol. 31, 1918, pp. 155–160; vol. 32, 1919, pp. 93–96; vol. 33, 1920, pp. 55–58; vol. 34, 1921, pp. 55–58.

Two of the species required new generic names, namely, *Coracornis* and *Celebesia;* while *Scolopax celebensis* and *Megalurus celebensis* belong to genera hitherto unreported from Celebes.

Besides the above new forms, the collection contains the two following additions to the avifauna of the island: *Nyroca australis* (belonging to a probably unnamed resident form), and *Poliomyias mugimaki.* Leaving out of consideration the mere segregation of previously reported species, Mr. Raven has added 5 genera and 12 species to the avifauna. A wonderful showing, considering that he covered less than half the area of the island.

Altogether, Mr. Raven's Celebesian collections contain 202 forms of birds as at present worked out, a larger number than had been taken personally by any earlier collector in the same area. The Sarasins, apparently, have a larger number to their credit, but they covered more territory and were on the island for a longer period.

When it is taken into consideration that all of Mr. Raven's remarkable discoveries came from the mountains of the north-central part of the island, it can readily be appreciated that the avifauna of Celebes is far from well known or will be for many years to come. There are higher mountains (Latimodjong) than the Bonthian Peaks in the southwest peninsula that have not been worked, and the northeast and southeast peninsulas are almost unknown, though the latter is said to present a rather uninteresting appearance, but it should nevertheless be explored before a complete knowledge of the avifauna as a whole can be obtained. Even the north peninsula is none too well known; there has not been enough collecting done in the mountains, except at the extreme northern end in the Minahassa district. There has been considerable work done in the extreme south around Macassar and the Bonthian Peaks. The Sarasins, I understand, have made quite a thorough survey of the whole island, but they were not primarily interested in birds and outside of the records of their collections in Meyer and Wiglesworth's Birds of Celebes and two short papers by Doctor Meyer [3] nothing has been published upon their bird collection as a whole. Even Meyer and Wiglesworth lament the inadequate data upon the distribution of the birds in the island and predict that it will be a hundred years before any finality is arrived at in this respect. This should only stimulate naturalists to greater exertions, because civilization is advancing at such an accelerated pace, and the introduction of exotic animals to different parts of the world is becoming so prevalent, that the balance of nature is liable to be overthrown at any time and species disappear before zoologists become aware of their existence.

[3] Notes Leyden Mus., vol. 23, 1903, pp. 185–189; vol. 24, 1904, pp. 232–235.

As Meyer and Wiglesworth[4] have already remarked, the avifauna of Celebes is more closely related to that of the Philippines than that of any of the surrounding islands; this seems to be especially true of the north. In the south, however, a southern element has worked in and quite frequently a species will have a representative form in both ends of the island. Mr. Raven's collections would seem to indicate that the southern forms extend much farther to the north than has hitherto been suspected.

Since the publication of Meyer and Wiglesworth's great work[5] very few papers have been published upon the avifauna. Besides the two papers by Doctor Meyer mentioned above, Vorderman[6] has published a list of 118 forms of which none appear to be described as new; Madarás[7] named a ground thrush, *Geocichla frontalis;* Charles Hose[8] published a list of the birds taken by him during a two months' collecting trip to the northern districts, especially on Mount Musarang, but the only new bird secured by him had already been named by Sharpe some years previously and included by Meyer and Wiglesworth; Doctor Hartert[9] published a paper on the birds of Tukang-Besi Islands and Buton; most of the mention of Celebes otherwise has been in short notes, the revision of genera, or incidentally in papers on other regions. Naturalists seem to have conceived the idea that Celebes was well-worked so far as birds are concerned, thus instead of stimulating research, Meyer and Wiglesworth's work would seem to have discouraged it.

In the following notes upon the forms, after a list of localities represented, I have endeavored to confine myself to facts supposed to be additional to those given by Meyer and Wiglesworth, or to other items of interest to emphasize some fact. It is quite possible that I have overlooked some of the literature, but this has become so immense in recent years that it is almost inevitable; then authors have a habit of revising genera in a paper whose title would be easily passed over by an investigator dealing with a definite locality.

The species have been arranged in the order of Sharpe's hand list, though an arrangement following Meyer and Wiglesworth would have facilitated comparison with that work, but an arrangement that begins with the hawks and ends with the grebes seems so fundamentally wrong and archaic that comparisons with modern lists of other countries are too difficult to make.

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[4] Birds of Celebes, p. 130.

[5] Birds of Celebes, 2 vols., continuously paged, quarto, 1898, pp. v–xxxii, 1–962, 7 maps, 45 colored plates.

[6] Natuur. Tijds. Nederl. Indie, vol. 58. 1898, pp. 26–121.

[7] Természetrajzi Füzetek, vol. 22, 1899, pp. 111–113, pl. 8.

[8] Ornis, vol. 12, 1903, pp. 77–177.

[9] Nov. Zool., vol. 10, 1903, pp. 18–38.

Mr. Raven's field notes have been put in smaller type followed by his initials.

For the loan of material used in determining some of the species and in characterizing two new forms, I am indebted to the authorities of the American Museum of Natural History, New York, and to J. H. Fleming, Toronto, Ontario.

Family MEGAPODIIDAE.

MEGAPODES.

1. MEGAPODIUS CUMINGI GILBERTII Gray.

One male, Pinedapa, February 6, 1918.

The United States National Museum contains a small series of this species from the Philippine Islands (Fuga, Luzon, and Palawan). This series shows quite a little variation, both in size and color; the birds from Fuga Island (north of Luzon) are large and dark (varying from sepia to bister brown), while those from Palawan are smaller and much lighter and more reddish brown (near tawny olive) above. The only specimen from Luzon is an unsexed bird from the Taal Volcano; it is lighter than the Fuga Island specimens but much darker than those from Palawan. It is closer to the former, however, and could be placed with them without violence. The single Celebes specimen listed above is smaller than any other in the series before me; in color it is darker above than the Palawan bird but not as dark as that from Fuga and does not fit into either series. From the above it is evident that this species needs revision, but one which my material is too scanty to undertake. As the Celebes bird is certainly not the same as that from Palawan or the northern Philippine Islands, the only safe course it seems to me is to adopt the oldest name founded upon a Celebes specimen and use it. This happens to be *Megapodius gilbertii* Gray [10], which makes the distribution more intelligible also, as otherwise a closely related form (*Megapodius sanghirensis*) would come in between.

There is one egg in the collection from Celebes without definite locality. It is a light vinaceous-cinnamon and measures, 79.6 by 50.8 mm.

Meyer and Wiglesworth [11] have given a table of measurements of their series which, taken in connection with that in the National Museum seems to show that the Celebes bird is smaller than that of the Philippines. The series before me measures as follows:

[10] Proc. Zool. Soc. Lond., 1861, p. 289. [11] Birds of Celebes, vol. 2, 1898, p. 672.

Number.	Sex.	Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
			mm.	*mm.*	*mm.*	*mm.*	*mm.*
201738	Male	Fuga Island	230	74. 5	22. 5	65. 5	40. 5
201739	do	do	235	61. 5	22	59. 5	39. 5
192551	Female	do	238	73. 5	19	68	41
233660	Male	Palawan	217	68. 5	18	64	40
233006	do	do	214	73	18. 5		
233007	do	do	207	63. 5	18. 5	64	39
107647	do	do	220	77	17	64. 5	42
211299		Taal Volcano, Luzon	225	74	22	66	43
251687	Male	Pinedapa, Celebes	195	67. 5	16	60	40

2. MEGACEPHALON MALEO (Hartlaub).

One adult female, Bumbaraedjaba, November 3, 1916; one female immature, Laboea Sore, November 14, 1916; one adult male, Koeala Prang, May 29, 1916.

The adults still show the beautiful salmon-buff of the breast and belly and the immature is tinged with pink, but of a much lighter shade.

The immature bird has the top of the head feathered, forming a crest, and the throat is also feathered. The throat is white and the forehead and crest have some white markings scattered through them. The specimen is about half grown.

Seven eggs were taken at Roemoesoem, June 10, 1916. One was broken in shipment. The remainder are of the usual megapode shape and vary in color from light vinaceous cinnamon to light pinkish-cinnamon. They measure as follows: 109.3 by 63.4; 106.1 by 61.2; 107 by 64.5; 106.3 by 60.7; 103.4 by 61; 109.6 by 62.7.

Family PHASIANIDAE.

PHEASANTS AND FOWL-LIKE BIRDS.

3. EXCALFACTORIA CHINENSIS MINIMA (Gould).

One male and two females, Toli Toli, December 10–16, 1914; one male, Dolo, December 25, 1916.

The above males have been compared with a good series from the Philippines, one skin from the Malay Peninsula, and two from Java. The single mainland bird is lighter than those from the Philippines. All the Philippine specimens agree, except one, which differs only slightly, in having no rufous in the wing and in this character agrees with the minland bird. The Javan males are very richly colored, with the back much mixed with slate color and consequently the black markings are much reduced; the wings with much rufous; the rufous below much increased in extent. No birds

from the large series before me match them in the above characters; the bills also seem to be a little larger. This has led me to believe the Javan bird to be separable and I have named it *Excalfactoria chinensis palmeri*,[12] in honor of the late William Palmer, who collected the type.

The two Celebes males are small, the wings contain some rufous, but not to the same extent as the Javan race; the back is like the Philippine bird but not quite so dark, and they appear to be lighter below. They apparently represent a recognizable race that Gould[13] named and which will stand as above.

I have seen no males from Australia, but judging from the plate in Mathew's Birds of Australia[14] it is a very dark richly colored bird with no rufous in the wing and well worthy of subspecific recognition, if these characters hold good.

The females show considerable individual variation and the racial differences are not so well marked. The mainland bird appears to be lighter than the island forms represented in my series. One Australian female before me is very dark, but not as dark as the bird represented by Mathews.[14] It can be almost matched by a specimen from Mindanao (No. 191942); in fact, the Philippine bird is possibly a little darker.

One of the females taken at Toli Toli, December 16, is a bird of the year still in the streaked plumage below.

The series available before me averages as follows:

	Wing.	Culmen.	Tarsus.	Middle toe.
MALES.				
	mm.	*mm.*	*mm.*	*mm.*
One from Malay Peninsula	67. 5	11	21	18
Two from Java	71. 5	11. 2	22. 7	18. 2
Nine from Luzon	68. 6	10. 2	19. 1	16. 4
Three from Mindanao (2) and Basilan (1)	69. 2	10. 3	19. 5	16. 8
Two from Celebes	64. 7	9. 7	18. 2	16. 2
FEMALES.				
Four from Tenasserim (1) and Malacca (3)	69. 9	10	20. 2	16. 7
Three from Java	69. 5	11	20. 3	17. 7
Four from Luzon	72. 2	10. 5	19. 2	16. 2
Three from Mindanao	69	10. 5	19	16. 2
One from Celebes	64. 5	10. 5	17. 5	16. 5
One from New South Wales	68. 5	9. 5	18	15. 5

[12] Proc. Biol. Soc. Wash., vol. 32, 1919, p. 93.
[13] Proc. Zool. Soc. Lond., 1859, p. 128.
[14] Vol. 1, pt. 1, 1910, pl. 12.

4. GALLUS GALLUS GALLUS (Linnaeus).

One male, Kampa, February 12, 1915; one male, Tandjong Penjoe, February 27, 1915; two females, Parigi, September 12, 25, 1916; one immature male and female, Laboea Sore, November 14, 26, 1916; one downy young, Gimpoe, August 21, 1917; one immature male and one immature female, Pinedapa, January 22, 1918.

The two adult males from Celebes have been compared with one from east Sumatra and a fair series from the mainland, the Philippines, and three from Java. There is a good deal of individual variation; hardly any two specimens are exactly alike. The mainland and Philippine specimens, making allowances for variation, seem to be essentially the same, and those from Celebes are too close to those of the Philippines to warrant separation. The three Javan males differ from any before me in having the occiput darker and the neck hackles more truncate, giving to the lower border where they rest upon the back a square appearance, quite different from those of any other region. Robinson and Kloss [15] have noticed this character in the Javan bird and have shown that *Gallus bankiva* Temminck is the name to use for it, and it should stand in the future as *Gallus gallus bankiva.*

The name of the red jungle fowl has received a good deal of attention in recent years, of which only the more recent need be considered. Bangs and Penard [16] tried to stabilize the nomenclature of the races and reached the conclusion that the names should stand as follows:

(*a*) *Gallus gallus bankiva* Temminck, for the Sundanese bird.

(*b*) *Gallus gallus ferrugineus* (Gmelin), for the eastern mainland race.

(*c*) *Gallus gallus gallus* (Linnaeus), for the western mainland race.

This is all very well, but Robinson and Kloss [17] have called attention to the fact that Linnaeus himself in the twelfth edition of the Systema Naturae (p. 270), had already restricted the type locality to Pulau Condor off the mouth of the Mekong, and this applies with equal force to the tenth edition of the Systema Naturae (p. 158), where the same locality is given. In a later article Kloss [18] says: "Nevertheless we can not accept *Phasianus gallus* of the Systema Naturae as the name of the Red Jungle Fowl for he had used it previously in the Fauna Succica for domesticated European birds and it can not be employed again for something else." In this

[15] Records Indian Mus., vol. 19, 1920, p. 14.
[16] Proc. New England Zool. Club, vol. 7, 1919, pp. 23–25.
[17] Records Indian Mus., vol. 19, 1920, p. 13.
[18] Idem, p. 182.

contention Kloss is in error, Linnaeus was nonbinomial in the Fauna Suecica until the 1761 edition and the names used there before that time have no standing. Now as Linnaeus himself restricted the type locality by writing: "India orientali: Pouli candor. etc.," when he named the species in the first work in which he was consistently binomial and which is universally recognized as the starting point of our modern nomenclature, it seems to me the three races of the Red Jungle Fowl that have been recognized to date should stand as follows:

(*a*) *Gallus gallus gallus* (Linnaeus), Syst. Nat., ed. 10, 1758, p. 158 (Pulau Condor, off the mouth of the Mekong).

(*b*) *Gallus gallus bankiva* Temminck, Pig. et Gall., vol. 2, 1813, pl. 87 (Java).

(*c*) *Gallus gallus murghi* Robinson and Kloss, Records Indian Mus., vol. 19, 1920, p. 14 (Chirala, Gya District, Bihar).

The ranges will be the same as those given by Robinson and Kloss in the last paper cited above.

Family TRERONIDAE.

FRUIT PIGEONS.

5. DENDROPHASSA GRISEICAUDA GRISEICAUDA (Wallace).

A good series from the following localities: Kwala Besar, August 24, 1914; Tandjong Penjoe, February 19–25, 1915; Likoepang, March 4–10, 1916; Toemaratas, July 6–8, 1916; Parigi, September 25, 1916; Toboli, October 25, 1916; Koelawi, January 31, 1917; Rano Lindoe, March 6–15, 1917; Gimpoe, August 8 and 28, 1917; Doda, Besoa, October 24, 1917; Pinedapa, February 8, 1918.

Treron griseicauda G. R. Gray[19] is a nomen nudum and when Wallace[20] took up the name and published a description, basing it upon the Sula Island and Celebes birds (Salvadori[21] states the types as from Macassar), he first gave it nomenclatural status, unless Schlegel's[22] use of the name should prove to be prior. This would make *Osmotreron wallacei* Salvadori[23] a pure synonym of *Treron griseicauda* Wallace and the name of the Java race would become, *Dendrophassa griseicauda pulverulenta* Wallace.[24]

A young male taken at Doda, Besoa, October 24, 1917, is not long from the nest, if indeed it had left it. It is parrot green, with the

[19] List Birds Br. Mus. Columbae, 1856, p. 10.
[20] Proc. Zool. Soc. Lond., 1862, p. 344, published February, 1863.
[21] Cat. Birds Brit. Mus., vol. 21, 1893, p. 42.
[22] Nederl. Tijds. Dierkunde, vol. 1, 1863, p. 66.
[23] Cat. Birds Br. Mus., vol. 21, 1893, p. 42.
[24] *Treron pulverulenta* Wallace, Ibis, 1863, p. 319 (Java).

mantle, wing-coverts, secondaries, and chest edged with lemon yellow, the edging on the chest very narrow; the center of the throat grayish; belly white with yellow tips to the feathers; under tail-coverts white, tipped with light yellow and with a dark green mark on the inner webs of the feathers; outer tail-feathers blackish basally with a sub-terminal gray spot edged with green and narrowly tipped with white, the outer web green; the other tail-feathers are similar, except the white edging becomes yellow and narrower as the central feathers, which are without the gray subterminal spot, are approached.

A slightly older specimen taken at Gimpoe, August 8, differs from the above in the tail pattern, the outer feathers being slate gray on the inner web with a darker subterminal bar, the tip gray, narrowly edged with yellowish white.

Dendrophassa is common at Pinedapa but as they feed mostly on fruit of the taller trees here they are difficult to shoot; in other places I have seen them feeding on the fruit of small trees and saplings. They are very fond of the small yellow fruit of the Waringan. The flight is very rapid and when taking wing they make a rather loud clapping of the wings as do nearly all the pigeons and doves in Celebes.—H. C. R.

6. DENDROPHASSA VERNANS PURPUREA (Gmelin).[25]

One male, Kwala Besar, August 24, 1914; one male and two females, Tandjong Penjoe, February 18–20, 1915; three males, Likoepang, March 11–12, 1916; one male and one female, Parigi, September 19, and October 5, 1916.

An immature male taken at Likoepang, March 11, acquiring the adult plumage, has the gray of the throat, cheeks, and forehead mixed with light green, as also the purple jugular band, the orange breast patch is separated into two spots by a green band down the center. Several of the above males have the throats and foreheads washed with greenish, the last traces of the immature plumage.

The above series has been compared with quite an extensive one from the Philippines, the mainland, Borneo, and Java. From the mainland form the Celebes bird differs in having the top of the head, back, breast, and purple band noticeably lighter in color; in fact, the gray of the head in Celebes specimens is slightly lighter even than in the two males before me from Java, though they seem to agree in other respects and the difference is slight. Even Philippine specimens appear to be slightly lighter than birds from the mainland, especially in the southern islands. Bornean specimens seem to agree with those from Java.

[25] For the use of this name see Hartert and Goodson, Nov. Zool., vol. 25, 1918, p. 355. Since the above was written Oberholser (Journ. Wash. Acad. Sci., vol. 14, 1924, p. 298) has named the Celebes bird, *Dendrophassa vernans zalepta.*

The males of the series before me average as follows:

	Wing.	Tail	Culmen.
	mm.	*mm.*	*mm.*
Five from Celebes	145. 9	85. 8	17. 2
Seven from Mindanao and adjacent islands	147. 5	87. 8	17. 4
Seven from Luzon	152. 6	90. 1	16. 7
Six from Borneo	142. 1	84. 6	16. 9
Two from Java	141. 5	87. 5	16. 7
Seven from Tenasserim and the Malay Peninsula	151. 2	87. 7	16. 9

7. LEUCOTRERON FISCHERI CENTRALIS (Meyer).[26]

One female, Toewo Mountain, Besoa, November 3, 1917; five males and two females, Rano Rano, December 11–28, 1917.

I have none of the races of *Leucotreron fischeri* for comparison, but from the locality, the above specimens belong to Meyer's bird, which, judging from descriptions alone, is only a form of the older race.

8. LEUCOTRERON EPIA Oberholser.[27]

One male, Paleleh, November 10, 1916; one female, Laboea Sore, November 21, 1916; two males and one female, Gimpoe, August 13–22, 1917; one male and one female, Pinedapa, January 12, and February 4, 1918.

The male taken at Paleleh is immature but almost adult. The crown, occiput, and cheeks have a greenish wash; the bill is dark, otherwise it is much like the adult, though smaller. The rectrices are narrower than in the adult and are 15 in number; 14 seems to be the normal condition.

Bill in life yellow—H. C. R.

9. HAEMATAENA[28] MELANOCEPHALUS MELANOSPILUS (Salvadori).

A good series of both sexes and young from the following localities: Kapas Bay, November 23, 1914; Toli Toli, December 7, 1914; Tandjong Penjoe, February 19–27, 1915; Likoepang, February 26–March 12, 1916; Batoe Hangoes Baroe, June 11, 12, 1916; Toemaratas, July 4, 1916; Temboan, July 18, 1916; Gimpoe, August 7–22, 1917; Pinedapa, January 14–February 8, 1918.

In a young female obtained at Pinedapa, February 6, probably taken from the nest, though fully feathered, the under tail-coverts

[26] *Ptilopsus centralis* Meyer, Notes Leyden Mus., vol. 23, 1901, p. 188 (Poana Mts., south of Leboni).

[27] Proc. Biol. Soc. Wash., vol. 31, 1918, p. 48, for *Columba gularis* Quoy and Gaimard, preoccupied.

[28] For the use of this name in place of *Spilotreron*, see Richmond, Proc. U. S. Nat. Mus., vol. 53, 1917, p. 593.

are light greenish tipped with yellow, the longer ones with light carmine; the greater and middle wing-coverts are narrowly edged with yellow, forming two wing-bars; the chin is grayish; otherwise the body plumage is green; the tail is a reduced replica of the adults. A slightly older specimen, a male, taken at Gimpoe, August 9, has lost one wing-bar and the edging on the greater wing-coverts is reduced; the yellow-chin mark is appearing; the forehead is becoming gray; otherwise it resembles the other young. A young female of about the same age, from Pinedapa, February 2, is without the yellow throat. A young male taken at the same place and date as the latter seems to be acquiring the gray head, yellow throat, and black occipital spot simultaneously, which does not exactly agree with what Meyer and Wiglesworth (Birds Celebes, vol. 2, 1898, p. 609) have written.

The distinctive sexual plumage seems to be acquired at least as early as the post juvenal molt. From the above dates of young, the breeding season probably extends more or less throughout the year.

The crop of a male taken at Pinedapa, January 14, contained several hard red fruits, each about the size of the bird's head. A remarkable swift flyer; their coloration is very protective.—H. C. R.

10. MUSCADIVORES PAULINA (Bonaparte).

One male, Kwandang, October 5, 1914; one male and two females, Likoepang, March 3–6, 1916; one female, Koeala Prang, June 8, 1916; one male and one female, Laboea Sore, November 24, 28, 1916; one female, Koelawi, February 2, 1917.

All the above series show more or less coppery iridescence on the back in certain lights and it is especially strong in one of the females from Likoepang (No. 249113) but the male from the same locality has the most uniformly green back of the whole series. I share with Meyer and Wiglesworth doubts as to the specific validity of *Carpophaga pulchella* Walden.

The United States National Museum contains a specimen from Tobea Island, Buton Strait, Celebes (No. 234,087), which has the ear-coverts and hind-neck cinnamon-buff, deepening to cinnamon posteriorly and the specimen from Koelawi approaches it; these I consider individual variations only.

11. ZONOPHAPS FORSTENI (Bonaparte).

Two males, Toemaratas, July 6, 7, 1916; one male and one female, Rano Lindoe, March 3, 14, 1917; one male, Gimpoe, August 9, 1917.

The only species that is congeneric with the above is *Zonophaps poliocephala* (Hartlaub) of rather wide range in the Philippines; interesting as showing the close relations of the two faunas.

12. COMPSOENAS RADIATA (Quoy and Gaimard).

One male, Toemaratas, July 7, 1916; one male, Rano Lindoe, March 16, 1917; two males and one female, Rano Rano, December 23-27, 1917; two males Pinedapa, January 12 and 20, 1918.

As this species differs structurally from *Zonophaps* Salvadori, in having the inner web of the three outer primaries widened about the middle, then sinuated to the tips, instead of having the two outer primaries scooped out about the middle, I have erected the genus *Compsoenas* [29] for its reception. The only other species that appears to be congeneric with the above is, *Carpophaga mindorensis* Whitehead, of Mindoro, Philippines, but I have not handled a specimen of the latter; the plate [30] indicates close relationship, however, and emphasizes the derivation of the avifauna of northern Celebes.

The iris consists of two bands of color; the outer bright red, the inner black anteriorly with the posterior half orange.—H. C. R.

13. CRYPTOPHAPS POECILORRHOA (Brüggemann).

One male and one female, Goenoeng Kalabat, April 11 and 12 1916.

Crop filled with palm fruit.—H. C. R.

14. MYRISTICIVORA BICOLOR (Scopoli).

One male, Kwandang, October 5, 1914.

15. MYRISTICIVORA LUCTUOSA (Temminck).

One female, Kampa, February 14, 1915; one male and one female, Likoepang, February 26, 29, 1916; two males, Manembo Nembo, June 20, 1916; three males and two females, Parigi, September 19–28, 1916; one female, Toboli, October 21, 1916.

Family COLUMBIDAE.

PIGEONS.

16. TURACOENA MENADENSIS MENADENSIS (Quoy and Gaimard).

A good series from: Paleleh River, August 15, 1914; Kwandang, September 20, 1914; Toli Toli, December 19, 1914; Likoepang, March 9 and 12, 1916; Toemaratas, July 4, 1916; Laboea Sore, November 21, 1916; Koelawi, February 1 and 2, 1917; Gimpoe, August 20–27, 1917; Toeare, Bada, September 28, 1917; Pinedapa, February 4, 1918.

A male taken at Likoepang, March 9 (No. 249,118), has the foreneck, chest, and occiput a beautiful iridescent magenta purple, only slightly approached by a male from Laboea Sore (No. 250,083).

[29] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 51. [30] Ibis, 1896, pl. 11.

17. MACROPYGIA ALBICAPILLA ALBICAPILLA (Bonaparte).

A small series of adults and young from the following localities: Paleleh River, August 8, 1914; Toli Toli, December 3, 1914; Likoepang, March 4–12, 1916; Koeala Prang, June 14, 1916; Temboan, July 20, 1916; Rano Lindoe, March 19, 1917; Gimpoe, August 6–12, 1917; Toare, Bada, September 18–28, 1917.

This bird has been made a subspecies[31] of *Macropygia amboinensis* by several authors in the past, but a comparison with that species will convince any unprejudiced ornithologist that the differences between the two are more than subspecific.

Locally known (Likoepang) as *Koeoo;* the name being taken from its note.—H. C. R.

Family PERISTERIDAE.

DOVES.

18. STREPTOPELIA CHINENSIS TIGRINA (Temminck).

A good series of both sexes from the following localities: Soemalata, September 8, 1914; Toli Toli, December 10–13, 1914; Tandjong Penjoe, February 18–19, 1915; Likoepang, February 24–29, 1916; Manembo Nembo, June 22–24, 1916; Parigi, September 25–27, 1916; Toboli, October 25, 1916; Kasimbar, December 13, 1916; Koelawi, January 26–28, 1917; Rano Lindoe, March 7–24, 1917; Gimpoe, August 1–12, 1917; Pinedapa, February 15, 1918.

This large series seems to be subject to considerable individual variation but when compared with Javan birds, allowing for this variation, seem to be practically identical. Birds from the mainland (Malay Peninsula and Tenasserim) appears to be slightly darker and larger, but the differences are very slight and not worth recognizing by name.

The following averages will show how really close they are in size:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Eight males from the mainland	151. 6	136. 7	16. 4
Ten males from Celebes	146. 5	138. 7	15. 4
Two males from Java	148	144	15. 7

Many crops examined and found to contain paddy only.— H. C. R.

19. CHALCOPHAPS INDICA INDICA (Linnaeus).

One male, Gimpoe, August 5, 1917.

This specimen is lighter below than any specimen in an extensive series in the United States National Museum from various parts of

[31] See Cat. Bds. Brit. Mus., vol. 21, p. 353 (syn.) ; Nov. Zool., vol. 10, 1903, p. 35, etc.

the wide range of the species, but with only one specimen it is impossible to say whether this difference is constant.

20. CHALCOPHAPS STEPHANI STEPHANI Reichenbach.

One male immature, Manembo Nembo, June 22, 1916; one male and three females, Pinedapa, January 11–27, 1918.

Chalcophaps stephani is a forest bird, preferring forests which offer much shade so that the ground beneath remains damp even during dry weather. When feeding they walk and act much as domestic pigeons do and when alarmed often remain motionless for a moment and then fly up rapidly, usually causing a rustle amongst the leaves. Generally they fly but a short distance and then alight again, usually close to the ground (within 6 to 20 feet of the ground as a rule). In life the bill, which is weak and soft, is yellow; eyes dark brown; skin about eyes dull reddish; feet and tarsus reddish. The food of one examined consisted of fruit and insect remains.— H. C. R.

21. DIOPEZUS TRISTIGMATA (Bonaparte).

One male, immature, Temboan, July 22, 1916; one female, Laboea Sore, November 14, 1916; five males and four females, Pinedapa, January 19–February 8, 1918.

The above series shows quite a little variation within certain limits. Some specimens are much darker or browner than others. The majority of the skins have the upper-parts washed with an iridescent green, only a little iridescent purple showing on the upper mantle in certain lights, while a few birds have the mantle strongly tipped with a deeper iridescent purple and very little green. Some specimens have the purple nuchal band interrupted behind, but in the majority it is entire, though often very narrow posteriorly. The yellow of the chest is more extensive in some specimens than in others. In one specimen (No. 251732) the greater wing-coverts on the right side are largely white, but not on the other and as this is one of the specimens with deep iridescent purple tips to the mantle, the yellow of the chest most highly developed, the purple nuchal band very narrow, if not interrupted behind, and the plumage of the upper parts dark, I take it to be a very old bird.

The Temboan specimen (No. 249638) is immature; the feathers of the back and wing-coverts are edged with rusty, the breast on each side has some scattered russet-vinaceous feathers, and the nuchal band is broad throughout, light seal brown, with only one or two metallic purple feathers appearing; otherwise it is like the adult, except the iridescent purple of the mantle is very faint and the tail pattern is different as mentioned beyond.

The Laboea Sore female (No. 250088) has a smaller bill than those from Pinedapa.

A female from Pinedapa (No. 251736) is unique in the series. The jugulum and breast are dark gray and the breast is crossed

from the shoulders by an irregular bar of iridescent purple, dividing the yellow breast patch, which is poorly developed; and it is very dark above with much iridescent purple on the mantle. Like some other specimens the purple nuchal band is interrupted behind.

Salvadori's [32] description of the tail, which he uses as one of the characters to separate two Celebes forms in his key, is probably taken from a not fully adult bird in the case of his *tristigmata*, as none of the adults before me are as he describes this feature. All the birds before me, except the immature, have the five outer tail feathers slate gray with a subterminal black band. The immature mentioned above has only the two outer tail feathers slate gray with a subterminal black band, the next feather changing from olive to gray with a subterminal black band and gray tip, the next two olive with gray tips, and the remainder as in the adult. From the above, I judge, the skin of the northern form that he considered to be adult is not really so, and as mentioned above the nuchal band is either entire or interrupted in the same locality. As he had before him only one specimen of the northern bird and one from the south, it appears as if his *Phlogoenas bimaculata* is not well founded.

For *Phlegaenas tristigmata* Bonaparte, which differs structurally from *Gallicolumba* Heck (*Phlogoenas* of authors), in having the tarsus about a fifth longer than the middle toe with claw, instead of nearly equal, a different color pattern, and other characters, I have erected the genus *Diopezus*.[33]

This pigeon is very shy and extremely alert and though I have seen it several times, I have never been able to obtain a shot. It inhabits heavy forest and flies up similar to a partridge, but before a gun could be raised it has disappeared amongst the dense foliage.—H. C. R.

The food of two birds, which were examined by Mr. Raven, consisted of hard red fruits about the size of a pea, another hard fruit somewhat larger, remains of a cicada, green grasshoppers, crickets, beetles, and small grubs.

Family RALLIDAE.

RAILS, GALLINULES, COOTS.

22. HYPOTAENIDIA STRIATA STRIATA (Linnaeus).

One male, Kwandang, September 15, 1914; one female, Rano Lindoe, March 22, 1917.

These two specimens are in widely different plumages. The male is in worn plumage and as Meyer and Wiglesworth's description [34] is

[32] Cat. Birds Brit. Mus., vol. 21, 1893, p. 583.
[33] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 52.
[34] Birds of Celebes, vol. 2, 1898, p. 693.

taken from a Leyte, Philippine specimen, it may be briefly described as follows: The top of the head and nape deep chestnut with a few nearly obsolete black spots; upper parts, including the wing coverts and tail, blackish, with some olive brown borders to the feathers (mostly worn off) and barred narrowly with white; remiges and wing coverts chaetura drab with broken white bars; chin and throat white; lores, side of face, fore-neck, and breast neutral gray; sides, flanks, belly, crissum, and under wing coverts chaetura black barred with white, the belly much lighter; the bill is dusky, lead color towards the tip, the base of the lower mandible horn color for two-thirds of the base (in the skin). It measures: Wing, 118; culmen, 35; tarsus, 37; middle toe, 38.

The female from Rano Lindoe is quite different. It lacks the chestnut of the head, it being similar to the back; the back, wing-coverts, and scapulars are black with broad olive-brown edges to the feathers and with a few white spots on the upper back, in a few feathers of the scapulars and wing-coverts the spots become incipient bars; the primary coverts and remiges uniform chaetura black, the first primary and a few of the inner secondaries with a few white spots on the outer web only; below it is much like the male described above, except the flanks are lighter and the belly buffy white unmarked. I take it to be a not fully adult bird.

The adult male seems to agree fairly well with Philippine specimens (the type locality of the species), except the white bars above are not interrupted (in Philippine birds the bars on the upper back are interrupted and more in the nature of spots); this may or may not be a constant variation.

An adult female in the United States National Museum from Java (No. 218,311) is quite different from the Philippine bird. The top of the head and nape are lighter; the edges of the feathers broader and hair brown (not olive-brown), the black centers more restricted and the white bars on the wing-coverts with dusky shadow bars; the bars on the sides and flanks more restricted and almost entirely absent from the belly; the bill yellow, only dusky at the tip (in the skin). If additional specimens bear out these peculiarities, the Javan race will have to be recognized and may stand as *Hypotaenidia striata gularis* (Horsfield).[35]

23. HYPOTAENIDIA PHILIPPENSIS CHANDLERI (Mathews.)[36]

One female, Kwandang, October 7, 1914; one male and one female, Toli Toli, December 13 and 18, 1914; one female, Koelawi, January

[35] *Rallus gularis* Horsfield, Trans. Linn. Soc., vol. 13, 1821, p. 196 (Java).

[36] *Eulabeornis philippensis chandleri* Mathews, Birds Australia, vol. 1, pt. 4, Aug. 9, 1911, p. 196 (Celebes).

31, 1917; one male and one female, Rano Lindoe, March 14 and 22, 1917.

Besides the above series, the United States National Museum contains a male, a female, and an unsexed specimen from Celebes, but I only have available for comparison two males and two females from Luzon, besides a few additional specimens from the other parts of the extensive range of the species. The latter I am disregarding and will confine myself to a comparison of the Philippine and Celebes material. Mathews's [37] diagnosis of the Philippine bird does not agree with the specimens before me in numerous particulars, only two of which I will mention. The secondaries in none of the specimens before me reach the tips of the primaries by a considerable margin nor are the flanks and breast washed with olive-brown. That some of the characters relied upon by Mathews as geographic are really seasonable or age characters, I am convinced. That the tawny pectoral band is not entirely absent from Celebes specimens is proven by a female (No. 248,148) from Kwandang, in which it is strongly marked.

The only differences that I can see between Celebes and Luzon birds is the darker olive edgings of the feathers of the back, the average darker head and nape, and apparently heavier barring below of the former. The measurements seem to indicate a bird with slightly longer tarsus and middle-toe in Celebes, though the series are too unequal to be conclusive.

That there are geographic forms in the extensive range of the species there is no doubt, but that Mathews's treatment of them is only tentative is equally certain, as it is not founded upon the examination of a sufficient number of specimens. I prefer to recognize a race tentatively rather than to suppress it, even though the differences are slight.

The two series average as follows:

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
Two males from Luzon	137. 7	65	32. 5	40. 7	34. 2
Three males from Celebes	144. 2	62. 8	33	43	37. 5
Two females from Luzon	132. 2	63. 2	29. 2	40. 5	34. 2
Five females from Celebes	132. 2	58. 1	30	41. 5	35. 4

24. HYPOTAENIDIA CELEBENSIS CELEBENSIS (Quoy and Gaimard).

One adult male, Kwandang, October 24, 1914; one slightly immature male, Rano Lindoe, April 1, 1917.

[37] Birds of Australia, vol. 1, 1911, p. 198.

The adult has the chin and throat black, the feathers obscurely fringed with a little white; the two outer primaries are barred on the inner web with white, these bars having a little cinnamon appearing towards the rachis on the third and the bars becoming entirely cinnamon on the fifth primary; otherwise it agrees fairly well with the descriptions.

The specimen from Rano Lindoe is not fully adult; it is much browner on the back; the chin is white; only the sides of the throat are entirely black, the center being barred black and white; the primaries are narrower than in the adult, the white bars on the inner web of the two outer ones being almost obsolete, not more than spots, and the cinnamon bars on the inner web are also obscure and basal; the inner secondaries are softer and longer and the tail softer than in the adult; otherwise it is like the adult.

From the above it would appear as if the birds of this genus go through several stages of plumage before becoming adult. Naturalists describing closely related forms should bear this in mind and try to compare specimens of the same age. This is hard to determine in birds in which the young plumage resembles the adult and often can only be worked out by series taken during various seasons at or near the same locality.

Judging from descriptions, *H. saturata* of New Guinea and *H. sulcirostris* of the Sula Islands are only subspecies of the Celebes bird. *H. torquata* of the Philippines has been derived from the same stock as *H. celebensis* and only differs from it noticeably in the brown pectoral band of the former, but this difference is pronounced and constant enough to keep them apart as species.

25. GYMNOCREX ROSENBERGI (Schlegel).

One male and one female, Laboea Sore, November 16 and 21, 1916.

Both are apparently adult and measure as follows, the male placed first: Wing, 194–208; tail, 74–73.5; culmen, 36–39.5; tarsus, 67.5–69; middle tone, 36.5–39.5.

Bare skin behind eye, cobalt blue; eyelid reddish; iris brown; tarsus yellowish-green.—H. C. R.

26. RALLINA MINAHASA Wallace.

One adult female, Likoepang, March 4, 1916.

This specimen measures as follows: Wing, 132; tail, 63; culmen, 26; tarsus, 42; middle toe with claw, 42.

27. OENOLIMNAS ISABELLINA (Schlegel).

One male, Soemalata, September 3, 1914; one male and one female. Laboea Sore, November 18 and 28, 1916.

28. POLIOLIMNAS CINEREUS OCULARIS Ingram.[38]

One female, Toli Toli, December 10, 1914; and one male, Tandjong Penjoe, February 16, 1915.

The two specimens are darker on the head and back than three specimens from Java before me. Philippine birds are dark above like the two Celebes specimens and it seems very probable that this species breaks up into a number of local races.

29. AMAURORNIS PHOENICURA LEUCOMELANA (S. Müller).

One male, Kwala Besar, August 24, 1914; one male, Toli Toli, December 17, 1914; one immature male, Laboea Sore, December 14, 1916; two males and two females, Rano Lindoe, March 6–19, 1917.

Stresemann has revised the forms of this species [39] but the material available does not permit me to go very deeply into the subject, and my only object is to find an available name to use for the bird inhabiting Celebes. I have compared my Celebes specimens with birds from the surrounding region. I have only a pair of birds from Java, which seem to have the black line on the sides of neck less pronounced than in Celebesian specimens. Philippine and Bornean skins are somewhat intermediate between those from Java and Celebes, but probably incline more toward the former. In the Celebes series the white frontal band is very narrow, almost absent in the majority of the specimens; this also occurs in one specimen from the Philippines and one from Borneo. It may be a question of age as it is always absent in undoubted immature specimens but this seems to be approaching the adult condition in Celebes birds. Of undoubted *A. p. leucomelana*, I have no specimens for comparison, but as the Celebes bird can not be referred to the race occurring to the north or west, the only logical thing to do is to refer it for the present to the southern form. Stresemann seems to regard it as a sort of intermediate between *A. p. javanica* and *leucomelana*, with leanings toward the latter.

Oberholser [40] described *Amaurornis phoenicura cleptea*, which Stresemann [41] places in the synonymy of *A. p. javanica*, but the series before me seems to show that this disposition of it is incorrect. The type of *A. p. cleptea* is a female and somewhat aberrant, as two other specimens from the same island have the lower abdomen and anal region tinged with isabella color and the lack of olive above is due to the worn condition; the females in all the races of the species are considerably smaller than the males. A small series from

[38] See Stresemann, Nov. Zool., vol. 21, 1914, p. 54.
[39] Nov. Zool., vol. 20, 1913, pp. 303–305.
[40] Smithsonian Misc. Coll., vol. 60, no. 7, 1912, p. 2.
[41] Nor. Zool., vol. 20, 1913, p. 303.

Simalur Island, all males, that Oberholser refers in manuscript to the same race as the Nias bird do not bear out the character of small size, in fact they are intermediate in this respect between *A. p. chinensis* and *A. p. javanica*. *A. p. cleptea* is apparently a good race, somewhat darker and smaller than *A. p. javanica*.

Below I give the average measurements of all the sexed adults available to me:

	Wing.	Culmen.	Tarsus.	Middle toe.
MALES.				
	mm.	*mm.*	*mm.*	*mm.*
One from China	168	39	54. 5	54. 5
One from India	163. 5	38	53	53. 5
One from Tenasserim	166	40. 5	56	55. 5
One from E. Sumatra	175	37	51. 5	56
Four from Simalur Island	155. 1	39. 5	56	56
One from Java	145	37	51. 5	53. 5
Four from Borneo	145. 5	37. 2	54. 5	54. 9
Three from the Philippines	145. 7	36. 8	54	54
Four from Celebes	150. 5	38	53. 5	54. 4
FEMALES.				
One from China	170	36	55. 5	58
Two from Lower Siam	156	36. 2	52. 5	54
Two from Nias Island	136. 7	35. 2	51	52. 7
One from Java	-------	34	47	51. 5
Four from Philippines	140. 4	33. 6	50. 9	52. 2
Two from Celebes	137	32. 2	49. 2	51

30. GALLINULA FRONTATA Wallace.

Two males, Toli Toli, December 11 and 17, 1914; four males, two females, and two young, Rano Lindoe, March 20–26, 1917.

One of the young is in the black down and was taken March 20; the other young, taken March 26, is older and feathered but still with some of the down adhering to the plumage. The latter may be described as follows: Nape, hind-neck, and remaining upper-parts sooty black; forehead, sides of face, sides, flanks, and chest deep mouse gray, much darker on the forehead; throat and abdomen white, the throat with a few scattering black feathers.

31. PORPHYRIO CALVUS PALLIATUS Brüggemann.

One male, Besoa, November 9, 1917.

Besides the specimen recorded above the United States National Museum possesses an unsexed example from north Celebes and a male and female from Java. The two Celebes birds closely resemble each other and differ from the Javan pair in being considerably darker, both above and below, especially in the blue of the hind-neck; the bill is larger and the horn color of the tip more extensive.

Hartert[42] has fixed the type locality of Viellot's *Porphyrio calvus* as Java, as was previously done by Meyer and Wiglesworth.[43] The latter authors at the place cited also say that individuals of this species differ in the two ends of the island of Celebes, but on this point my lack of material will not allow me to venture an opinion. I am using[44] the oldest name founded upon a Celebes specimen, since it would be unwise to lump it with the Javan bird, especially as Sharpe[45] has pointed out that the birds from south Celebes are not the same as those from Java, but this author further says that, some specimens from north Celebes appear to be the same as those from Java, while others from the same end of Celebes he refers to *Porphyrio smaragdinus!* The truth of the matter seems to be that the genus is badly in need of revision, with ample material, and that any identifications founded upon our present knowledge of the forms are merely tentative.

Measurements of the four specimens.

Museum No.	Sex.	Locality.	Wing.	Culmen and shield.	Tarsus.	Middle toe.
			mm.	*mm.*	*mm.*	*mm.*
251679	Male	Besoa, Celebes	229	68	81	80
178002		North Celebes	219. 5	64. 5	83	83
218821	Male	Batavia, Java	226	66	80	78
219157	Female	do	218	61	81	81

Family PODICIPEDIDAE.

GREBES.

32. PODICEPS RUFICOLLIS TRICOLOR (Gray).

Four males and three females in full breeding plumage, Rano Lindoe, March 20–26, 1917.

Podiceps ruficollis philippensis has a much smaller bill and the inner web of the outer secondaries white, the latter character in *tricolor* being much reduced.

Family STERNIDAE.

TERNS.

33. THALASSEUS BERGII PELECANOIDES (King).

One immature male, Kwandang, September 29, 1914.

[42] Nov. Zool., vol. 9, 1902, p. 425.

[43] Birds of Celebes. vol. 2, 1898, p. 720.

[44] *Porphyrio indicus*, var. *palliatus* F. Brüggemann, Abhand. natur. Ver. Bremen, vol. 5, Heft i, April, 1876, p. 89.

[45] Cat. Birds Brit. Mus., vol. 23, 1894, p. 201.

Family CHARADRIIDAE.

PLOVERS.

34. PLUVIALIS DOMINICUS FULVUS (Gmelin).

One female, Paleleh, November 12, 1914; two males and one female, Toli Toli, November 28–December 16, 1914; one male and two females, Rano Lindoe, March 24 and 25, 1917.

The male, one of a pair, taken March 25, has begun to acquire a few black feathers of the breeding plumage on the chest and breast.

35. CHARADRIUS DUBIUS (Scopoli).

One female in worn plumage, Gimpoe, August 21, 1917.

Similar to Luzon specimens (the type locality of *dubius*). It measures: Wing, 113; tail, 53.5; culmen, 14.

36. CHARADRIUS PERONI (Bonaparte).

One immature female, Tamboe, June 13, 1917.

This specimen was bred on the island without a doubt, as it is a young bird in juvenal plumage, which is becoming somewhat worn.

Family RECURVIROSTRIDAE.

AVOCETS AND STILTS.

37. HIMANTOPUS LEUCOCEPHALUS TIMORENSIS Mathews.

A good series of adults of both sexes and one immature female, Rano Lindoe, March 3–26, 1917.

Mathews [46] has separated the Timor bird with which he doubtfully includes that from Celebes. I have no Timor specimens and only one sexed specimen of typical *H. l. leucocephalus*, but have three males and one female from Mindanao and one male from Java. The two latter fall within the variations of my Celebes series and undoubtedly belong to the same form. My single sexed specimen, a male, from New South Wales also falls within the variations of the males of the Celebes series, except the black hind-neck patch is more extensive; in fact it has some black-tipped feathers on the occiput; this is unusual and no other specimen before me shows anything approaching this condition. The New South Wales bird may be aberrant, as three unsexed specimens (but probably males) from Australia do not seem to have the black hind-neck patch so pronounced. Until a larger series of Australian specimens has been examined, the only logical course is to recognize the northern bird as a distinct form from the southern, though it seems to rest upon rather slender characters. To show the range of variation,

[46] Birds Australia, vol. 3, pt. 2, 1913, p. 150.

the largest, smallest, and average dimensions are given of eight males from Celebes: Wing, 205–234 (223.4); tail, 65–74.5 (70.8); culmen, 58.5–66 (62.4); tarsus, 110–124.5 (116.9); middle toe, 34–40 (36.4).

Below, for comparison, are given the averages of the males available from the surrounding region:

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
	mm.	*mm.*	*mm.*	*mm.*	*mm*
Three from Mindanao	229	72. 7	61	120	38. 7
One from Java	220	69. 5	-------	101	35. 5
One from New South Wales	228. 5	68	64. 5	119	40

Family SCOLOPACIDAE.

SNIPES, ETC.

38. NUMENIUS CYANOPUS Vieillot.

One female, Dampelas, July 17, 1914.

This was the first bird collected by Raven in Celebes.

39. PHAEOPUS PHAEOPUS VARIEGATUS (Scopoli).

One male, Kwandang, September 19, 1914.

40. VETOLA LAPPONICA BAUERI (Naumann).

One male and two females, Toli Toli, December 16 and 17, 1914.

41. TOTANUS TOTANUS EURHINUS Oberholser.

One male and one female, Kwandang, October 9, 1914.

42. ACTITIS HYPOLEUCOS (Linnaeus).

Two females, Toli Toli, December 16, 19, 1914; one female, Likoepang, February 26, 1916; one male, Toboli, October 23, 1916; two males and two females, Koelawi, February 3–12, 1917; one male, Rando Lindoe, March 25, 1917; one male, Gimpoe, August 21, 1917.

Mathews [47] has recognized an eastern race of this little sandpiper, but upon what grounds he bases this assumption he fails to state. I have measured an equal number of males of both races and there seems to be no difference in size worth mentioning as the following will show, the western race being listed first: Wing, 109.7–106.4; tail, 54.8–54.8;; culmen, 26–25.7; tarsus, 24.6–24; middle-toe, 20.6–20.1. In color the two series are equally close and for the present I do not see the utility of recognizing an eastern race unless some definite characters can be shown.

[47] Birds Australia, vol. 3, pt. 3, 1913, p. 216; List of Birds Australia, 1913, p. 66.

43. RHYACOPHILUS GLAREOLA (Linnaeus).

A good series from Koelawi, January 30–February 10, 1917; and Rano Lindoe, March 3–25, 1917.

Mathews [48] recognizes an eastern race of the well-known Wood Sandpiper, claiming that it is smaller and paler, but after carefully comparing an equal number of adults of both supposed races, I am unable to appreciate any tangible differences in support of his contention, either in plumage or size.

I have taken four adult specimens of each sex from the two extremes of the range of the species and carefully measured them, with the following result:

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
Eight adults, west	122. 7	47. 6	29. 2	36. 9	26. 8
Eight adults, east	124. 7	51. 2	30	38. 6	28. 6

44. CAPELLA MEGALA Swinhoe.

One male and four females, Toli Toli, December 10–18, 1914; five males and four females, Rano Lindoe, March 7–23, 1917.

45. SCOLOPAX CELEBENSIS Riley.[49]

One male, Rano Rano, December 22, 1917. The original description is as follows:

Similar to *Scolopax saturata* but russet notches on primaries much larger and deeper in color; wing and culmen longer. Wing, 188; culmen, 86.5 mm.

Mr. Raven found this woodcock inhabiting bamboo thickets in the mountains of the type locality, where they only come out at night to feed. The only specimen he succeeded in recovering had been badly eaten by ants, as it had been shot the evening before, and made into a rough skeleton. The flight feathers had been left on the wing and some feathers around the base of the bill and the end of the tibia. The flight feathers alone show this to be a very distinct species of woodcock, quite different from *Scolopax saturata* and more like *rusticola*, having the russet notches on both webs of the primaries, but of a much deeper color; the wing-coverts are of a different pattern, the russet darker and confined to notches along the border not bars, the rest of the feather brownish-black, like the primaries.

Judging from the plate [50] and remarks, *Scolopax rusticola mira* Hartert approaches the Celebes species, but the latter has a much darker wing, and as the former is supposed to be a resident on the Island of Amami in the northern Riu Kiu group, it is not likely to reach Celebes.

[48] Birds Australia, vol. 3, pt. 3, 1913, p. 230.
[49] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 55.
[50] Nov. Zool., vol. 24, 1917, p. 437, pl. 2.

To the above I would add that the lesser wing-coverts in the plate of *Scolopax rusticola mira* are of the usual "*rusticola*" type, while, as remarked above, in *Scolopax celebensis* they are of a different pattern, but I made a mistake in calling them notches, for further examination shows them to be really bars. The pattern is quite different, however, the black bars wide and the russet narrower; there are no gray bars bordered by narrow black ones as in *Scolopax rusticola*. The feathers remaining at the base of the forehead of *Scolopax celebensis* are similar to the same area in *Scolopax rusticola*, if not identical, but quite different from this area in *Scolopax saturata*.

Scolopax apparently has not been recorded from Celebes before and a more perfect specimen is much desired.

Family JACANIDAE.

JACANAS.

46. IREDIPARRA GALLINACEA GALLINACEA (Temminck).

Two males, Toli Toli, December 13, 1914; and one female, Rano Lindoe, March 26, 1917.

These appear to be considerably darker above, especially on the rump and tail, when compared with *Irediparra gallinacea novaehollandiae* (Salvadori).

Comb bright red in life and loses its color within a few minutes after death.—H. C. R.

Family PLEGADIDAE.

IBISES.

47. PLEGADIS FALCINELLUS PEREGRINUS (Bonaparte).

Three adult males, two adult females, one immature male, and two immature females, Rano Lindoe, March 7–13, 1917.

The series available for comparison, consisting of one male from Europe and one male and two females from North America, is much too small to reach any definite conclusions regarding the forms, if any, that this species might develop. The North American male is slightly darker than the specimen of the same sex from Europe; the Celebes males appear slightly darker than the North American bird. Whether these slight differences would hold in a larger series only the future can decide. The measurements are too scattered to be of any value and are not given. I am following Hartert[51] in recognizing an eastern form.

Birds in the Celebes series with the top of the head greenish, instead of washed with a purplish gloss, prove to be not fully adult,

[51] Vögel paläark. Fauna, vol. 2, pt. 4, 1920, p. 1222.

such specimens having the remains of a few very fine white stripes on the face and neck and a few black feathers scattered through the underparts.

Family CICONIIDAE.

STORKS.

48. DISSOURA EPISCOPUS NEGLECTA (Finsch).

One female, Toli Toli, December 16, 1914; one male and one female, Tandjong Penjoe, February 17, 1915; one male, Gimpoe, August 13, 1917.

The above series, when compared with a male and female from the mainland (Trong and Tenasserim), a male from Mindoro and an unsexed specimen from Mindanao, appears to be slightly smaller and the bills (in the dried skin) differently colored. The bill in the Celebes bird is red for nearly two-thirds of its length from the tip and this color runs back along the culmen considerably further, only the basal third of the bill black, while in the mainland and Philippine specimens the bill is black or dusky for nearly its whole length, only the extreme tip and a narrow line along the culmen running back as far as the nostril, being reddish. The purplish gloss to the upper mantle seems to be less extensive in the Celebes bird. The mainland and Philippine specimens seem to be the same, though the specimen from Mindanao has the tip of the bill more extensively reddish and in this respect approaches the Celebes bird.

Doctor Finsch[52] in describing *D. neglecta* gave no definite type locality but simply cited the range as Java, Sumbawa, Lombok, Celebes, Philippines. Stresemann[53] in recording it from Bali questioned the two latter localities and for the Philippines correctly so, as I have shown above. It is certain, however, that the Celebes bird is not the same as that from the mainland and until we know the exact locality of the type of *D. neglecta* and compare typical specimens, I can not do otherwise than place it where the original describer did.

Dissoura stormi is represented in the United States National Museum by specimens from Borneo and E. Sumatra. It is quite a different species, smaller than *Dissoura episcopus*, the bill entirely red in the skin, with numerous other differences.

The Asiatic specimens of *Dissoura episcopus* in the United States National Museum measure as follows:

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[52] Orn. Monats., vol. 12, 1904, p. 94. [53] Nov. Zool., vol. 20, 1913, p. 332.

No.	Sex.	Locality.	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
			mm.	*mm.*	*mm.*	*mm.*	*mm.*
252537	Male	Gimpoe, Celebes	485	183	152	161	80
248940	do	Tg. Penjoe, Celebes	471	175	149	163	78
248941	Female	do	475	195	147	155	74
248939	do	Toli Toli, Celebes	460	194	146	153	70
153617	Male	Trong, L. Siam	507	205	161	177. 5	81
180313	Female	Tg. Badak, Tenasserim	480	193	147	166	78
201662	Male	Calapan, Mindoro	490	205	185	176	85
192101		Zamboanga, Mindanao	466	195	180	164	83

Family ARDEIDAE.

HERONS, BITTERNS, ETC.

49. PYRRHERODIAS PURPUREA MANILENSIS (Meyen).

One male, Soemalata, September 6, 1914; one male, Kapas Bay, November 19, 1914; one adult and one immature female, Rano Lindoe, March 3 and 8, 1917; one female, Pinedapa, January 31, 1918.

50. TYPHON SUMATRANA SUMATRANA (Raffles).

One adult female, Batoe Hangoes Baroe, June 11, 1916.

51. EGRETTA GARZETTA NIGRIPES (Temminck).

One female, Toboli, October 26, 1916; one male, Rano Lindoe, March 23, 1917.

The female is a young bird with the basal third of the maxilla light colored; the outer primary slightly shorter than the second, the tarsus scutellate both before and behind, differing in this respect from *Hemigarzetta*. The male measures: wing, 258; tail, 88; culmen, 81; tarsus 89.5; middle toe, 68.5; and the female: wing, 265; tail, 87; culmen, 77.5; tarsus, 94; middle toe, 59.5 mm.

52. HEMIGARZETTA EULOPHOTES (Swinhoe).

One male, Kwandang, October 7, 1914.

This specimen measures: wing, 265; tail, 89; culmen, 89; tarsus, 89; middle toe with claw, 64.5.

The tarsus is scutellate in front and reticulate behind in which respect it agrees with a specimen in the United States National Museum from Fusan, Korea. The Celebes bird has the first primary slightly the longest in one wing but slightly shorter than the second in the other.

53. DEMIGRETTA SACRA SACRA (Gmelin).

One female, Koeala Prang, June 14, 1916; one male, Toboli, October 21, 1916.

While the United States National Museum contains quite a series of these herons, mostly from the northern part of the range of the species, it is yet inadequate for the working out of the various forms and I am referring the Celebes birds for the present to the typical form, as Wetmore [54] has done for birds from the eastern Carolines and other Pacific islands.

I am convinced, however, that Mathews [55] is in error in regarding the white plumage as a separate species from the dark. The series before me seems to indicate that the white birds are only immatures or at most only a phase of the slate-colored birds. There are several specimens in pied plumage, and even amongst the dark birds there are at least two plumages—the well-known slate-colored adult and a lighter-colored bird with considerable admixture of brownish feathers in the plumage. The Celebes specimens, listed above, illustrate the two phases of the dark plumage, and all indications point to the lighter-colored bird being immature. It lacks the elongate scapular plumes, and the other specimens in this plumage are similar; one of the inner secondaries of the left wing is edged with white at the tip. Of course the absence of the elongate scapular plumes may be due to the nonbreeding season, but the general body plumage has the fluffy appearance of immaturity which can be better told than described. The evidence seems to show that the species goes through several plumage changes; that it breeds in the white phase is no doubt true, but this does not prove that it is a different species. Several North American herons have more than one phase of plumage; *Dichromanassa rufescens*, for instance, and the young of *Florida caerulea* are always white, eventually assuming the slate plumage of the adults.

54. NYCTICORAX MANILLENSIS MINAHASSAE Meyer and Wiglesworth.

One adult male, one adult female, and one immature female, Likoepang, February 22 and 24, 1916.

The above two adults when compared with two adult males and three adult females from the Philippines differ as follows: They have a pronounced whitish superciliary; the throats are broadly white, and this white continues down the foreneck in a narrow uninterrupted line until it merges into the white of the breast. In the Philippine bird the superciliary is narrow and poorly defined (in one specimen entirely absent) and cinnamon-rufous; the throats not pure white and in one specimen from Luzon (No. 211274) with no white at all; and there is no white line down the foreneck. In fact, the Celebes bird forms a transition toward *Nycticorax caledonicus* but

[54] Bull. Mus. Comp. Zool., vol. 63, No. 4, 1919, p. 171.
[55] Birds Australia, vol. 3, pt. 6, 1914, p. 456.

is darker than that form, especially on the sides of neck, and the tips of the long nuchal plumes are blackish. It would perhaps be nearer the truth to treat both the above and *Nycticorax manillensis* as only forms of the wide-ranging *N. caledonicus*.

The adult male from Celebes has the back warm blackish brown with a plumbeous cast that varies in different lights; this is probably due to age, as one of the Philippine birds shows an approach to this condition. The type of *N. minahassae* is evidently an extreme manifestation of this plumage.

55. BUTORIDES JAVANICA JAVANICA (Horsfield).

One male, Kapas Bay, July 22, 1914; three males (one immature) and one female, Koeala Prang, June 4 and 13, 1916; one male, Toboli, October 21, 1916.

I have compared this series with two adult males from Java, and the latter appear to have a little more pronounced white edging to the wing-coverts; otherwise they are similar, and until the species has been revised they had better remain as above.

Since the above was written, Hartert has published[56] a review of the species and has reduced them all to forms of *Butorides striatus*, a South American species; a proceeding to which naturalists will hardly agree.

56. ARDEOLA SPECIOSA (Horsfield).

Four males and four females Toli Toli, December 13–18, 1914; one male, Toboli, October 23, 1916; three females, Koelawi, January 26, and February 1, 1917; one male and one female, Rano Lindoe, March 4 and 10, 1917.

This series, with a small series from Java, the latter consisting of young not yet from the nest and adults, convinces me that Meyer and Wiglesworth's[57] description of what they call the winter plumage is really that of the immature. All the birds in the Celebes series taken in October and December are just like the breeding adults, except they lack the long nuchal plumes, the dorsal plumes are a little shorter and have more of a brownish tinge, and the scapulars usually lack the buff. The specimens taken in January and March have the head and neck more or less marked with blackish; the back blackish-brown; the scapulars hair brown with some slight buffy shaft streaks. The specimen taken March 4 (No. 250729) has begun to assume the adult plumage; the blackish streaks have almost entirely disappeared from the head and neck, the slaty back plumes have begun to appear, and there are buffy feathers present in the

[56] Vögel paläark Fauna, vol. 2, pt. 4, 1920, p. 1250.
[57] Birds of Celebes, vol. 2, 1898, p. 830.

scapulars. A nestling with the pin-feathers just appearing was taken in Java, March 25, another slightly older, July 9, and another from the same island, completely feathered but with stubby tail, and the remains of the nestling plumage still adhering to the mesoptiles, July 8. The latter has the head and hind-neck tawny streaked with blackish, the jugulum and foreneck with feathers broadly streaked centrally with ochraceous-buff, the back mummy brown with a cinnamon-rufous wash, and the outer primaries tipped with hair-brown. In the next stage the back, scapulars, and tips of the primaries are drab, the neck has become almost white with only a few buffy and dusky streaks, the top of head darker and the dusky streaks more pronounced. After this stage the slaty dorsal train begins to appear, the jugulum deepens, and the streakings on the head and neck becomes more pronounced, and then the markings on the head and neck gradually decrease again as the adult plumage is assumed. Most of the foregoing remarks on the plumage of the young are founded on Javan birds taken in spring or summer, in conjunction with our Celebes birds. As a matter of fact, the Celebes birds are browner on the back, not so slaty as the breeding Javan birds, but this is doubtless due to season.

57. BUBULCUS IBIS COROMANDUS (Boddaert).

Two males and two females, Rano Lindoe, March 8–13, 1917.

These are often seen about wet rice fields and follow horses and water buffaloes to eat flies and ticks.—H. C. R.

58. IXOBRYCHUS SINENSIS ASTROLOGUS Wetmore.

One immature male, Toli Toli, December 10, 1914.

This specimen is too immature to show the characters of the race and I am placing it here solely on geographic grounds.

59. NANNOCNUS CINNAMOMEUS (Gmelin).

One male, Toli Toli, December 16, 1914.

In this specimen the wing-coverts are lighter than the back, about the same as the sides of the neck. There is a specimen from Java that is similar and one from Mindanao that has the wing-coverts partially lightened, but in a second specimen from Java the wing-coverts are as dark as the back or nearly so; from this I conclude it is a matter of age. The Celebes bird is evidently fully adult as there is no dark line down the center of the fore-neck.

60. DUPETOR FLAVICOLLIS FLAVICOLLIS (Latham).

One male, Rano Lindoe, March 20, 1917.

Family ANATIDAE.

DUCKS, GEESE, ETC.

61. DENDROCYGNA ARCUATA ARCUATA (Horsfield).

Six males and four females, Paleleh, November 12 and 13, 1914; two males and one female, Likoepang, February 23–25, 1916.

The United States National Museum possesses only two unsexed Australian specimens of this duck, amongst a large series from the wide range of the species. These seem to have lighter and more heavily spotted breasts than birds from the northern parts of its range.

Mathews[58] has rejected *Anas arcuata* because Horsfield[59] only intended to rename or rather use what he considered an earlier manuscript name of Cuvier for his *Anas javanica*,[60] but Horsfield defeated his purpose when he published a named plate and diagnosis of an entirely different species. Salvadori[61] was correct in accepting Horsfield's name for the present species founded upon the plate. As *Dendrocygna arcuata* and *javanica* are perfectly distinct species, both occurring in Java, and as the Australian form is a race of the former, it will become *Dendrocygna arcuata australis* Reichenbach.[62]

62. DENDROCYGNA GUTTATA Schlegel.

One male and one female, Likoepang, January 19, 1916.

The first description of this duck is apparently that of Schlegel;[63] all previous uses of the name being nomina nuda.

63. ANAS SUPERCILIOSA PERCNA Riley.[64]

Two males and two females, Dolo, December 26, 1916; one male, Winatoe, January 21, 1917; three males, two females, and downy young, Koelawi, February 2–3, 1917; one male, Rano Lindoe, March 13, 1917.

This series, while showing quite a little variation, agrees in being darker and smaller than the Australian form (*Anas superciliosa rogersi*); the throats are noticeably of a deeper buff, more pinkish.

There is apparently no difference in the sexes worth mentioning, even in size. The seven males measure: Wing, 240–266 (249.3); tail, 86–107.5 (97.4); culmen, 45–52.5 (49); tarsus, 42–45 (43.3);

[58] Nov. Zool., vol 18, 1911, p. 9.
[59] Zool. Research. Java, 1824, pl. 64.
[60] Trans. Zool. Soc. Lond., vol. 13, 1821, p. 199.
[61] Cat. Birds Br. Mus., vol. 27, 1895, p. 153.
[62] Nov. Syn. Av., No. 4, Dec., 1850, [4], pl. 335, fig. 2650–51, ex Gould.
[63] Mus. Pays-Bas, vol. 6, No. 31, liv. 8, 1866, p. 85.
[64] Proc. Biol. Soc. Wash., vol. 32, 1919, p. 93 (Koelawi, Celebes).

middle toe, 48–53.5 (51.6). The four females measures: Wing, 231–256 (249.7); tail, 92–100 (97.2); culmen, 48.5–52 (50.2); tarsus, 40.5–45.5 (42.2); middle toe, 46–55.5 (51.6). Three specimens from Australia (only one sexed and that a female) measure: Wing, 275–255 (263.3); tail, 99.5–108.5 (103); culmen, 53–58.5 (54.8).

Anas supercilosa pelewensis is still smaller than the Celebes form, the buff of the throat is lighter, the auriculars and sides of neck more heavily streaked, and there are other differences.

The downy young taken at Koelawi, February 2, may be described as follows: Above sepia, darker on the rump; sides of face and lower parts, cream-buff, deepening on sides of face; an obscure band across chest and a very narrow line down the center of breast, cinnamon-buff; a dark line from bill under and through the eye to the nape; a rictal spot and another on the auriculars, of the color of the back; superciliary stripe, creamy buff; a line across hinder border of wing, a small streak on the back on each side opposite the wing, and another small streak on each side of rump, cream-buff; flanks and crissum, a little lighter than the back.

For a fuller discussion of the forms of this duck the reader is referred to Mathew's Birds of Australia,[65] where references to the pertinent literature will be found.

64. NETTION GIBBERIFRONS GIBBERIFRONS (S. Müller).

A good series of both sexes from: Toli Toli, November 28–December 12, 1914; Kampa, February 14, 15, 1915; Tandjong Penjoe, February 16, 1915; Winatoe, January 21, 1917; Koelawi, February 23, 1917; Rano Lindoe, February 24–March 13, 1917; Gimpoe, August 4, 1917.

The above birds when laid out in series show quite a little variation. The specimens taken in January, February, and the early part of March are much lighter below, without any chestnut wash on the breast, and the throats are much lighter, also, almost white. The birds taken in the latter part of March and December have the underparts strongly washed with chestnut and the throats tinged with rusty, but in my opinion this difference in color is due to stain caused by iron in the water. The males have the foreheads considerably swollen, much more pronounced in some specimens than in others; it is very noticeable in the skeleton, but poorly developed or almost entirely absent in the females.

A pair in the United States National Museum from Java are considerably darker on the back, wings, scapulars, and tail than any of our Celebes specimens and probably represent a distinct form.

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[65] Vol. 4, pt. 2, 1915, pp. 85–94.

Three skins marked as males, one female and four unsexed specimens (which from the absence of the swelling on the foreheads I take to be females) before me from Australia have the edges of the feathers of the back and breast lighter and the throats more extensively whitish than in Celebes birds. Mathews [66] has named this race *Netlion castaneum rogersi*, but does not point out in the original description how it differs from *N. g. gibberifrons;* later under *Virago gibberifrons rogersi* [67] he concludes the Australian birds are larger and this seems to be borne out by the above series. It is possible that the majority of our Australian specimens are really females of *N. castaneum*, but the bird marked as a female (No. 85928) is quite a little smaller than the others and is probably *N. gibberifrons*. She is larger than any female I have measured from Celebes and the buffy margins of the feathers above and below are much lighter; as this agrees with Mathews conclusions it is wiser to recognize the Australian race for the present at least.

A fine male specimen (No. 278783) of *N. castaneum* from Port Lincoln, South Australia, before me shows a great reduction in the size of the swelling on the forehead, so pronounced in *N. gibberifrons*, causing the head to appear of quite a different shape. In the old males of *N. gibberifrons*, where the above character is best developed, the forehead rises almost vertically while in *N. castaneum* it slopes gradually back to the crown. In my opinion both the above species belong to the same genus, and lacking any other good characters to separate them from *Nettion*, it would appear that the genus *Virago* is not well-founded.

Five young in the down taken at Gimpoe, with the adult female, August 4, may be described as follows: Above fuscous-black with a brownish wash, darker on the head; two narrow white lines (one on each side) from near posterior base of wing to sides of rump; a superciliary streak extending from lores to auriculars, chamois; a streak from forehead through eye to nape and an incomplete "rictal" stripe that does not quite reach the rictus are the color of the back; a spot on the outer border of wing and a stripe across middle of wing to back, buffy white; lower-parts, buffy-white, the chest crossed by a narrow seal brown band, shading below into a slightly wider band of a much lighter brown.

Ten adult males measure: Wing, 179–192.5 (187.2); tail, 84–94 (88.3); culmen, 34.5–40 (37.6); tarsus, 32.5–35.5 (33.9); middle-toe, 38.5–43.5 (42); and 10 adult females; wing, 170–183 (176.8); tail, 79.5–90 (80.2); culmen, 32.5–38 (34.5); tarsus, 31–34.5 (32.5); middle-toe, 37.5–42 (39). From the above it will be seen the female is

[66] Aus. Av. Record, vol. 1, 1912, p. 86.
[67] Birds Australia, vol. 4, pt. 2, 1915, p. 102.

smaller than the male. The female from Australia referred to above measures: Wing, 194; tail, 84; culmen, 36.5; tarsus, 32; middle-toe, 37.

65. NYROCA AUSTRALIS (Eyton).

One male, Rano Lindoe, March 26, 1917.

This is an extension of the range of this species to the northward. When compared with Australian examples, the above specimen is much darker on the head and back and the primaries are more extensively white on the inner web with little or no drab shading, except on the outer primary and even then it is not so pronounced. It evidently represents a breeding form which for the present is best not named until more material can be examined.

Band on forward part of bill almost white in life.—H. C. R.

Family ANHINGIDAE.

DARTERS.

66. ANHINGA MELANOGASTER Pennant.

Two males, Rano Lindoe, February 24, and March 26, 1917.

Family FREGATIDAE.

MAN-O'-WAR-BIRDS.

67. FREGATA ARIEL ARIEL (Gray).

One male, Toeriboeloe, December 16, 1916.

I have no Australian specimens available but have a male from the Amirante group, Seychelles, taken August 29 (*Fregata ariel iredalei*), and a male from Makemo, Paumotu Islands. From the former, the Celebes bird differs in being much glossier above and on the wing-coverts, the lanceolate feathers on the head and back being a dusky bluish-green with purplish reflections in certain lights, the lesser wing-coverts bronzy-green, while in the Amirante specimen there is little gloss above, the lanceolate feathers of the head and back being a dull black with only a slight greenish sheen, and the feathers of the back with a subterminal band of iridescent purple; the lesser wing-coverts dull black with little bronzy green. The Celebes skin has a larger and heavier bill. The Paumotu bird when compared with that of Celebes, is duller, the lanceolate feathers of the mantle with more of a steely purple gloss. It more closely resembles the Celebes specimen than that from Amirante as was naturally to be expected. The bills of the three specimens measure as follows:

Celebes, culmen, 91; width at base, 28.

Paumotu, culmen, 88.5; width at base, 23.

Amirante, culmen, 85; width at base, 24.

As the specimens at hand are so few I can not do better than Wetmore,[68] who reported upon the Paumotu specimen, in arriving at any definite conclusions and assign the Celebes bird to the typical form.

Family FALCONIDAE.

HAWKS, EAGLES, ETC.

68. CIRCUS ASSIMILIS QUIRINDUS Mathews.[69]

One adult male, one adult female, and one immature female, Parigi, September 12–25, 1916; one adult male, Toboli, October 26, 1916; one immature male, Rano Lindoe, March 10, 1917.

The only Australian specimen available for comparison is an immature, sex undetermined, but probably a female. It is in about the same stage of immaturity as the immature female from Parigi. When compared, the Celebes bird is darker, especially on the lower-parts; in size there is not much difference, the Australian specimen being slightly the larger.

As the immature plumages of hawks are very puzzling the two mentioned above may be roughly described as follows: The male taken at Rano Lindoe differs from the adult male in being blackish seal brown above; the top of the head heavily streaked with the color of the back; the throat and foreneck the color of the back, the latter with the feathers edged with cinnamon rufous; remainder of the underparts cinnamon rufous streaked with white, the sides and flanks beginning to break up into bars and spots as in the adult. The immature female taken at Parigi is blackish seal brown above; the head much lighter than in the adult, especially on the nape, the dark streaks broader, and of the color of the back or even darker; the feathers of the mantle edged with drab; the scapulars and wing coverts rather broadly tipped with cinnamon, fading to buffy on the outer margin; the rump and upper tail coverts the color of the back tipped with orange-cinnamon, the longer tail coverts with white; the lower parts are cinnamon, fading to cinnamon-buff on the lower breast and belly, and streaked with seal brown, the streaks becoming narrower on the abdomen and fading out on the belly; the tail is the color of the back with darker shadow bars.

This is more common about the villages and rice fields than elsewhere and catch a great many young domestic chicks.—H. C. R.

69. LOPHOSPIZA GRISEICEPS (Schlegel).

One immature female, Laboea Sore, November 15, 1916.

This specimen measures: Wing, 201.5; tail, 164; culmen from cere, 18.

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[68] Bull. Mus. Comp. Zool., vol. 63, No. 4, 1919, p. 171.
[69] Birds Australia, vol. 5, pt. 1, 1915, p. 23.

70. ACCIPITER RHODOGASTER RHODOGASTER (Schlegel).

One adult male, Toemaratas, July 7, 1916; one adult female, Parigi, September 19, 1916.

The female is much darker above than the male; the chest lighter; the bars on the outer rectrix, both above and below, much better defined; and the difference in size between the sexes is remarkable. They measure: Male—wing, 164; tail, 119; culmen from cere, 13.5; female—wing, 210; tail, 151.5; culmen from cere, 16.

71. TACHYSPIZA SOLOENSIS (Horsfield).

One immature male, Kwandang, October 16, 1914; one immature male, Kapas Bay, November 21, 1914; one adult male, Likoepang, March 12, 1916.

The adult male is very dark slate color above and vinaceous cinnamon below and has the inner web of the outer tail-feather marked with six bars, the last two bars reduced to spots; the majority of the adult specimens of this species in the United States National Museum collection have this feather unmarked or with only three or four basal bars, except one adult male (No. 178,458) from Little Nicobar, Nicobars, which is very much like the Celebes specimen but has one less bar. It would appear as if the unbarred outer tail feather is acquired only after several moults.

72. SPILOSPIZA TRINOTATA TRINOTATA (Bonaparte).

One immature male, Paleleh River, August 11, 1914; one adult male, Kapas Bay, November 20, 1914; one adult male, Toemaratas, July 3, 1916; one adult male, Teteamoet, January 25, 1916; one immature female, Rano Lindoe, March 26, 1917; one adult male, Pinedapa, February 21, 1918.

The male from Teteamoet agrees with the description of *Spilospizias trinotatus haesitandus* Hartert[70] described from Bonthain Peak and would seem to discredit the form. It is lighter on the back than any of the other specimens in the series before me, the vinaceous-cinnamon confined almost exclusively to jugulum and chest; the breast, under tail-coverts, and thighs being white, faintly tinged with buff on the upper breast. The Kapas Bay specimen is darker below, with the crissum whitish; the Toemaratas bird still darker below, but with the crissum whitish; while the specimen from Pinedapa is the darkest below of any with little or no whitish on the crissum. From the above it would appear as if the southern race was founded upon individual variation rather than geographic differences.

These little hawks seem common; I have several times seen them darting through the open forest.—H. C. R.

[70] Nov. Zool., vol. 3, 1896, p. 162.

73. ICTINAËTUS MALAYENSIS MALAYENSIS (Temminck).

One female, Napoe, Watoetaoe, November 20, 1917.

This specimen is not quite adult. The abdomen has a few cinnamon-buff streaks; the bend of the wing with whitish markings along the margin; the auriculars with some clay color streaks; and the nape with a few slight buffy markings. It is molting and the new tail and primaries have already been acquired and the wing-coverts, scapulars, secondaries, and back-feathers are in process of renewal. The new feathers are sooty-black with a greenish sheen in certain lights and show conspicuously amongst the older dark brown feathers of the plumage; the tail with dark grayish irregular shadow bars. It measures: Wing, 520; tail 290; culmen from cere, 29, which is considerably smaller than an unsexed specimen from Darjeeling, India, with which I have compared it.

74. SPIZAËTUS LANCEOLATUS Temminck and Schlegel.

One adult male, Molengkapoti, Kwandang, October 25, 1914; one immature female, Laboea Sore, November 20, 1916.

75. SPILORNIS RUFIPECTUS RUFIPECTUS Gould.

One male, Kwandang, October 9, 1914; one female, Laboea Sore, November 21, 1916; one male, Koelawi, January 6, 1916; one female, Gimpoe, August 23, 1917; one female, Pinedapa, January 31, 1918.

The specimen from Kwandang has not quite acquired the fully adult plumage. The back and chest are lighter than in the adult; a patch in the center of the chest and under primary coverts white, the latter with a few brown spots; the feathers of the nape margined with cinnamon; and the bars on the underside of the tail much fainter than in the adult. The bars on the tail of the female from Gimpoe are very faint and on the two outer feathers on each side are reduced to two, very narrow, near the tip; the chest is darker than in the other adult specimens. It is molting, and the old, worn feathers of the back are being replaced by dark new ones.

76. CUNCUMA LEUCOGASTER (Gmelin).

One immature male, in the brown plumage, Kapas Bay, November 18, 1914.

77. HALIASTUR INDUS AMBIGUUS Brüggemann.

One male, Kwandang, October 7, 1914; one male, Koeala Prang, June 4, 1916; one female, Toboli, October 26, 1916; one male, Toare, September 20, 1917.

The above specimens have been compared with a good series of adults from the Philippines, one from Java, and one from Borneo. The Bornean skin does not seem to differ from those from the Philip-

pines; the Javan bird resembles those from the Philippines very much, except that the shaft lines on the feathers of the head, neck, and chest are more pronounced. The four Celebes specimens have the shaft lines of the white areas very fine, in fact almost obsolete; this sometimes occurs in Philippine birds, but not so generally or to so pronounced an extent; the Celebes birds are also somewhat smaller. Only one specimen of the Australian form, without definite locality, has been available for comparison. It is entirely without shaft stripes on the white areas. As the Celebes bird does not seem to be the same as that from Java, the Philippines, or Australia, I am using Brüggemann's name, founded upon Celebes specimens, as the only safe course.

Mathews [71] unites the Celebes form to that of the Philippines, but there is no evidence in his work that he actually compared series of specimens from the two localities, apparently relying more upon the literature. He may be right in assigning Javan specimens to a different form than that of the Philippines but he is not justified in uniting the latter to that of Celebes.

78. ELANUS HYPOLEUCUS Gould.

Three males and two females, Parigi, September 12–23, 1916; one male, Gimpoe, August 20, 1917.

Philippine and Javan specimens do not appear to differ in any way from those of Celebes.

The crops of the two specimens examined by Mr. Raven both contained the remains of quail (*Excalfactoria*).

79. MILVUS MIGRANS AFFINIS Gould.

One male, Parigi, September 3, 1916; one male and five females, Laboea Sore, November 19–December 4, 1916; one female, Winatoe, January 21, 1917; one male, Koelawi, February 3, 1917; two males and one female, Gimpoe, August 3, 23, 1917.

No Australian specimens of this race have been available for comparison.

Never seen until a deer or other large specimen is being skinned.—H. C. R.

80. PERNIS CELEBENSIS CELEBENSIS Wallace.

One female, Koelawi, February 8, 1917; one female, Gimpoe, August 23, 1917.

The specimen from Koelawi is much like the plate in Meyer and Wiglesworth,[72] except the black streaks on the throat and chest are more numerous and broader, while the Gimpoe female has them

[71] Birds Australia, vol. 5, pt. 2, 1916, p. 156.
[72] Birds of Celebes, vol. 1, 1898, pl. 2.

less numerous and narrower. The Koelawi bird has the outer tail-feather worn off at the tip and the web worn down to the shaft for quite a distance. The two specimens measure as follows (the Koelawi bird first): Wing, 370–375; tail, 260–265; culmen from cere, 24–25.

Crops contained larvae of bees.—H. C. R.

81. LOPHASTUR CELEBENSIS (Schlegel).

One adult male, Gimpoe, August 22, 1917.

It measures: Wing, 300; tail, 205; culmen from cere, 23.

English ornithologists generally persist in using Sharpe's name for this hawk, though Meyer and Wiglesworth[73] had gone into the matter and shown that Schlegel's name had priority. As my data is somewhat different from theirs, though the results are the same, I will give them as follows: Sharpe[74] described *Baza erythrothorax* from Celebes. The paper in which it was described was received June 13, but it was published in part 3 of the Proceedings, which did not appear until April, 1874. In the meanwhile Schegel[75] had described it as *Baza celebensis*. This livraison is dated July, 1873, and the copy in the United States National Museum was certainly received within the year. Even if it should have come out much later in the year than the ostensible date it would have clear priority over Sharpe's name and should be employed.

82. CERCHNEIS MOLUCCENSIS OCCIDENTALIS (Meyer and Wiglesworth).

One female, Kapas Bay, November 18, 1914; two females, Tandjong Penjoe, February 19 and 23, 1915; one male, Temboan, July 20, 1916; one female, Winatoe, January 10, 1917; one female, Koelawi, January 31, 1917; one male, Rano Lindoe, March 30, 1917; one female, Dampelas, June 14, 1917, one male, Gimpoe, August 20, 1917.

The above series shows some little variation. The female is more heavily streaked below, the bars on the back are heavier, and the tail is narrowly barred with black, the male having the latter plain gray with a subterminal black bar and the top of the head with a grayish tinge. A specimen (No. 250766), marked as a female, and the measurement of the wing and barring of the back would indicate that it is such, from Koelawi, January 31, has the middle pair of tail feathers as in the male and only a few very faint indications of bars on the inner web of the other tail feathers. This bird is approached by another female from Tandjong Penjoe, February 23, and it would

[73] Birds of Celebes, vol. 1, 1898, p. 75.
[74] Proc. Zool. Soc., 1873, p. 625.
[75] Mus. Pays-Bas, No. 36, livr. 10, 1873, p. 135.

appear as if old females approach the males in this character. A male from Temboan, July 20, has the back barred and the breast streaked as in the females, and the tail feathers narrowly barred on the inner web. It is in worn plumage and may be a bird of the year. A female from Tobea Island, Buton Strait, South Celebes, November 14 (No. 234092), is darker on the back than any specimen in the above series, but it is in fresher plumage, before much fading has set in. A Javan female, No. 218358, Buitenzorg, June 2, can not be distinguished from Celebes examples in the same stage of plumage, except for the thighs which are more heavily spotted.

Oberholser[76] described *Cerchneis moluccensis microbalia* from Solombo Besar, a small island between Borneo and Java. He evidently founded this race upon a single male specimen, the type, which I have carefully compared with our Celebes material. None of the subspecific characters given in the original description seem to hold. The top of the head is rusty like the back as in the female, not with a grayish tinge like the fully adult male from Celebes, and the breast is more heavily streaked. These slight differences may prove to be individual, not geographic. It might well be that Bornean specimens may prove to be separable from those of Celebes, as the two islands have so little in common; if so, Oberholser's name may be available for such a race, but until that time there is no advantage in recognizing a form on mere conjecture. In any event Oberholser admits that the ranges for the three races will have to be redrawn, as they appear to be more or less speculative.

A specimen of *Cerchneis moluccensis moluccensis* from Ternate (No. 125027), marked as a male, but, judging from the color of the top of the head and the barred tail, is probably a female, is darker both above and below and is less streaked on the breast than any female in the Celebes series.

The two extremes of the series before me are given in the measurements below:

	Wing.	Tail.	Culmen from cere.
	mm.	*mm.*	*mm.*
Three males from Celebes	200–228	136–150	15–16
Type of *Cerchneis m. microbalia*	230	152	15
Six females, Celebes	210–240	140–162. 5	14. 5–16. 5
One female, Java	214	141	15
One female, Ternate (*Cerchneis m. moluccensis*)	227	143	16

83. ICTHYOPHAGA HUMILIS HUMILIS (Müller and Schlegel).

Two adult females, Toli Toli, November 28, and December 22, 1914.

[76] Proc. U. S. Nat. Mus., vol. 54, 1917, p. 178.

Dr. C. W. Richmond [77] has already pointed out that *Icthyophaga* Lesson [78] is the proper generic term to be employed for this genus of eagles, but he does not seem to have been followed by subsequent authors. *Ichthiaetus* Lafresnaye [79] is preoccupied by *Ichthyaetus* Sweeting [80] and is a nomen nudum, anyway.

These two specimens measure as follows:

	Wing.	Tail.	Culmen from cere.	Tarsus.	Middle toe.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
No. 248224	415	218	26	81	51
No. 248225	390	201	25	81	51. 5

There appear to be some discrepancies in the descriptions of this species that I have consulted, probably due to the age of the specimens used for description. The above two specimens have the base of the tail, except the two central feathers, mottled with white, more pronounced in the smaller specimen and more noticeable below than above. Indeed the white mottling above is confined to the inner web of the feathers. They appear to be adult. Sharpe,[81] Meyer and Wiglesworth,[82] and Kirke Swann [83] do not mention this white mottling at the base of the tail in their descriptions but it is mentioned by Blanford.[84]

Family PANDIONIDAE.

OSPREYS.

84. PANDION HALIAETUS CRISTATUS (Vieillot).

One male and one female, Tandjong Penjoe, February 24, 25, 1915.

I have no Australian birds for comparison but the above two specimens have the top of the head white with a dark narrow nuchal stripe in the center, quite different from the more or less heavily streaked heads of more northern birds; they also appear to be somewhat smaller. The male measures: Wing, 418; tail, 207; culmen from cere, 30.5—the female: Wing, 440; tail, 227; culmen from cere, 33.

[77] Proc. U. S. Nat. Mus., vol. 26, 1903, p. 492.
[78] L' Écho du Monde Savant, ser. 2, vol. 7, No. 1, January 5, 1843, col. 14.
[79] Rev. Zool., 1839, p. 196.
[80] N. Wood's Nat., vol. 2, 1837, p. 303.
[81] Cat. Birds Brit. Mus., vol. 1, 1874, p. 454.
[82] Birds of Celebes, vol. 1, 1898, p. 43.
[83] Syn. List Accipitres, pt. 4, 1920, p. 164.
[84] Fauna Brit. India, vol. 3, 1895, p. 371.

H. Kirke Swann has informed me, since the above was written, that the above specimens are smaller than Australian birds and that he now believes the Celebes bird belongs to the form described by Brasil[85] from New Caledonia as *Pandion haliaëtus microhaliaëtus*, but for the present I prefer to leave them as above. Otherwise the distribution would be hard to understand.

Family STRIGIDAE.

HORNED OWLS, ETC.

85. OTUS MENADENSIS MENADENSIS (Quoy and Gaimard).

A male not long from the nest, Likoepang, March 11, 1916; one adult male, Kalawara, July 22, 1917; one immature male molting into the first adult plumage, Gimpoe, August 12, 1917.

86. NINOX SCUTULATA JAPONICA (Temminck and Schlegel).

One male and one female, Kapas Bay, November 21 and 22, 1914. These specimens are apparently identical with birds from Corea.

87. NINOX OCHRACEA (Schlegel).

One adult female, Toli Toli, November 25, 1914; one young female, Gimpoe, August 11, 1917; one adult male and one young male, Pinedapa, January 12, and February 28, 1917.

The female taken at Toli Toli differs somewhat from the adult on plate 4, of Meyer and Wiglesworth's Birds of Celebes. The buff of the chest and belly is much deeper and extends in a narrow line almost to the chin, separating the dark chest band, the feathers rather broadly streaked centrally with brussels brown; and there is not so much white on the chin. It measures: Wing, 188.5; tail, 106; culmen from cere, 13.5. The adult male from Pinedapa is very similar to the above female but is even darker above and below, especially on the chest and belly. It measures: Wing, 184; tail, 108.5; culmen from cere, 13.

The young female, taken at Gimpoe, August 11, is slightly younger than the young male from Pinedapa, February 28; both have some of the downy first plumage still adhering to the lower parts. They are similar to the adults but of a darker brown above; the chest and belly pinkish buff with some almost obsolete cloudings of sepia.

The adults of this species are commonly heard during the night and are easily recognizable by their plaintive one syllabled note, which late at night is often the only sound heard, other than that of insects and batrachians.—H. C. R.

[85] Rev. Franç. Orn., vol. 4, 1916, p. 201.

Family TYTONIDAE.

BARN OWLS.

88. TYTO ALBA ROSENBERGI (Schlegel).

One female, Manembo Nembo, June 28, 1916; one male, Parigi, September 20, 1916.

The above female has the facial disk, back, and lower parts darker than in the male, especially the face and lower parts; the tarsus is more heavily feathered and deeper in color, the lower parts more heavily spotted with dark brown, the spots having more a tendency to form bars. It may be that more than one form of the species occurs in Celebes.

A single male of the Javan race (*Tyto alba javanica*) before me is much lighter in every way than my Celebesian male, but whether this would hold in a larger series it is impossible for the present to say.

The Celebesian race is so very different in color and size from true *Tyto alba* that it is very doubtful indeed if the former should be made a race of the latter, but I prefer to make no change for the present.

Family LORIIDAE.

LORIES.

89. TRICHOGLOSSUS ORNATUS (Linnaeus).

A good series from the following localities: Kwala Besar, July 29–31, 1914; Soemalata, September 4–8, 1914; Kwandang, September 16–October 7, 1914; Paleleh, November 13, 1914; Toli Toli, December 18, 1914; Tandjong Penjoe, February 17–20, 1915; Likoepang, January 17–March 12, 1916; Manembo Nembo, June 22–24, 1916; Toemaratas, July 5–9, 1916; Parigi, September 20–October 5, 1916; Toboli, October 20–25, 1916; Rano Lindoe, March 3–23, 1917; Gimpoe, August 3–28, 1917; Pinedapa, February 1–6, 1918.

Common about clearings and villages and very noisy; food mostly soft fruit, buds, and sweet blossoms.—H. C. R.

90. EUTELIPSITTA MEYERI MEYERI (Walden).

Five males and four females, Toemaratas, July 5–8, 1916; three males and one female, Laboea Sore, December 18, 1916; one male Lindoe Trail, February 25, 1917.

This series is very uniform and the only variation is such as would be accounted for by age. The yellow subterminal bar on the feathers of the mantle is much reduced in some specimens, probably birds not fully adult.

Mathews[86] has shown that *Psitteuteles* can not be used for this genus and has proposed *Eutelipsitta* in its place.

If this genus is to be retained, it would seem to me that *Trichoglossus johnstoniae* Hartert of Mindanao should be placed in it.

Family CACATOIDAE.

COCKATOOS.

91. CACATOES SULPHUREA (Gmelin).

A good series of both sexes from the following localities: Kwala Besar, August 24, 1914; Kwandang, September 17–19, 1914; Tandjong Penjoe, February 17–20, 1915; Parigi, September 20–27, 1916; Toboli, October 21–26, 1916; Laboea Sore, November 21–26, 1916.

This does not occur in Minahassa, but is common at Kwandang.—H. C. R.

Family PSITTACIDAE.

PARROTS, PARAKEETS, ETC.

92. PRIONITURUS PLATURUS PLATURUS (Vieillot).

A good series of both sexes and young from the following localities: Kapas Bay, July 22 and November 20–23, 1914; Kwandang, September 17–October 26, 1914; Paleleh, November 9–13, 1914; Toli Toli, November 28–December 18, 1914; Teteamoet, February 1–3, 1916; Likoepang, March 11, 1916; Rano Rano, December 20, 1917.

The series of males varies considerably. The occipital spot ranges from mineral gray through light violet plumbeous to slate blue, the majority being light violet plumbeous. The wing coverts vary from pea to vertiver green, with the bend of the wing not conspicuously different to strongly marked with light violet plumbeous or slate blue. The back is more or less washed with a grayish cast to plain parrot green.

These parrots may be considered common in this locality (Teteamoet), and though often difficult to reach are heard almost continually during the day and often seen flying in numbers high above the heavy forest. It is here known as *keli keli*.—H. C. R.

93. PRIONITURUS FLAVICANS Cassin.

A fair series from the following localities: Tandjong Tango, August 28, 1914; Kwandang, October 8–26, 1914; Paleleh, November 13, 1914; Likoepang, January 13 and March 4–11, 1916; Toemaratas, July 9, 1916; Temboan, July 20, 22, 1916.

94. TANYGNATHUS MUELLERI MUELLERI (Temminck).

A good series from the following localities: Paleleh, August 19, 1914; Kwala Besar, August 23, 1914; Soemalata, September 4, 1914;

[86] Nov. Zool., vol. 18, 1911, p. 10.

Kwandang, September 17–October 9, 1914; Kapas Bay, November 21–22, 1914; Toli Toli, December 1–20, 1914; Tandjong Penjoe, February 16–18, 1915; Likoepang, March 4–12, 1916; Manembo Nembo, June 24, 1916; Parigi, September 9–26, 1916; Toboli, October 18–27, 1916; Laboea Sore, November 12–28, 1916; Koelawi, January 26, 1917; Rano Lindoe, March 22, 1917; Gimpoe, August 5–23, 1917; Pinedapa, February 3, 1918.

A male taken at Koelawi (No. 250820) differs from any other in the series in having the fore neck and chest strongly suffused with apricot orange, overlaid with green. A female taken November 12 (No. 250133) has the pileum strongly washed with venetian blue and the feathers of the upper back edged with the same color; one or more other specimens have the feathers of the upper back edged with blue, but the above specimen is unique in the color of the pileum.

All the specimens marked as females by the collector have the bill horn color; only the adult males have it red.

95. LORICULUS STIGMATUS (Müller and Schlegel).

A good series from the following localities: Paleleh River, August 11, 1914; Kwandang, September 16–29, 1914; Toli Toli, December 11, 1914; Tandjong Penjoe, February 18–26, 1915; Likoepang, January 21–March 11, 1916; Manembo Nembo, June 24, 1916; Toemaratas, July 5–8, 1916; Parigi, October 5, 1916; Toboli, October 19–22, 1916; Toewoeloe, January 16, 1917; Gimpoe, August 3–26, 1917; Toare, Bada, September 20–28, 1917.

The immature, able to fly, only differ from the adults in being duller and having the throats yellow, instead of red; the red throat apparently being the last adult character to appear.

Family CORACIIDAE.

ROLLERS.

96. CORACIAS TEMMINCKI (Vieillot).

A good series of both sexes and young from the following localities: Tandjong Tango, August 28, 1914; Kwandang, September 17, October 7 and 16, 1914; Palaleh, November 13, 1914; Toli Toli, December 6 and 20, 1914; Kampa, February 14, 1915; Teteamoet, February 2, 1916; Likoepang, February 19–March 6, 1916; Manembo Nembo, June 24, 1916; Toemaratas, July 7–9, 1916; Temboan, July 28, 1916; Kasimbar, December 13, 1916; Dampelas, June 14, 1917; Pinedapa, February 8, 1918.

Two young taken July 30, 1916, have the blue crown washed with dusky; the throats and chests dusky with only a slight purplish wash, and the throats quite heavily streaked with light blue.

The majority of the adults have the throats sparsely streaked with light blue, but a few have not; the latter are probably old birds, as judging from the young the more dusky chest and streaked throats are remains of the immature dress.

A specimen (No. 248434) taken December 20, 1914, differs from any other in the series in having the throat more heavily streaked; the tail tipped narrowly on the outer and broadly on the central feathers with dusky blue-green; and an elongated spot on the outer web of the outer tail-feather near the tip bremen blue. That it is an immature bird is shown by its dusky throat and chest, less bright crown, the olive-brown tinge to the back, and the greater and lesser wing-coverts tipped with green. From the two younger birds mentioned above, it differs in the green tips to the outer tail-feathers, but as these are worn in the younger birds they were probably lost by abrasion.

Coracias temmincki differs structurally from *Coracias garrulus*. The bill in the former is stronger and heavier; the outer tail-feather in *C. garrulus* is slightly narrowed towards the tip and none of the tail-feathers are especially broad, while in *C. temmincki* all the tail-feathers are broad and rounded. *C. temmincki* has the fourth primary longest, the third a little shorter, while *C. garrulus* has the second primary longest, the third a little shorter. As at present constituted it would be a very hard matter to draw up a diagnosis of *Coracias*. The long-tailed African species are even more aberrant than *C. temmincki*.

The two young taken at Temboan, July 30, are three days out of the nest, a hollow tree near the edge of a clearing.—H. C. R.

97. EURYSTOMUS ORIENTALIS CONNECTENS Stresemann.[87]

A fair series from the following localities: Toli Toli, December 17, 1914; Likoepang, January 17–19, 1916; Batoe Hangoes Baroe, June 12, 1916; Parigi, September 16, 1916; Gimpoe, August 2–25, 1917.

Family ALCEDINIDAE.

KINGFISHERS.

98. RAMPHALCYON MELANORHYNCHA MELANORHYNCHA (Temminck).

One male, Kwala Besar, August 23, 1914; one female, Kampa, February 15, 1915; one male, Batoe Hangoes Baroe, June 2, 1916; one male and two females, Dampelas, June 4 and 14, 1917; one male, Pinedapa, January 21, 1918.

[87] Nov. Zool., vol. 20, 1913, p. 302.

The specimens from Dampelas are very much faded, the blue has almost entirely disappeared from the scapulars, leaving them drab; one of the females has the tail much worn.

A female in the United States National Museum (No. 234102) from Dodepo Island, Gulf of Gorontalo, November 16, has the top of the head more extensively gray than any in the series collected by Raven; the culmen is longer and the base of the bill seems to have been of a different color in life. These differences may be individual. The bill is malformed, the lower mandible being considerably longer than the upper.

Interior of the bill and mouth salmon colored; exterior of bill black; feet salmon colored, except the toes and lower part of tarsus above, which are washed with blackish.—H. C. R.

99. ALCEDO ATTHIS HISPIDOIDES Lesson.

Three males from: Tandjong Tango, August 28, 1914; Kwandang, September 15, 1914; Koeala Prang, June 14, 1916.

A female in the United States National Museum, No. 234,101, from Amboina, when compared with the three Celebes males has a shorter and heavier bill; the lower mandible ochraceous for about half the length from the base; and the patch of specialized feathers on the sides of the neck behind the ear-coverts, white. In all three of the Celebes males the lower mandible is black to the base and the patch of specialized feathers on the sides of the neck, buffy. Whether the above differences are sexual or not I am not prepared to state.

The race is so very different from *Alcedo atthis* that I have grave doubts whether it should be only recognized as a form of that species. but follow Hartert [88] and Stresemann.[89]

100. CEYCOPSIS FALLAX (Schlegel).

One male, Paleleh River, August 10, 1914; one male, Kwandang, October 9, 1914; one, male, Laboea Sore, November 15, 1916.

The male from Laboea Sore (No. 250218) has a shorter bill than the other two and it is black, horn color for a short distance at the extreme tip; the back is much darker; the blue spotting on the top of the head is heavier and extends further back onto the nape. It apparently is not fully adult.

101. ENTOMOTHERA COROMANDA RUFA (Wallace).

One female, Likoepang, March 9, 1916, and one female, Laboea Sore, December 1, 1916.

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[88] Vögel paläark, Fauna, Heft 7, 1912, p. 882.
[89] Nov. Zool., vol. 20, 1913, p. 315.

In establishing the generic name *Entomothera* Horsfield[90] says on the page opposite to the one on which he proposed the name: "*Alcedo sacra* furnishes a sample of this genus." To my mind this is fixing the type but it is not in accordance with the International Code. He should have said "type," a term probably unknown to him in the modern sense. If the common-sense view of the matter was taken *Entomothera* should be used in place of *Sauropatis* Cabanis and Heine[91] and the generic name for the Ruddy Kingfishers would be *Calialcyon* Bonaparte.[92]

102. SAUROPATIS SANCTA (Vigors and Horsfield).

Five males, Koeala Prang, June 4–18, 1916.

The Australian material available consists mostly of females. The only male from New South Wales in the lot when compared with the Celebes series appears to be bluer on the wings and to be lighter below. A male from northern Australia (Port Darwin) is duller than the New South Wales male with a broader black nuchal collar; the former is in more worn plumage, however. There seems to be no constant difference in size between Celebes and Australian birds. Anyway the material at my command is inadequate to work out the various forms into which this kingfisher has been divided. There is some doubt as to whether it is resident in Celebes.

103. SAUROPATIS CHLORIS FORSTENI (Bonaparte).

A good series of both sexes from: Toli Toli, December 10–18, 1914; Kampa, February 14, 1915; Tandjong Penjoe, February 19, 1915; Likoepang, February 23–March 11, 1916; Ayemadidi, May 5, 1916; Koeala Prang, June 18, 1916; Manembo Nembo, June 23, 1916; Toemaratas, July 3, 1916; Toboli, October 17–23, 1916; Dolo, December 26, 1916; Lindoe Trail, February 25, 1917; Rano Lindoe, March 3–15, 1917; Gimpoe, August 1–25, 1917; Napoe, Watoetaoe, November 20, 1917; Pinedapa, January 13, and February 13, 1918.

104. CITTURA CYANOTIS (Temminck).

One male, Kwala Besar, July 31, 1914; one male, Paleleh, November 12, 1914; one female, Teteamoet, January 23, 1916.

The male from Kwala Besar is darker on the head, back, and tail than the one from Paleleh, but as it has a black bill, I presume it is immature, though it shows no other sign of not being fully adult.

105. MONACHALCYON MONACHUS INTERMEDIUS Hartert.

One male, Laboea Sore, November 15, 1916; one female, Parigi, September 22, 1916.

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[90] Zool. Research. Java, 1824, text to *Alcedo biru.*

[91] Mus. Hein., pt. 2, 1860, p. 158, type *Halcyon sanctus* Vigors and Horsfield).

[92] Consp. Av., Vol. 1, 1850, p. 156, type *Alcedo coromanda* Latham.

The male has the top of the head very deep indigo blue, shading off into a blackish tinge on the crown and forehead, the lower part much lighter than in the typical form. In the female the blue on the head is much lighter but still darker than in northern birds. They both probably belong to the above race.

Bill bright red; feet reddish flesh color below and behind, brown above. Very shy.—H. C. R.

Family BUCEROTIDAE.

HORNBILLS.

106. RHABDOTORRHINUS EXARATUS (Temminck).

One female, Paleleh River, August 8, 1914; one male and one female, Teteamoet, February 4, 1916; one female, Koeala Prang, May 8, 1916; one male, Temboan, July 30, 1916; one male and one female, Loboea Sore, November 28, 1916; one male, Koelawi, February 1, 1917; three males and one female, Rano Lindoe, March 21–22, 1917.

107. CRANORRHINUS CASSIDIX (Temminck).

A fair series of males and females from: Paleleh River, August 9–15, 1914; Kwandang, October 24, 1914; Paleleh, November 10, 1914; Teteamoet, January 25 and 29, 1916; Koeala Prang, May 28, 1916; Pinedapa, January 10–February 8, 1918.

The smooth, peculiarly shaped casque and the fact that it has the corrugations at the base of both maxilla and mandible entitle this species to stand alone. The other species usually placed in the genus, with the corrugations at the base of the mandible only, I have proposed to remove and have named *Cranobrontes*,[93] with *Buceros leucocephalus* Vieillot as the type.

Family MEROPIDAE.

BEE-EATERS.

108. MEROPS PHILIPPINUS JAVANICUS Horsfield.

Five males and seven females from the following localities: Koeala Prang, May 28, 1916; Parigi, September 12, 1916; Rano Lindoe, March 6–26, 1917.

When laid out in series alongside birds from the Philippines and viewed from one side, the Celebes bird appears to be of a deeper green; the rump, tail, and under tail-coverts a purer blue; and the breast more greenish. Two Javan specimens seem to agree best with the Celebes series, and so for the present I am assigning the latter to the same race.

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[93] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 52.

A female taken at Koeala Prang, May 28, is an immature molting into the adult plumage and was undoubtedly bred on the island.

The various series average as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Four males, Celebes	132. 8	140	43. 2
Eleven males, Philippines	130. 8	146. 3	40. 6
One male, Java	131	128	42. 5
Four males, lower Siam and Malay Peninsula	137. 7	144. 4	40. 9
Two males, south Pagi and Simalur	134. 5	145. 5	40. 4
Three males, Nicobars	137. 2	150	42. 5
Four females, Celebes	128. 9	132. 9	39. 6
Five females, Philippines	128	137. 7	39. 5
One female, Java	138	150. 5	44
One female, West Sumatra	128. 5	136. 5	41. 5

109. MEROPS ORNATUS ORNATUS Latham.

One male and one female, Soemalata, September 5 and 8, 1914.

The small series of this species from Australia available for comparison varies quite a little individually; specimens from north Australia (Port Darwin), West Australia and South Australia have a more bluish cast above and on the belly than the only two specimens in the series from New South Wales. The western bird has been named, *Merops ornatus shortridgei* Mathews.[94] The Celebes male has a more ochraceous cast to the green and less blue on the lower back and tertials; the top of the head is also more extensively cinnamon rufous and the blue rictal stripe narrower than in a male from New South Wales. Nevertheless it seems to be nearer this form than the one from western Australia but my series is too small to determine the various races into which the species may be divided. It is probably only a migrant in Celebes. A male from Port Moresby, New Guinea, closely resembles the male specimen from New South Wales; it has a more bluish cast to the belly and the top of the head is browner.

110. MEROPOGON FORSTENI CENTRALIS Meyer.[95]

One male and one female, Rano Lindoe, March 21, 1917; five males and two females, Toewo Mountain, Besoa, October 24–November 3. 1917; one male and two females, Pinedapa, February 1, 1918.

In the above series the females have the central tail feathers less narrowed and the blue toward the tip less evident than in the males.

A pair of young, not long from the nest, taken at Toewo Mountain, October 24, have the top of head dusky, the feathers tipped with dusky-green blue (more greenish in the female), shading to dusky

[94] Nov. Zool., vol. 18, 1912, p. 290.

[95] Notes Leyden Mus., vol. 23, 1901, p. 186 (Takala Mountains).

greenish on the nape and hind-neck; the gorget with the blue less intense than in the adult and the feathers tipped with dusky green-blue; otherwise much as in the adult except the central feathers are not produced beyond the remainder. An immature female taken at Pinedapa, February 1, is molting into the adult plumage. It has acquired the chestnut hind-neck band; the blue of the top of the head and gorget of the adult is appearing; the breast and belly are still strongly tinged with green; the central tail-feathers have already been acquired.

I have no specimen of *Meropogon forsteni forsteni* for comparison.

The measurements of the undoubted adults in the above series are given below:

Cat. No.	Sex.	Locality.	Date.	Wing.	Tail.	Culmen.
				mm.	*mm.*	*mm*
251875	Male	Besoa	Oct. 27	112. 5	151	41. 5
251877	do	do	Oct. 28	115	153. 5	43
251878	do	do	Nov. 1	116	168	45.
251879	do	do	Nov. 3	115	169	43
251881	do	Pinedapa	Feb. 1	115	146	45. 5
250826	Female	Rano Lindoe	Mar. 1	108	146	43
251876	do	Besoa	Oct. 28	111	136	41. 5
251880	do	Pinedapa	Feb. 1	111	130. 5	43

Family CAPRIMULGIDAE.

GOATSUCKERS.

111. LYNCORNIS MACROPTERUS Bonaparte.

One male, Soemalata, September 6, 1914; one female, Kwandang, October 25, 1914; one male, Parigi, September 19, 1916; one male and one female, Pinedapa, February 2 and 15, 1918.

112. CAPRIMULGUS AFFINIS PROPINQUUS Riley.[96]

One male, Parigi, September 28, 1916.

As the above specimen apparently differed considerably from the form with which it has usually been identified, I have ventured to describe it as follows:

Similar to *Caprimulgus affinis griseatus* but buff of belly unbarred, the ear-coverts and sides of neck more heavily marked with buff; the buffy spotting on the wing-coverts more numerous and pronounced; the white of the outer tail-feather more extended basally. Wing, 171; tail, 101; culmen, 10 mm.

Remarks.—I have been able to compare this specimen with three males of *Caprimulgus affinis affinis* from Java and one from Borneo and seven males of *Caprimulgus affinis griseatus* from Sibuyan and Luzon, Philippines. From the former it is much lighter, both above and below, and the buffy spots on the chest and wing-coverts are more numerous and pronounced and much

[96] Proc. Biol. Soc. Wash., vol. 31, 1918, p. 155.

lighter, the vermiculations on the back finer and the tail-bars above narrower. From the latter it is much closer in color and forms a connecting link; the chief difference is the unbarred belly.

Caprimulgus affinis mindanensis Mearns[97] is a dark bird like true *affinis* but with finer vermiculations above and with the belly barred, with which the present form hardly needs comparison. It seems strange that the Celebes bird should resemble the one from Luzon rather than that from Mindanao.

Since writing the above, I have reexamined the above forms but can add little to the published descriptions. The only resemblance between *Caprimulgus affinis affinis* and *Caprimulgus affinis propinquus* is the unbarred belly in the two forms.

113. CAPRIMULGUS CELEBENSIS Grant.

One male, Soemalata, September 6, 1914; one male, Kwandang, October 25, 1914.

The character of the length of the rictal bristles relied upon by Ogilvie-Grant to separate this from all other species of *Caprimulgus* does not hold true; they are just as long and heavy in *C. macrurus macrurus* and in *C. manilensis*. The present species resembles *C. manilensis* very much, the chief difference being that in the latter the white tip to the outer tail-feather does not extend across the outer web. I agree with Meyer and Wiglesworth[98] that both will eventually only be ranked as forms of *C. macrurus*, as has been done by Hartert[99] but not by Oberholser.[1]

Family HEMIPROCNIDAE.

TREE SWIFTS.

114. HEMIPROCNE WALLACEI (Gould).

One male, Likoepang, January 13, 1916.

Family MICROPODIDAE.

SWIFTS.

115. COLLOCALIA ESCULENTA ESCULENTA (Linnaeus).

One male and two females, Goenoeng Kalabat, April 9, 1916; one male, Koeala Prang, June 5, 1916; two males and two females, Toewo Mountain, Besoa, October 31, 1917.

The male from Koeala Prang (No. 249748) has the light spot at the base of the outer tail feather on the inner web much restricted and gray like the outer web (seen from below), only showing whitish along the shaft; on the next two feathers the white is more pronounced. It differs also from the other males as follows: the primaries and their coverts are largely dusky slate-violet; the wing-

[1] Proc. U. S. Nat. Mus., vol. 48, 1915, pp. 587–599.
[97] Proc. Biol. Soc. Wash., vol. 18, 1905, p. 85.
[98] Birds of Celebes, vol. 1, 1898, p. 321.
[99] Nov. Zool., vol. 13, 1906, p. 296.

coverts, secondaries, and scattering feathers on the back and head are tipped with a brighter violet; the tail is washed with violet. It is evidently an immature bird and is smaller than the other males. The remaining males are probably adult and are of a shining dusky dull bluish-green above; the wings and tails with a steely-blue cast in certain lights; the basal spot on the inner web of the outer tail feathers is pure white. Two of the females in color are precisely like the adult males, while two are like the immature male, except the basal spot on the inner web of the outer tail feathers is more pronounced, though reduced in size. This can hardly be due to immaturity as one taken at Besoa, October 31, has the outer tail feather and tips of the primaries worn while the other is one of the birds taken April 9. It may be that it takes more than a year to acquire the fully adult plumage. The males average larger than the females. The three adult males measure: Wing, 102–105 (103.5); tail, 37–43 (39.2); culmen, 3.5–4 (3.8). The four females measure: wing, 96.5–101 (98.9); tail, 37.5–40 (39.1); culmen, 3–4 (3.5). The immature male measures: wing, 94.5; tail, 37; culmen, 4.

From the above it would appear that some of the very small measurements accorded the wing by authors, along with normal measurements in the various forms of this genus, was due to the inclusion of immature specimens, as in most of the races the only way to tell the adults from birds of the year is by size.

I have been unable to compare the above series with any other specimens of the species.

These probably nest in holes in the rock on the slopes of the crater (Kalabat).—H. C. R.

116. COLLOCALIA VESTITA AENIGMA Riley.[2]

Two males and three females, Parigi, September 10, 1916; one male and two females, Gimpoe, August 1 and 29, 1917; one male and two females, Pinedapa, February 13 and 21, 1918.

The above series is very uniform in color. Four specimens of *Collocalia vestita vestita* from Java before me are olivaceous black No. 1 above; sooty hair brown below, the throats little lighter than the breast, while in *Collocalia vestita aenigma* the back is a shining black with little or no olivaceous sheen; the lower parts smoke gray, the chin and throat a silvery pale smoke gray or even whitish. The upper surface of the wings and tail in *Collocalia vestita aenigma* has a more deep dusky violet cast, not so olivaceous as in *Collocalia vestita vestita* from Java. There is apparently no difference in size. To *Collocalia vestita mearnsi* of the Philippines, the Celebes race is more closely related, but differs in being darker above, the wings externally with a more dusky violet gloss; below it is lighter, especially on the throat. The Celebes form is slightly larger.

[2] Proc. Biol. Soc. Wash., vol. 31, 1918, p. 156 (Parigi, Celebes).

Collocalia vestita aenigma belongs to the feathered-tarsi section of the genus, and in the above series I can only find three specimens that have the tarsi apparently bare, but the series is more or less in molt and some specimens that at first sight have this member apparently denuded when examined under a glass show one or two minute feathers. The three specimens above alluded to are so much like the rest of the series in every other way that this condition is probably due to loss by molt.

In the original description only the measurement of the type was given. The four males measure: Wing, 133–122 (117.9); tail, 46–50 (48); culmen, 4.5–5 (4.8); the seven females: wing, 112–120.5 (116.7); tail, 46.5–50.5 (48.6); culmen, 4–5 (4.6).

117. HIRUNDAPUS CELEBENSIS (Sclater).

One male (?), Ayermadidi, May 18, 1916.

The above specimen, though marked as a male is probably a female, as the lores are a dirty brown; the body a greenish black; a patch on the lower flanks and under tail-coverts white. It measures: Wing, 188, tail, 59; culmen, 9.5. The outer primary has been lost and is being replaced by a new one.

I have a specimen from Mindoro (topotype of *Chaetura dubia* McGregor) and two specimens from Basilan; they are probably all males, though the two latter are unsexed. I can detect no difference between the Mindoro and Basilan birds; both are a beautiful purplish black, the rump and back more sooty and inclining to brownish, the wings and tails steely black with purplish and greenish reflections, the lores, under tail-coverts, and lower flanks white, quite different from the Celebes specimen, but the latter is probably a female. There is an indication that the Philippine bird may prove to be racially different as all the measurements are greater than those indicated by Meyer and Wiglesworth[3], in which case the Philippine race would stand as *Hirundapus celebensis dubia* McGregor.

The males available measure as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
No. 201931, male, Alag River, Mindoro	223	59	10. 5
No. 192474 [male], Basilan Island	220	64	9
No. 192475 Do	215	63. 5	9. 5
Type of *Chaetura dubia**	220	64	10
Hirundapus celebensis †	203	71	----

* McGregor, Man. Philippine Birds, pt. 1, 1909, p. 359.
† Meyer and Wiglesworth, Birds Celebes, vol. 1, 1898, p. 330.

Gizzard very large and filled with the heads, wings, legs, etc., of insects, which were possibly flying ants.—H. C. R.

[3] Birds of Celebes, vol. 1, 1898, p. 329.

Family CUCULIDAE.

CUCKOOS.

118. SURNICULUS MUSSCHENBROEKI Meyer.

One female, Likoepang, March 10, 1916.

The above specimen differs from Meyer and Wiglesworth's [4] description of the type in having the outer tail-feather with five irregular white bars distally and two white spots along the shaft basally; the second tail-feather with four white spots along the shaft on one side of the tail and three on the other, being unsymmetrical in this respect; and the white concealed nuchal spot apparently larger. It measures: Wing, 124.5; tail, 128; culmen, 21.5.

Surniculus musschenbroeki in plumage comes nearer to *S. velutinus* of the Philippines than to *S. lugubris*, the only other known species of the genus. From *S. velutinus*, the Celebes bird differs in having the white on the nape more extensive; in the less brilliant color of the wings and tail; and in the tail being longer, the feathers broader, and of a different shape. The different shape of the tail of *S. velutinus* is more apparent than real, the two outer tail-feathers have the outer web broadened at the tip, showing a tendency to bend outwards. In the Celebes species when the tail is spread, it is seen not to be really forked but more or less truncate or slightly emarginate, with the second and third outer feather bent slightly outward.

Since writing the above Stuart Baker has published [5] a review of the genus. In it he reduces *S. velutinus* to only a form of *S. musschenbroeki*. That they are closely related no one will deny, but the differences are such that they had better be recognized as distinct species for the present at least.

Mr. Raven in a letter says that the species is more or less nocturnal; this may account for its scarcity in collections.

119. CACOMANTIS MERULINUS MERULINUS (Scopoli).

One young male not long from the nest, Parigi, September 25, 1916.

120. CACOMANTIS SEPULCRALIS VIRESCENS (Brüggemann).

One male, Likoepang, March 5, 1916; one male, Rano Rano, December 10, 1917.

The male from Rano Rano has the breast and belly darker than the Likoepang specimen and the tips to the tail feathers buff, not white as in the latter. They measure as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
No. 251832, Rano Rano	116	135	15
No. 249144, Likoepang	107	135	16

[4] Birds Celebes, vol. 1, 1898, p. 203. [5] Nov. Zool., vol. 26, 1920, pp. 291–294.

121. LAMPROCOCCYX MALAYANUS (Raffles).

One female, Parigi, September 17, 1916, and one male, Toboli, October 25, 1916.

These belong to *Neochalcites* Mathews,[6] but I do not see the advantage of recognizing it, though there are slight structural differences. *Lamprococcyx basalis*,[7] when compared with *Lamprococcyx lucidus* (type of *Lamprococcyx* Cabanis and Heine), has the nostril of a different shape; more oval and nearly parallel with the tomium, *L. lucidus* has the feathers of the chin more bristly at the tips, and the bill is broader. The wing formula is practically the same. These differences are slight and hard to make out. Genera are largely matters of convenience or to emphasize lines of descent, and in the present case I can see no practical utility in recognizing *Neochalcites*.

122. EUDYNAMIS MELANORHYNCHA S. Müller.

A good series of adults and immature in various stages of plumage from the following localities: Soemalata, September 7, 1914; Kwandang, October 9, 1914; Likoepang, March 12, 1916; Manembo Nembo, June 23, 1916; Toemaratas, July 8, 1916; Laboea Sore, November 28, 1916; Koelawi, February 1, 1917; Rano Lindoe, March 8–19, 1917; Gimpoe, August 2–23, 1917; Pinedapa, February 5 and 21, 1918.

This series convinces me that Meyer and Wiglesworth's [8] interpretation of the plumages of this species, except for the adult male, is erroneous. A young male, taken June 23, 1916, No. 249,652, is not long from the nest; the tail is about half grown and the bill is short and stubby, yet it is a shining blue black, above and below, only a little duller than the adult. Now, what I take to be the fully adult female, and it is so marked by the collector, is a greenish black above and on the fore neck, shading off into fuscous, with a metallic sheen on the chest, breast, and belly. From the foregoing it will be seen that the fully adult female resembles the adult male, but is duller, being a greenish black above and fuscous on the chest, breast, and belly, whereas the male plumage is a uniform bluish or purplish black, only slightly duller on the under parts. The next stage with greenish black backs and tails, dull black throats, and cinnamon-buff lower parts are immature females, approaching maturity and are marked as females by the collector, the specimens like the above but with bars below being only still younger. Birds with backs and tails barred rufous and black, with cinnamon-buff under parts barred with black, and chestnut throats are younger females, probably

[6] Austral Av. Rec., vol. 1, 1913, p. 7.

[7] Mathews makes his *Chrysococcyx basalis mellori* the type of *Neochalcites*, but subspecies do not differ structurally from the species.

[8] Birds of Celebes, vol. 1, 1898, p. 205.

of the year, as some of the specimens in this stage have begun to assume the black heads and throats of the next plumage.

There is one specimen (No. 252550), Gimpoe, August 21, marked as a female, that does not fall into any of the above stages and I must confess that I do not know what to make of it. It is a bluish black on the back, tail, and fore neck; the breast and belly buffy barred with black; the old feathers of the wings (it is in molt) show a few hardly discernible rufous irregular cross bars, the new feathers are coming in bluish black. It resembles the male in the color of the back and tail, but not otherwise. If the bird is wrongly sexed and proves to be an immature male, it is still very remarkable, as I have already shown that the young male when it leaves the nest is a shining black like the adult. For a bird to acquire the adult dress and then retrograde would be rather unique. I must confess that I do not know how to interpret Meyer and Wiglesworth's description of the nestling, except that it must be a female and that the sexes differ widely in the immature plumage, even in the nestling, but approach each other in old age.

To recapitulate: The fully adult female resembles the adult male but is duller. The young male resembles the adult male from the nest up, while the young female has a distinctive immature dress and only acquires the fully adult plumage after successive molts covering a period of two or more years. The females breed in the immature plumage, that is the stage with greenish black backs, black throats, and cinnamon underparts, which is assumed in the second year, judging from the material in the collection. This would account for the rarity of fully adult plumages of the female in collections as they would be overbalanced by immature individuals and owing to the struggle for existance much fewer would ever live to assume it. There is nothing new in the above interpretations of the changes in plumage, except that the young male described above seems to me to be the key to the whole situation and to settle the matter, leaving no ground for further argument.

123. SCYTHROPS NOVAEHOLLANDIAE Latham.

One male and one female, Rano Lindoe, March 11, 1917; one immature unsexed, Lende, June 15, 1917.

The two adults when compared with Australian specimens have the backs less tinged with olive, and the top of the head a clearer gray. The Australian specimens are old and unsatisfactory and when new and larger series are compared the above differences might not hold.

The immature when compared with a specimen of about the same age from Cape York, Queensland, has the throat and top of head

a deeper buff; the back lacks the brownish tinge and the tips of the wing-coverts, secondaries, and primaries have the buff a deeper tint; the barring on the sides and flanks are more pronounced; the dark bars on the tail are more distinct and the buff of the notches deeper. The Australian specimen has been mounted and some of these differences may be due to exposure to light.

The series measures as follows:

Cat. No.	Sex.	Locality.	Wing.	Tail.	Bill from nostril.
			mm.	*mm.*	*mm.*
71632	Male adult	Cape York, Queensland	361	286	58
145785	Adult	do	346	261	58
13920	do	Australia	365	270	71
250798	Male adult	Rano Lindoe, Celebes	360	273	74
250799	Female adult	do	336	251	65. 5

124. CENTROPUS BENGALENSIS SARASINORUM Stresemann.[9]

Three males, five females, and one unsexed, from the following localities: Kwandang, October 26, 1914; Likoepang, February 20, March 2 and 9, 1916; Parigi, September 26, 1916; Toboli, October 25, 1916; Rano Lindoe, March 8 and 21, 1917; Lende, June 15, 1917.

The above series has been compared with a fair number from the Philippines, and a few specimens from Java and the Malay Peninsula. Birds from the latter three localities seem to agree in size and color, but those from Celebes are larger and do not seem to be quite so dark on the backs; the color differences are slight but that of size entitles the Celebes form to recognition.

The series at my command averages as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Three males, Celebes	151	192. 7	26
Five males, Philippines	141. 5	174. 2	23. 4
One male, Trong, lower Siam	139. 5	151. 5	25
One male, Banka, east Sumatra	138	149	24
Two females, Celebes	180	222. 7	29
Six females, Philippines	160. 7	192. 1	26. 6
Two females, Java	153. 2	181. 5	25. 2
One female, west Malay Peninsula	169	198	27

125. PYRRHOCENTOR CELEBENSIS CELEBENSIS (Quoy and Gaimard).

Three males and three females from the following localities: Kwala Besar, July 29 and August 24, 1914; Tandjong Penjoe, February 19, 1915; Likoepang, March 9, 1916.

[9] Nov. Zool., vol. 19, 1912, p. 338.

A female from Likoepang (No. 249137) has about half the lower mandible from the tip and the tip of the maxilla, horn color, but this is an indication that the bird is not fully adult.

Local name *Koeng Koeng*.—H. C. R.

126. PYRRHOCENTOR CELEBENSIS RUFESCENS Meyer and Wiglesworth.

One male, Laboea Sore, November 21, 1916; one male and one female, Koelawi, February 2 and 23, 1917; two females, Rano Lindoe, March 10 and 15, 1917; one male and one female, Gimpoe, August 12, 1917; two males, Pinedapa, January 22 and February 14, 1918.

Two specimens in the above series (Nos. 250804 and 251842) taken at Rano Lindoe, March 10, and Gimpoe, August 12, respectively, have the lower mandible wax yellow and the tip of the upper mandible horn color. A specimen taken at Koelawi, February 2, has the lower mandible darkened along the tomium and the remainder and extreme tip of the upper dusky horn color, while a specimen taken at Rano Lindoe March 15 (No. 250805) has only the tip of the lower and extreme tip of the upper mandible dusky horn color. From the above it would appear that the wholly black bill is only assumed by old birds.

Of the two birds taken at Koelawi, the female is more rufescent above, especially on the wing coverts, than any in the series, while the male is much lighter below than any other specimen of the form before me, approaching specimens of *Pyrrhocentor c. celebensis* but still not quite so light below.

Specimens taken at Laboea Sore, November 21, Koelawi, February 23, Rano Lindoe, March 15, and Pinedapa, January 22 and February 14, are molting on the head, wings, and tail, but more especially on the top of the head. The new feathers on the forehead are much darker than those they displace or after the molt is completed. One specimen (No. 251845), Pinedapa, February 14, has the primaries and tail very dark, the exposed part of the closed wings nearly the color of the back, but this seems to be due to stain as the unexposed part of the wings are of the usual color and there are signs of stain at the base of the tail.

When compared with specimens from the north end of the island the above series averages more rufescent on the underparts and sides of face; above there do not appear to be any striking constant differences.

127. RHAMPHOCOCCYX CALORHYNCHUS CALORHYNCHUS (Temminck).

Six males and eight females from the following localities: Kwala Besar, July 29, 1914; Paleleh River, August 8, 1914; Tandjong Penjoe, February 16–20, 1915; Likoepang, March 4, 1916; Toemaratas, July 10, 1916.

This series is fairly uniform, though some specimens are lighter than others; but judging from the color of the bill and compressed condition of the lower mandible, forming a sharp ridge on the gonys, these are birds of the year or not fully adult. One specimen (No. 248,390) from Kwala Besar is without the whitish tip to the upper mandible and in four others in the series it is reduced to such a minute point as to be practically absent.

In describing *Rhamphococcyx centralis*,[10] I referred two specimens from Parigi to *Rhamphococcyx c. calorhynchus*. They are birds of the year as attested by the base of the lower mandible being blackish and one of the birds having the top of the head strongly washed with cinnamon-rufous. Comparing them with *R. c. centralis* of equal age they are darker on the throats and have smaller bills and the other measurements are decidedly smaller. They are lighter than northern specimens of *R. c. calorhynchus*, and as there are undoubted specimens of *R. c. centralis* from the same locality I now think I was in error and they had better be placed with the Middle Celebes form, on geographic grounds, especially as they are immature birds. As a matter of fact they are more or less intermediate and would seem to indicate that the two forms intergrade on the borders of their respective ranges.

128. RHAMPHOCOCCYX CALORHYNCHUS CENTRALIS Riley.[11]

Five males and ten females from the following localities: Parigi, September 10 and 19, 1916; Laboea Sore, November 21 and December 1, 1916; Rano Lindoe, March 21, 1917; Gimpoe, August 12, 1917; Pinedapa, January 11–February 15, 1918.

This race differs from *Rhamphococcyx c. calorhynchus* as follows: In larger and more arched bill; longer wing; the top of the head lighter; in the lighter color of the throat, chest, and mantle; and in less purplish wings and tail.

It might be that I have only redescribed *Rhamphococcyx calorhynchus meridionalis* Meyer and Wiglesworth but they say[12] that the only difference between their bird and the one from the north is the lighter color of the top of the head. Hartert,[13] however, in commenting on birds from Indrulaman says: "differ considerably from the bird from northern Celebes in having a much paler crown and a decidedly paler throat and it seems that also the tail as about half an inch longer." He says nothing about the larger and more arched bill, or longer wing, so the only course left to me for the

[10] Proc. Biol. Soc. Wash., vol. 31, 1918, p. 156.

[11] *Rhamphococcyx centralis* Riley, Proc. Biol. Soc. Wash., vol. 31, 1918, p. 156 (Rano Lindoe, Celebes).

[12] Birds of Celebes, vol. 1, 1898, p. 227.

[13] Nov. Zool., vol. 3, 1896, p. 160.

present is to list my birds under the above name until we know more about the distribution and relationship of these large cuckoos.

In the original description of the above form I identified two immature specimens from Parigi as belonging to *Rhamphococcyx* c. *calorhynchus*. This I am now convinced was an error and that they are really more or less intermediate between the two forms; accordingly, I have reduced my supposed species to a race.

A female taken at Pinedapa, Jan. 11, 1918, contained eggs with soft shells. Feet and tarsus black; skin about eyes black; tip of upper mandible with no color pigment for 5 mm., then black for 10 mm., then chrome yellow, which extends about 100 mm., gradually becoming sulphurous yellow; space near nostril and lower mandible, red.—H. C. R.

Family PICIDAE.

WOODPECKERS.

129. YUNGIPICUS TEMMINCKI (Malherbe).

A male and female, Likoepang, March 9, 1916; two males and one female, Toewo Mountain, Besoa, October 28–November 3, 1917; two males and one female, Rano Rano, December 12–22, 1917.

130. LICHTENSTEINIPICUS FULVUS FULVUS (Quoy and Gaimard).

A good species from: Paleleh River, August 17, 1914; Kwandang, October 8, 1914; Paleleh, November 10–13, 1914; Toli Toli, November 25–December 3, 1914; Tandjong Penjoe, February 17–20, 1915; Likoepang, January 18, and March 2–12. 1916; Koeala Prang, June 3–15; Manembo Nembo, June 24, 1916; Toemaratas, July 3, 1916.

A specimen (No. 249656) marked as a female, from Toemaratas, July 3, has a band of scarlet tipped feathers on the forehead; it is apparently an adult bird as it shows no indication of immaturity, indeed the plumage is somewhat worn below. It seems to indicate that very old females develop a few red feathers on the forehead.

A few specimens of either sex develop light spots to the tips of the feathers of the chest which apparently are soon worn off and some even have small light spots on the mantle; the latter variation being rarer than the first.

131. LICHTENSTEINIPICUS FULVUS INTERMEDIUS (Meyer).[14]

A good series from the following localities: Parigi, September 20, 1916; Toboli, October 21, 1916; Laboea Sore, November 28, 1916; Rano Lindoe, March 14–16, 1917; Tamboe, June 13, 1917; Gimpoe, August 4–27, 1917; Toewo Mountain, Besoa, November 1, 1917; Rano Rano, December 8–19, 1917; Pinedapa, February 6, 1918.

[14] *Microstictus intermedius* Meyer, Notes Leyden Museum, vol. 23, 1901, p. 186 (Gimpu).

The males of this series differ from *L. f. fulvus* in the greater extension of the red of the head on to the nape and cheeks; the females by the darker tails.

I have no specimens of *L. f. wallacei* for comparison. Two males of the above series (Nos. 251906 and 251909), from Rano Rano and Gimpoe, respectively, have the red confined to the forehead and crown, not reaching down on the sides of the face as far as the eye; they are evidently immature. The Gimpoe specimen is the younger (taken August 4) and has the breast and chest avellaneous, while in the older specimen it is like the adult.

Family PITTIDAE.

PITTAS.

132. PITTA CELEBENSIS Müller and Schlegel.

One male, Temboan, July 24, 1916; one female, Pinedapa, February 21, 1918.

In some particulars the specimen taken at Temboan does not agree with Meyer and Wiglesworth's [15] description. It lacks the blue vertical stripe and neck collar; the new feathers on the crown are very dark, almost black, edged with morocco red; the nape is brazil red; the black jugular patch shows a whitish central spot, caused by the bases of the feathers showing through the black; the dark pectoral band is *not* black but taupe brown. The bird is molting but in apparently adult plumage. It measures: Wing, 104; tail, 38.5; culmen, 20; bill from nostril, 14.5. The Pinedapa specimen is apparently a much younger bird than that from Temboan, or there is a difference in the sexes. It is a much lighter red on the breast and belly; the white center to the black jugular spot is more pronounced; the crown is lighter, chestnut not blackish; the blue vertical stripe and neck band are present; the chin and cheeks lighter, light russet vinaceous, not vinaceous russet; the dark pectoral band is very narrow, almost absolete. It measures: Wing, 102; tail, 40; culmen, 20; bill from nostril, 14.5. The Temboan specimen has had the skin badly broken on the top of the head and cleverly mended by the collector, this may account for the absence of the blue vertical stripe, but would not account for the other differences.

133. PITTA FORSTENI (Bonaparte).

One female, Temboan, August 1, 1916.

It measures: Wing, 114; tail, 46; Culmen, 25; bill from nostril 16.5.

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[15] Birds of Celebes, vol. 1, 1898, p. 340

Family HIRUNDINIDAE.

SWALLOWS.

134. HIRUNDO RUSTICA GUTTURALIS Scopoli.

A fair series of both sexes and immature from: Toli Toli, December 12 and 17, 1914; Parigi, September 24–October 5, 1916; Dolo, December 25 and 26, 1916; Rano Lindoe, March 10–27, 1917; Napoe, Watoetaoe, November 20, 1917.

135. HYPUROLEPIS JAVANICA FRONTALIS (Quoy and Gaimard).

A fair series from the following localities: Toli Toli, November 28, 1914; Koeala Prang, June 17 and 18, 1916; Parigi, September 28, 1916; Toboli, October 17 and 21, 1916; Manilili, December 16, 1916.

This series averages darker on the forehead and throat than Javan birds, but the breast and belly appear lighter; there is little or no difference in size. Birds from the Philippines, Borneo, the coast of the Malay Peninsula, the Anambas, and the Mergui Archipelago appear to be much like those from Celebes in color, allowing for individual variation, but have a longer wing, and belong to the form named by Oberholser[16] *Hypurolepis javanica abbotti*, with the range expanded. It is true the type of the latter has the throat a little darker and of a somewhat different shade than any in the series from the Philippines or elsewhere but the difference is slight and besides it is in freshly acquired plumage, before fading has set in; a specimen from Borneo (No. 178118) closely approaches it. I have no specimens from the type locality of *H. j. frontalis* for comparison but as the Celebes bird apparently does not belong to the Javan race or the one to the north there is nothing left to do but follow precedent[17] in the matter and refer it to the southern race for the present. Of *Hypurolepis javanica domicola* of peninsular India, I am not able to speak, having no specimens.

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
One male, Java	105. 5	47. 5	9. 5
Nine males, Celebes	104. 3	45. 9	9. 3
Four males, Philippines	108. 4	47. 6	9. 1
Two males, Borneo	107. 2	42	9
Two males, Anambas	109	45. 7	8. 7
One male, east coast Malay Peninsula	110	46. 5	9
Three males, Mergui Archipelago	109. 7	46. 3	9
One female, Java	102	42. 5	8. 5
Six females, Celebes	104. 6	45	8. 9
Five females, Philippines	106. 4	47. 5	9. 1
One female, Borneo	107	47	9
Three females, west coast Malay Peninsula	106. 7	43. 3	8. 8
Two females, Mergui Archipelago	108. 2	46	9

[16] Bull. U. S. Nat. Mus. No. 98, 1917, p. 32.
[17] See Oberholser, Bull. U. S. Nat. Mus. No. 98, 1917, p. 33.

Family MUSCICAPIDAE.

FLYCATCHERS.

136. CYORNIS BANYUMAS OMISSA (Hartert).

A small series of adults and young of both sexes from: Koelawi, February 23, 1917; Rano Lindoe, March 6–23, 1917; Toewo Mountain, Besoa, October 31–November 4, 1917.

I have been able to compare the above series with an adult male and female from Java and the birds from the two islands are quite distinct. In the male of the Javan form (*Cyornis banyumas banyumas*) the line on the forehead and over the lores is very light blue, while in the Celebes bird it is much deeper. The black on the chin is narrower, the lores deeper, and the ear coverts darker in the Javan form. The belly is whitish in the Javan male while in none of the Celebes specimens is it so; the lower parts are also deeper in the latter. The female of *Cyornis banyumas omissa* in the color of the back, wings, and tail, is only a lighter duller blue, than the male, while in the female of the Javan race the back is deep olive, the wings edged with buffy brown, the tail and upper tail-coverts cinnamon-brown. There are other differences, but the above is sufficient to show that the two races are very distinct and it is doubtful if they should only be recognized as forms instead of distinct species. However, out of deference to Hartert's[18] opinion, such an arrangement will show their relationship better and is retained.

An immature in the spotted plumage of about the same size as the adult was taken November 4, and two additional immatures that have begun to assume the adult plumage were taken March 6 and 21. Judging from the above more than one brood must be raised in a season, and the breeding period extends over a considerable part of the year.

Averages.	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Six males, *Cyornis b. omissa*	74. 8	59. 7	13. 3
Three females, *Cyornis b. omissa*	72. 8	57. 5	12. 5
One male, *Cyornis b. banyumas*	73. 5	58. 5	13. 5
One female, *Cyornis b. banyumas*	70. 5	56. 5	12. 5

137. CYORNIS HOEVELLI (Meyer).[19]

A small series of adults and immature of both sexes from Goenoeng Lehio, January 13–19, 1917; Toewo Mountain, Besoa, November 1, 1917; Rano Rano, December 10–27, 1917.

[18] Nov. Zool., vol. 8, 1901, p. 53.

[19] *Siphia hoevelli* Meyer, Notes Leyden Mus., vol. 23, 1903, p. 186 (Takala Mountains, Celebes).

As Meyer's original description of this rare and very distinct species is in Dutch, it has been thought advisable to give a description in English: Head all round, including the foreneck, dusky slate blue; across the forehead and the superciliary as far as the posterior border of the eye, a slightly brighter blue; chin, feathers covering the nostril, and lores, black; back and upper wing coverts, brownish olive with a russet wash on the rump; longer upper tail coverts and upper surface of the tail, argus brown, rectrices shading at the tip to sepia; remiges, chaetura drab, margined externally with raw umber, the tertials wholly of that color; under wing coverts, breast, abdomen, and crissum, ochraceous tawny, this color extending up each side slightly beyond the rounded border of the blue of the jugulum; remiges below, hair brown, bordered where they rest against the sides of the body with cinnamon; under surface of tail, sepia.

The female differs from the male in having the pileum deep neutral gray; the frons and lores ochraceous buff, the ear coverts and sides of neck lighter gray than the pileum and washed with ochraceous buff, middle of throat and jugulum ochraceous buff. Another female (No. 251,927) in the collection has the pileum deep payne's gray.

Young birds about the size of the parents, but in spotted plumage, were taken November 1 and December 24–27. One of these taken December 27 already has a few blue feathers appearing on the jugulum and a few feathers of the adult plumage appearing on the chest. An immature male taken at Goenoeng Lehio January 14 has nearly assumed the adult dress; the head is blue with only the chin ochraceous buff and a few tawny spots on the forehead and along the superciliary; the back still has a few tawny black-tipped feathers, and the breast and abdomen a few narrow black spots. From the above it will be seen that the males molt directly into the adult plumage and at an early date after leaving the nest.

In the quite extensive series of males in the collection there is little variation in color; in some the blue is slightly lighter than others. The principal variation seems to be in the width of the lighter blue of the forehead and superciliary; in some specimens it is quite extensive on the forehead, while in others it is much reduced.

The present species is closely related to *Cyornis hyacinthina* of Timor and *kühni* of Wetter in structure, but in coloration is unique in the genus, so far as is known at present.

The measurement of the series, exclusive of the immatures, is given below to show the variations:

Museum	Sex.	Locality.	Wing.	Tail.	Culmen.
			mm.	*mm.*	*mm.*
251113	Male	Goenoeng Lehio	88	69	15. 5
251115	do	do	86	70	13. 5
251980	do	Besoa (Toewo Mountain)	87. 5	72	13. 5
251982	do	Rano Rano	89. 5	70	15
251983	do	do	89	69. 5	13. 5
251984	do	do	87	68	14
251985	do	do	85	65	13
251989	do	do	88	73	13. 5
251991	do	do	86. 5	70. 5	13. 5
251992	do	do	85. 5	65.	13
251116	Female	Goenoeng Lehio	82	65. 5	13
251987	do	Rano Rano	87	64. 5	14

138. POLIOMYIAS MUGIMAKI (Temminck).

Two males and one female, Rano Rano, December 11–18, 1917.

I can not find that this species has been recorded from Celebes before.

Stresemann[20] places the above in *Erythrosterna* Bonaparte of which *Muscicapa parva* Bechstein is the type, but I do not think he will be generally followed in so doing.

139. DENDROBIASTES RUFIGULA (Wallace).

One male, Koelawi, February 6, 1917.

This specimen measures: Wing, 63.5; tail, 46.5; culmen, 13.55 mm. It does not agree exactly with Meyer and Wiglesworth's[21] description; the throat and breast are not bright rufous but more of an ochraceous-orange, shading off on the sides into a lighter color; the middle of the lower breast, the belly, and under tail coverts white.

140. DENDROBIASTES HYPERYTHRA JUGOSAE Riley[22]

A good series from: Goenoeng Kalabat, April 9–10, 1916; Goenoeng Lehio, January 15–19, 1917; Rano Rano, December 9–28, 1917; Toewo Mountain, Besoa, November 4, 1917.

The above race is similar to *Dendrobiastes hyperythra vulcani* Robinson, of Java, but averages lighter above; the belly with more white; wing longer. Wing, 62; tail, 43; culmen, 10 mm.

The female is even more different than the male. The back is more brownish-olive; the superciliary and lower parts more of a clay color, not light brownish-buff; edgings of the remiges darker than in the Javan form.

[20] Nov. Zool., vol. 19, 1912, p. 325.
[21] Birds of Celebes, vol. 1, 1898, p. 372.
[22] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 561 (Goenoeng Léhio, Celebes).

In all the forms of this species examined by me the males are similar, but judging from the females of the only two forms in which I have been able to examine this sex the differences are quite noticeable. The female of the Javan form has the pectoral band very pronounced with the throat and superciliaries much lighter, while in that from Celebes the superciliaries are of about the same color as the throat which is scarcely or not lighter than the chest. A single male from Kina Balu, Borneo, is lighter above and much lighter below than any specimen of the several forms before me and probably represents a distinct form.

Three young in the spotted plumage, not long from the nest, with stumpy tails, were taken at Rano Rano, December 13–18; a young bird, considerably older, taken at Goenoeng Kalabat, April 9, though marked female is undoubtedly a male and is assuming the plumage of the adult. Some dark-blue feathers are appearing amongst the sooty ones of the back; the superciliary is only indicated by buffy bases to some of the feathers; the throat and foreneck light pinkish cinnamon, the dark mentum barely indicated; the chest much deeper than the throat, the feathers margined with sooty, giving a mottled appearance; the rest of the plumage is much as in the adult, except that the feathers of the sides are narrowly edged with dusky. The chief interest of this specimen is that it shows that the adult plumage is assumed soon after leaving the nest.

The series before me average as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Ten males, *D. h. jugosae*	61. 8	41. 8	9. 8
Four males, *D. h. vulcani*	57. 7	41	9. 7
Two males, *D. h. annamensis*	62. 7	45	10
One male, Kina Balu, Borneo	56. 5	39. 5	10
Nine females, *D. h. jugosae*	58. 8	39. 3	9. 3
Four females, *D. h. vulcani*	56. 9	40	9. 2

141. MUSCICAPULA MELANOLEUCA WESTERMANNI Sharpe.

One male, Goenoeng Kalabat, April 10, 1916.

It measures: Wing, 58; tail, 41; culmen, 9 mm.

142. GERYGONE FLAVEOLA Cabanis.

One female, Kwandang, September 15, 1914; one male, Toli Toli, December 6, 1914; three females, Koelawi, January 27–February 10, 1917; one male, Rano Lindoe, March 29, 1917; one female, Rano Rano, December 29, 1917.

Meyer and Wiglesworth [23] in their description do not refer to the dark subterminal tail-band, but it is mentioned by Sharpe [24] and well

[23] Birds of Celebes, vol. 1, 1898, p. 388.

[24] Cat. Birds Brit. Mus., vol. 4, 1879, p. 214, pl. 5, fig. 2.

shown in his plate. It may be that the birds from the north and central part of the island are different from those of the south, but I have none of the latter for comparison. Hitherto the species has only been found in the south and central part of the island. The series measures as follows:

Cat. No.	Sex.	Locality.	Wing.	Tail.	Culmen.
			mm.	*mm.*	*mm.*
248706	Male	Toli Toli	54	38	10. 5
251137	do	Rano Lindoe	52	35	10
248705	Female	Kwandang	52. 5	35	10
251134	do	Koelawi	50	34. 5	10. 5
251135	do	do	55	36	10
251136	do	do	51. 5	35	10
252000	do	Rano Rano	55	40	9

143. HYPOTHYMIS PUELLA PUELLA (Wallace).

A fine series of both sexes and immature from: Paleleh River, August 17, 1914; Kwandang, September 15–19, 1914; Kapas Bay, November 19, 1914; Toli Toli, December 3–19, 1914; Tandjong Penjoe, February 19, 1915; Teteamoet, February 3, 1916; Likoepang, March 4–12, 1916; Ayermadidi, April 1–4, 1916; Pulo Lembeh, June 13, 1916; Manembo Nembo, June 22, 1916; Rano Lindoe, March 7–21, 1917; Gimpoe, August 3–24, 1917; Pinedapa, February 2–4, 1918.

This series shows quite a little variation, some specimens being a much deeper blue than others, but this condition does not seem to be geographic as both styles occur at the same locality. An immature taken at Gimpoe, August 11, has the back fuscous; a narrow dusky drab band across the chest; breast and abdomen whitish; the pileum, cheeks, and throat, slate blue; wings chaetura drab, the lesser wing-coverts bluish; tail chaetura drab with a bluish tinge.

The type of *Myiagra puella* Wallace[25] came from Celebes, as stated by the describer, not from the Sula Islands as stated by Meyer and Wiglesworth[26]; the bird of the latter group has been separated by Hartert[27] as *Hypothymis puella blasii.*

144. RHIPIDURA TEYSMANNI Büttikofer.

A small series of both sexes and young from: Toemaratas, July 9, 1916; Goenoeng Lehio, January 20, 1917; Koelawi, February 23, 1917; Lindoe Trail, February 25–27, 1917; Rano Lindoe, March 23, 1917; Toewo Mountain, Besoa, October 27–November 4, 1917; Rano Rano, December 12–23, 1917.

[25] Proc. Zool. Soc., 1862, p. 340.
[26] Birds of Celebes, vol. 1, 1898, p. 378.
[27] Nov. Zool., vol. 5, 1898, p. 131.

The birds of this series do not agree with the original description [28] or that of Meyer and Wiglesworth.[29] The forehead and flanks are much lighter than the rump and base of tail, which is described as cinnamon-red; the white of the throat is continued back beneath the auriculars in a narrow line; the black on the jugulum is a rather large blotch, not a narrow bar, and the feathers on the lower border of this black blotch are tipped with white, forming a rather large spot. It may well be that this is not true *R. teysmanni*, which has only been found in south Celebes, until quite recently, while the above series is from the north and north-central part of the island. Meyer [30] has reported it from central Celebes without definite locality.

A young female not long from the nest, with a short stumpy tail, taken at Toewo Mountain, October 28, resembles the adult, except the colors are lighter and the black jugular spot is lacking, its place being taken by a mouse gray band, washed with buffy.

The black jugular blotch first appears as a narrow band below the white of the throat and gradually increases in size as the bird ages, the white tips only appearing when it becomes fully adult. The unspotted condition of the young in this genus would seem to indicate that it is wrongly placed in the family Muscicapidae, or that the spotted condition of the young is not a family character.

Nine adult males measure as follows: wing 70–76 (73.5); tail, 77–84 (81.6); culmen, 9.5–11.5 (10.7); and four adult females: wing, 66.5–69 (67.4); tail, 76–80 (78); culmen, 9.5–10 (9.9).

From the above the female appears to be smaller and is slightly duller in color.

145. CULICICAPA HELIANTHEA HELIANTHEA (Wallace).

A good series of both sexes: Paleleh River, August 10, 1914; Ayermadidi, April 4, 1916; Goenoeng Kalabat, April 6 and 10, 1916; Toemaratas, July 6–8, 1916; Goenoeng Lehio, January 19, 1917; Koelawi, February 23, 1917; Lindoe Trail, February 25, 1917; Rano Lindoe, March 9–14, 1917; Toewo Mountain, Besoa, October 26–November 4, 1917; Rano Rano, December 17, 1917.

The birds from the north in the above series when compared with a series from the Philippines show the latter to represent a recognizable race; the Celebes birds are more yellowish and the Philippine specimens have more of a greenish cast to the upper surface; below there seems to be little if any difference. The Celebes series averages a little larger. The name for the Philippine form is, apparently, *Culicicapa helianthea panayensis* (Sharpe). [31]

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[28] Notes Leyden Mus., vol. 15, 1893, p. 80.

[29] Birds of Celebes, vol. 1, 1898, p. 380.

[30] Notes Leyden Mus., vol. 23, 1903, p. 189.

[31] *Xantholestes panayensis* Sharpe, Trans. Linn. Soc. Lond., ser. 2. Zool., vol. 1, 1877, p. 327.

The birds from central Celebes when compared with the northern birds are duller, more greenish above, especially on the pileum. It may be there is more than one form of this species in Celebes, or the differences may be seasonal; for the present I prefer to adopt the latter supposition.

Averages.	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Four males, north Celebes	62	50. 7	11. 2
Six males, central Celebes	59. 1	48. 7	10. 4
Six males, Philippines	56. 8	47. 2	9. 3
Five females, north Celebes	57. 3	46. 8	10
Five females, central Celebes	56. 5	46. 8	9. 5
Two females, Philippines	56. 5	42. 5	9

146. EUMYIAS SEPTENTRIONALIS SEPTENTRIONALIS (Büttikofer).

Two males and one female, Toemaratas, July 5–9, 1916; one female, Goenoeng Lehio, January 17, 1917; one male, Toewo Mountain, Besoa, November 3, 1917; one male, Rano Rano, December 19, 1917.

The two males from central Celebes appear to be slightly darker with smaller bills than the two northern males. The series is too small to arrive at any definite conclusions, and for the present I prefer to keep them under one name.

Stresemann[32] makes the Philippine (*E. panayensis*, *E. nigrimentalis* and *E. nigriloris*), Celebes (*E. septentrionalis* and *E. meridionalis*), the Ceram (*E. harterti*), and Obi (*E. obiensis*) species, races of *E. panayensis*, an arrangement which in my judgment is not correct. Of *E. panayensis* I have seen no specimens, but of the other two Philippine species I have good series and they are so different from the Celebes forms that it is doubtful if they are more closely related than being derived from the same stock. True, the Celebes forms probably reached the island from the Philippines, but this has been at so remote a period of time and the differences are so great that their subspecific relationship is purely speculative. Judging from descriptions (no specimens of *E. meridionalis* have been examined) the two Celebes birds are only forms of one another and should be treated as such. *E. panayensis obiensis* (Hartert) and *E. panayensis harterti* (van Oort), are made races of the Philippine species by the describers, but this, speaking geographically, can not well be so, if we recognize the Celebes forms as specifically distinct. They are, judging from descriptions alone, closely related to the Celebes forms of which they are probably only races.

[32] Nov. Zool., vol. 21, 1914, p. 127.

Oberholser[33] argues that *Stoporala* Blyth, 1845 (type *Muscicapa melanops* Vigors) is not preoccupied by *Stoparola* Blyth, 1836 (type *Stoparola luctuosa=Muscicapa atricapilla* Linnaeus), but as it seems that the one-letter rule has not been universally adopted or consistently used even by those who have evoked it to make some change, it would be better to continue to use a name of certain application, in this case *Eumyias* Cabanis.

The above series measures as follows:

Cat. No.	Sex.	Locality.	Wing.	Tail.	Culmen.
			mm.	*mm.*	*mm.*
249858	Male	Toemaratas	73	54	10
249856	do	do	72. 5	53	10
251998	do	Besoa	71. 5	52. 5	9. 5
251999	do	Rano Rano	71	51. 5	9
249857	Female	Toemaratas	68. 5	52	10
251112	do	Goenoeng Lehio	70	54	9

Family CAMPEPHAGIDAE.

CUCKOO-SHRIKES.

147. GRAUCALUS BICOLOR (Temminck).

One male, Kwandang, October 7, 1914; one male, Likoepang, February 28, 1916; one female, Tamboe, June 13, 1917; one male and one female, Pinedapa, February 7 and 21, 1918.

The male taken at Pinedapa, February 21, differs from the Likoepang male in having the feathers of the chest narrowly edged with black, forming a poorly defined band; it appears to be adult.

Aside from the larger size and presence of white at the extreme base of the tail-feathers, the bills in the above species are bluish-slate, lighter at the tip as a rule, especially in the female, as contrasted with the dull black (in the skin) bills in both sexes of *Graucalus leucopygius*. The specimen from Tamboe has the whole culmen horn color.

Bill slaty-blue, lighter at the tip and along the edges of the mandibles—H. C. R.

148. GRAUCALUS LEUCOPYGIUS Bonaparte.

A good series of both sexes from: Paleleh, August 1, 1914; Soemalata, September 4 and 8, 1914; Kwandang, September 16–October 9, 1914; Kapas Bay, November 22, 1914; Toli Toli, December 4, 1914; Tandjong Penjoe, February 20–26, 1915; Likoepang, January 16-March 12, 1916; Koeala Prang, June 4–14, 1916; Parigi, September 25, 1916; Toboli, October 25, 1916; Manilili, December 16, 1916; Rano Lindoe, March 8, 1917; Tamboe, June 13, 1917; Gimpoe, August 12, 1917.

[33] Proc. Biol. Soc. Wash., vol. 32, 1919, p. 47.

149. GRAUCALUS TEMMINCKI TEMMINCKI (S. Müller).

One male, Paleleh River, August 16, 1914.

Of a much deeper blue than the form listed below, with the bill of a different color; dusky horn-color at the tip for about half its length. The bill is also smaller. It measures, wing, 151.5; tail, 145.5; culmen, 23. The different color of the bill is due, evidently, to immaturity.

150. GRAUCALUS TEMMINCKI TONKEANUS (Meyer).[34]

A good series of both sexes from: Lindoe Trail, February 26, 1917; Rano Lindoe, March 9, 1917; Toewo Mountain Besoa, October 27–November 3, 1917; Rano Rano, December 11–26, 1917.

The above series is uniformly of a much lighter blue and have larger bills than the single specimen of *Graucalus temmincki temmincki*. The immature has the tips of the tail feathers and inner remiges edged with white, and the tip of the bill horn color. Judging from this, the Paleleh specimen (*G. t. temmincki*) is not fully adult. The above series may not belong to *G. t. tonkeanus*, as no specimens from the type locality are available to me for comparison, but they agree with the description.

Five males measure: Wing, 161–171 (165.2); tail, 143–161 (152.7): culmen, 25–27 (26), and 12 females: Wing, 155.5–168.5 (162.3); tail, 143.5–164 (153.7); culmen, 24–26.5 (25.4).

151. EDOLISOMA MORIO MORIO (S. Müller).

A small series of both sexes from: Kwandang, September 16, 1914; Likoepang, February 24–March 12, 1916; Ayermadidi, May 4, 1916; Laboea Sore, November 24, 1916; Rano Lindoe, March 14–21, 1917; Gimpoe, August 4–10, 1917; Toewo Mountain, Besoa, October 29, 1917.

I can detect no differences between the females from the extreme northern end of the island and those from the region in the vicinity of Lake Lindoe.

Males with the whole throat and chest blackish, apparently acquire this plumage at the first breeding season as two males from Likoepang still show signs of immaturity, though the throats and chests are blackish, in fact one (No. 249274) is the most highly developed in this respect of any bird in the series, yet the under wing coverts are cinnamon; the other (No. 249273) has in addition to the cinnamon under wing coverts some buff and black-barred feathers on the breast, yet the throat and chest are blackish. A male from Rano Lindoe, March 21 (No. 251043), has only the chin, lores, and auriculars black, the remainder of the lower parts

[34] Notes Leyden Mus., vol. 23, 1903, p. 187 (Tonkean).

being only a little darker than the back, except the throat which shades off into dark slate; it is the grayest specimen in the series, but is approached by another male from Gimpoe. Perhaps they are intermediates. This seems very probable, as a specimen from Tobea Island, Buton Strait, resembles a specimen of the gray-breasted type from Gimpoe, but is not as gray as the specimen from Rano Lindoe mentioned above. Two other males from Gimpoe are as dark as the extreme northern birds, however. It would appear as if the gray-breasted birds are the old males.

Van Oort [35] has shown that the type locality of *Ceblepyris morio* S. Müller is northern Celebes (Tondano and Gorontalo) and names the southern form *Edoliisoma morio wiglesworthi.*

Genus CELEBESIA Riley.[36]

The original description was as follows:

Similar to *Malindangia* Mearns but bill proportionally narrower (width just forward of the nostril equal to the depth instead of broader); fifth primary (counting from the outside shorter than the third instead of longer; rectrices more rounded; plumage not so soft in texture; and color pattern different.

To the above original diagnosis I would like to state that in *Malindangia* the tail about equals the wing in length, while in the above genus it is quite a little shorter.

Type and only known species the following:

152. CELEBESIA ABBOTTI Riley.[37]

Seven males and four females, Rano Rano, December 9–27, 1917.

The original description is as follows:

Upper parts, including the lesser wing coverts, slate gray; lores, superciliary, auriculars and throat, deep shining black; remaining under parts, white; wings (except the lesser coverts) black, the feathers edged outwardly with the color of the back; bend of wing blackish; under wing coverts, white; middle tail feathers slightly darker than the back with an irregular line along the shaft towards the tip and shaft black; remaining tail feathers blackish, the three outer with a subterminal band of deep neutral gray, widest on the outer and almost disappearing on the third, all the tail feathers narrowly bordered at the tip with white, this almost obsolete as the middle feathers are approached; thighs black. Wing, 114; tail, 87; culmen, 20; tarsus, 25.5; middle toe, 17.5 mm.

The females only differ from the males in having the face and throat slate gray instead of shining black.

There is some slight variation in the series of males. The black shaft line on the middle tail feathers is much narrowed or confined to the shaft; the dark gray subterminal tip on the three outer tail feathers and the narrow white terminal edging are much reduced or

[35] Notes Leyden Mus., vol. 29, 1907, p. 77.
[36] Proc. Biol. Soc. Wash., vol. 31, 1918, p. 158.
[37] Idem, p. 158.

nearly obsolete; the tail feathers next to the central pair with the outer webs bordered with and having a subterminal border of slate gray; and the gray edging to the remiges is more developed in some specimens than others.

In some lights the top of the head and mantle appear to be darker than the rump, in other positions this difference is scarcely noticeable. This effect seems to be produced by a sheen seen in certain lights; it is hardly what is usually called iridescent.

When I described this genus it was compared with *Malindangia* Mearns, but I neglected to compare it carefully with *Edolisoma*, as the color pattern was so different. Comparing it with the latter, the rectrices are more pointed; the bill longer and proportionally more slender; and the texture of the throat more silky. In fact, in structural details, *Celebesia* seems to be nearly intermediate between *Malindangia* and *Edolisoma* with leanings perhaps towards the latter. Nevertheless, *Celebesia* evidently represents *Malindangia* in the highlands of Celebes.

Most of the specimens of *Celebesia abbotti* before me have the primaries more or less in process of molt, and it is rather difficult to determine the true wing formula.

In the original description only the measurement of the type was given and the length of tail inadvertently given incorrectly. Below the extremes and averages of the above series are given: The (seven) males—wing, 105.5–114.5 (109.6); tail, 87–103 (94.4); culmen, 18–20 (19). The (four) females—wing, 103.5–107.5 (105); tail, 87–97 (92); culmen, 18–18.5 (18.4).

153. LALAGE LEUCOPYGIALIS Walden.

One adult male, one adult female, and one immature female, Likoepang, March 9, 1916.

Family TIMALIIDAE.

BABBLING THRUSHES.

154. CATAPONERA ABDITIVA Riley.[38]

One adult female, Rano Rano, December 21, 1917 (the type).

The original description of this distinct species is as follows:

Above mummy brown, shading into dresden brown on the forehead and crown; below dresden brown, shading into buckthorn brown on the belly; a rather broad superciliary line extending back over the ear coverts and widening posteriorly and a spot on the lower eyelid, black; upper tail coverts, tail, remiges, and the longer under tail coverts, mars brown; bill (in dried skin), ochraceous orange. Wing, 129; tail, 109; culmen, 25; tarsus, 39; middle toe, 26 mm.

[38] Proc. Biol. Soc. Wash., vol. 31, 1918, p. 158.

Remarks.—This species is so very different from the description and plate of *Cataponera turdoides* Hartert given in Meyer and Wiglesworth[39] that it scarcely needs comparison. Hartert's species came from the south, while the present comes from the central mountainous part of the island.

In this class of birds the sexes are alike, so the differences can not be explained upon that score.

Collected at dusk and seen to hop along branches in the same way as *Malia*. Bill reddish-orange; eyelid and feet chrome yellow.—H. C. R.

155. ANDROPHILUS CASTANEUS (Büttikofer).

One male, Goenoeng Lehio, January 17, 1917; one male, Toewo Mountain, November 4, 1917; two males, Rano Rano, December 10 and 13, 1917.

The tails in the above specimens are somewhat defective.

The genus *Androphilus* strongly resembles *Pseudotharrhaleus* of the Philippines, both in color and structure, and the only striking difference is in the longer, stiffer, and more pointed tail feathers of the latter. The wing formula is practically the same and somewhat peculiar, there being little difference in size after the third (from the outside) in the length of the primaries, making a very blunt wing. *Androphilus* is said to have 10 rectrices, while *Pseudotharrhaleus* has 12; the two genera are very closely allied and evidently represent each other in their respective habitats. Since Meyer and Wiglesworth wrote on the birds of Celebes, *Androphilus* has been discovered on the high mountains of Buru and Ceram, and Rothschild and Hartert[40] have described a species from central Dutch New Guinea; from the description of the latter and the remarks accompanying it this is a very doubtful member of the genus, however.

These are often heard but hard to see because of their habit of running along and under fallen tree trunks and dense dark underbrush, though most of the time they sit absolutely motionless watching for food.—H. C. R.

The four males measure as follows:

No.	Locality	Wing.	Culmen.	Tarsus.	Middle toe.
		mm.	*mm.*	*mm.*	*mm.*
251049	Goenoeng Lehio	61. 5	12. 5	26	18
251963	Toewo Mountain, Besoa	59. 5	13	27	17
251964	Rano Rano	59	13	26. 5	17
251965	do	62. 5	13. 5	27	16. 5

156. MALIA GRATA GRATA Schlegel.

A fair series of both sexes and immature from: Goenoeng Lehio, January 14–20, 1917: Rano Rano, December 8–27, 1917.

[39] Birds of Celebes, vol. 2, 1898, p. 503, pl. 29.
[40] Bull. Brit. Orn. Club, vol. 34, 1911, p. 33.

There are no specimens available for comparison from either the north or the south, but I am provisionally referring the above series to the southern form, as the relationship of other species from the region seem to point in that direction and the specimens before me do not agree with Meyer and Wiglesworth's description or plate (Birds Celebes, 2, 1898, 500, pl. 33) of *Malia grata recondita*. Their plate shows a bird with the greater and middle wing coverts, tertials, and inner secondaries warbler green like the back, while in the specimens before me only the lesser wing coverts are warbler green, the rest of the closed wing being mars brown like the tail; the flanks on my birds are also more extensively warbler green.

The immature is much like the adult, except it is duller, the chest and belly pyrite yellow, duskier on the flanks, with the feathers of the lower parts obscurely edged with dusky, giving these parts a slightly mottled effect in certain lights. Even the wings and tail are only slightly duller than in the adult. They gradually brighten with age as the adult condition is approached.

Acts much like a starling in the way it climbs about on moss-covered tree trunks and branches; flight starlinglike.—H. C. R.

157. AETHOSTOMA CELEBENSIS (Strickland).

A good series of both sexes from: Paleleh River, August 10, 1914; Tandjong Tango, August 28, 1914; Kapas Bay, November 19, 1914; Toli Toli, December 1–4, 1914; Likoepang, March 2–9, 1916; Toemaratas, July 3, 1916; Laboea Sore, November 28, 1916; Goenoeng Lehio, January 18, 1917; Koelawi, February 2–23, 1917; Rano Lindoe, March 21–25, 1917; Pinedapa, January 18–February 15, 1918.

This series shows quite a little individual variation. An apparently adult female (No. 249880) from Toemaratas, has the throat light buff and is approached in this respect by a male from Pinedapa. Some specimens have the flanks strongly buffy brown and this color even extends across the chest in an indistinct band, while in other specimens the flanks are much less strongly marked with buffy brown and the chest is smoky gray; in a few specimens the lower parts are almost entirely white, with the exception of the grayish wash on the sides and buffy under tail-coverts. Judging from an immature male taken at Koelawi, February 2, not long from the nest, having the chest with obscure dusky spots, the specimens with the indistinct chest bands are probably birds of the year and the birds with the underparts almost entirely white very old adults. The majority of the series have a dark rictal stripe, more or less distinct, but this is practically absent in a number of specimens. The series from central Celebes when compared with northern birds average a little more brownish on the sides and flanks, yet individual specimens from

either series can be picked out that are almost identical. There is little or no difference in size.

The type of *Aethostoma* Sharpe is *Trichostoma rostratum* Blyth, and a comparison of *celebensis* with it shows them to be not structurally quite the same and it is doubtful if they should be placed in the same genus. *Trichostoma celebense* Strickland has the tarsus less than one half the length of the tail, while in *rostratum* it is more than half. In *T. celebense* the tarsus equals about one and a third the length of the middle toe without claw while in *T. rostratum* the proportion is about one and a half.

Nasal region very soft. Iris light brown.—H. C. R.

Family TURDIDAE.

THRUSHES.

158. SAXICOLA CAPRATA ALBONOTATA (Stresemann).

One adult male, Dolo, December 30, 1916; two adult males, Rano Lindoe, March 10 and 23, 1917; one male in mixed plumage, Doda, Besoa, October 24, 1917; one male in mixed plumage, Napoe, Watoetaoe, December 4, 1917.

The above series when compared with Luzon birds (*S. c. caprata*) shows the Celebes form to be larger, with more white on the wing and rump and the black deeper as pointed out by the describer.[41] A male of *Saxicola caprata fruticola* from Java in the United States National Museum is larger with less white on the wing coverts than Celebes birds.

The five males measure as follows:

No.	Locality.	Wing.	Tail.	Culmen.
		mm.	*mm.*	*mm.*
251138	Dolo	67	51	12
251139	Rano Lindoe	70	52	12. 5
251140	----do	69	-------	11. 5
252058	Besoa	70. 5	54. 5	12
252059	Napoe, Watoetaoe	71	54	12

Seen many times in fields and open plains near Parigi, Toboli, and Laboea Sore, but very shy and difficult to approach.—H. C. R.

Family SYLVIIDAE.

WARBLERS.

159. CISTICOLA EXILIS GRAYI (Walden).

A good series: Rano Lindoe, March 7–24, 1917, and Doda, Besoa, October 23, 1917.

[41] Nov. Zool., vol. 19, 1912, p. 321.

Three or four specimens taken in March have a very slight tinge of yellow on the chest and flanks, remains of the immature plumage. The fall birds are whiter below.

The above series when compared with Philippine specimens taken at the same season are lighter, both above and below, and average smaller. Ogilvie-Grant[42] has expressed a doubt whether the Philippine bird is the same as that from Australia, and is of the belief that it is the same as *Cisticola erythrocephala*. I have no examples of the latter for comparison. Cabanis[43] named the Luzon bird *Cisticola semirufa*, and as it is the only name certainly applicable, it seems to me the only safe course is to call the Philippine race *Cisticola exilis semirufa*. Mathews[44] divides the birds of this species occurring in Australia into numerous forms. This leaves the name of the Celebes bird in doubt and as I have shown above that it is not exactly the same as the Philippine race, the only safe course is to use the oldest name founded upon a Celebes specimen, which happens to be *Cisticola grayi* Walden.[45] The only specimen from Australia examined by me is without definite locality or date; it seems to be darker and more heavily streaked than Philippine birds. A male in the United States National Museum (No. 234123) from Bouro Island, December 10, in breeding plumage is hardly distinguishable from Philippine examples; it is only slightly darker on the back.

A male from Java (No. 219579) in breeding plumage, only differs from Philippine specimens in having the top of head lighter and this may be due to bleaching; two females from the same source are like Celebes birds in color and measurements. From the above it would appear that this species needs revision, but the material at my command is not sufficient to undertake it.

Hartert[46] says that all the birds of this species from Letti, Moa, and Roma examined my him are without white tips to the tail-feathers. Philippine winter specimens usually have white tips but breeding birds seem to lack it. Most of the Celebes examples are without white tips to the outer tail feathers, but a few have them, so it would appear that the presence or absence of the white tips has something to do with the condition of the plumage.

Below the measurements of various series are given, exclusive of breeding males:

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[42] Ibis, 1896, p. 117.
[43] Journ. f. Orn., 1866, p. 10 (nomen nudum), and 1872, p. 316 (descr.).
[44] Nov. Zool., vol. 18, 1912, p. 343, and List Birds Australia, 1913, p. 210.
[45] Ann. Mag. Nat. Hist., ser. 4, vol. 9, 1872, p. 400.
[46] Nov. Zool., vol. 11, 1904, p. 210.

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Eighteen males, Celebes	46. 7	37. 3	9. 5
Seven males, Philippines	49. 6	39	9. 6
Eleven females, Celebes	44. 2	34. 7	9. 4
Five females, Philippines	47. 5	40. 5	9. 3
Two females, Java	45	33. 3	9. 7
One unsexed, Australia	46	27	10

160. MEGALURUS CELEBENSIS Riley.[47]

A male and female, Doda, Besoa, October 23, 1917.

The original description is as follows:

Similar to *Megalurus amboinensis* but larger, with the back more heavily streaked with blackish, the cinnamon edges of the tertials broader, the nape obscurely streaked with dusky, the blackish streaks on the wing coverts broader, lower back, rump, and upper tail coverts streaked with brownish black, and the buffy chest band more pronounced. Wing, 67; tail, 113.5; culmen, 12 mm.

The female is smaller than the male with the streaks on the head extending onto the forehead and the black streaking on the back narrower. A male specimen of *Megalurus amboinensis*, with which the above species has been compared, has no streaks on the nape whatever, the top of the head is a deeper sayal brown, and the lower back and rump are without streaks, only the upper tail coverts having narrow dark shaft streaks. It measures: Wing, 61; culmen, 12 mm.

These are apparently the first birds of this genus taken in Celebes and Mr. Raven informs me that while not rare at the type locality they skulked in the reeds and he found them very difficult to collect.

In the original description I only mentioned Besoa, because that was the only locality given on the label. Besoa turns out to be a district and the exact locality is as above.

161. ACANTHOPNEUSTE BOREALIS BOREALIS (H. Blasius).

One male, Ayermadidi, April 4, 1916.

162. CRYPTOLOPHA NESOPHILA Riley.[48]

A good series from the following localities: Goenoeng Lehio, January 14–19, 1917; Lindoe Trail, February 25, 1917; Rano Rano, December 10–29, 1917.

The original description is as follows:

Above citrine, deepening on top of head and nape into medal bronze; superciliary stripe barium yellow; loral streak dusky; post ocular streak color of the head; below, including cheeks and ear coverts, citron yellow, streaked with

[47] Proc. Biol. Soc. Wash., vol. 32, 1919, p. 94.

[48] Idem, vol. 31, 1918, p. 159 (Goenoeng Lehio, Celebes).

whitish and spotted on the chest with obscure spots of buffy citrine; under tail coverts citron yellow; flanks yellowish citrine; wings chaetura drab, the feathers edged externally with the color of the back, the tips of the greater coverts a little paler, but not forming a bar; bend of wing edged with citron yellow; under wing coverts whitish; remiges below hair brown, the feathers where they rest against the body bordered with whitish or internally pale buff; tail above olive with a citrine wash, the outer edges of the feathers brighter basally. Wing, 58; tail, 40; culmen, 11; tarsus, 20.5; middle toe, 9.5 mm.

The nearest ally of this species is evidently *Cryptolopha sarasinorum* Meyer and Wiglesworth, from which it differs in lacking the crown stripe and the white on the two outer rectrices.

To the above original account I would like to make one correction: The two outer rectrices on each side are very narrowly edged on the inner margin with yellowish white, almost obsolete and sometimes absent, being easily overlooked. This is nothing like the condition in *Cryptolopha sarasinorum*, but is an approach and shows their relationship.

The above series is fairly uniform. Some specimens are more whitish below; in fact, the whitish predominates over the yellow streaks, while in others the reverse is the case. The whitish is more pronounced on the abdomen and throat as a rule. The buffy citrine spots on the chest form a bar in one specimen (No. 252075), while in others they are almost absent. Above there is not much variation; some specimens have the top of the head hardly different in color from the back, but as a rule it is deeper and darker. The sexes are alike.

In the original description only the measurement of the type was given. The series measures as follows:

Fifteen males measure: Wing, 55–62 (58.7); tail, 40–44.5 (42.2); culmen, 10–11 (10.3); and 12 females: Wing, 52.5–59.5 (55.8); tail, 36–44.5 (40); culmen, 9.5–10.5 (10.1).

Since writing the above, Mr. J. H. Fleming has kindly loaned the National Museum two topotypes of *Cryptolopha sarasinorum*. They only emphasize the differences pointed out above, the lack of a central crown-stripe and restriction or absence of white on the outer rectrix in *Cryptolopha nesophila*.

In the absence of the crown-stripe and the very narrow whitish edging on the inner web of the outer rectrices, *C. nesophila* approaches *C. nigrorum* of the Philippines, but is darker above, with only streaks of yellow below, and there are other minor differences. *C. nesophila* probably had a Philippine origin, while *C. sarasinorum* was derived from the islands farther south.

Cryptolopha as at present constituted is not a homogeneous group and needs revision. Indeed, Stresemann[49] has removed *Cryptolopha*

[49] Nov. Zool., vol. 20, 1913, p. 354.

trivirgatus (Strickland) to *Phylloscopus*. *Acanthopneuste everetti* Hartert, *Cryptolopha everetti waterstradti* Hartert, and *Cryptolopha ceramensis* Grant, Stresemann[50] makes races of *Gerygone giulianettii* Salvadori, which he also places in *Phylloscopus*. Of the latter I can not speak, not having specimens, but this disposition of *Cryptolopha trivirgatus* is not a happy one. Bianchi[51] has reviewed the genus, but there have been quite a number of forms described since that time.

163. PHYLLERGATES CUCULLATUS RIEDELI Meyer and Wiglesworth.

Two males, Goenoeng Kalabat, 6,600 feet, April 7 and 9, 1916; two males, Goenoeng Lehio, January 15 and 19, 1917; two males, Rano Rano, December 11 and 12, 1917.

The two males from Goenoeng Kalabat have much more yellow on the flanks, under tail coverts and cheeks, with a much less rusty wash, than the four males from central Celebes; the latter are in more worn plumage, but that would hardly account for the increased rusty wash on the cheeks. It may well be that the differences are geographic and that there is more than one form found in Celebes.

The two Kalabat specimens differ from each other in the color of the top of the head. One (No. 249879) has this region inclining toward cinnamon rufous, shading off into a deeper color on the nape, while in the other it is an ochraceous-orange. This is without doubt due to fading in the latter, as it is in worn plumage, while the other is in fresh plumage.

The series measures as follows:

No.	Locality.	Wing.	Tail.	Culmen.
		mm.	*mm.*	*mm.*
249878	Goenoeng Kalabat	46	45. 5	13. 5
249879	do	48	46	14
251058	Goenoeng Lehio	49	46. 5	13. 5
251059	do	48. 5	46	14
252088	Rano Rano	49. 5	49. 5	13. 5
252089	do	51. 5	50	13. 5

Several specimens seen amongst the dense reeds on the summit of Kalabat.—H. C. R.

Family ARTAMIDAE.

WOOD SWALLOWS.

164. ARTAMUS LEUCORHYNCHUS CELEBENSIS Brüggemann.

A good series of adults and immatures from: Toli Toli, December 13–17, 1914; Likoepang, March 2, 10, 1916; Koeala Prang, June 7,

[50] Nov. Zool., vol. 21, 1914, p. 135.
[51] Bull. Acad. Imp. Sci. St. Petersb., ser. 5, vol. 23, 1905, pp. 49–65.

1916; Parigi, September 14–27, 1916; Toboli, October 17, 20, 1916; Manilili, December 16; 1916; Dolo, December 26, 29, 1916; Koelawi, February 7 and July 25, 1917; Rano Lindoe, March 5–21, 1917; Gimpoe, August 9, 21, 1917; Doda, Besoa, October 23, 1917; Toewo Mountain, Besoa, November 1, 1917; Napoe, Watoetaoe, December 4, 1917; Pinedapa, February 4 and 13, 1918.

The most striking difference between Philippine and Celebes birds is the longer and much heavier bill of the latter; if there were no other differences this alone would be sufficient to differentiate the two forms, but *celebensis* has a longer wing and when laid out in series appears paler on the throat and upper surface.

Interior of the mouth with the tongue, black in the adult and yellow in the young, later becoming streaked with black.—H. C. R.

165. ARTAMUS MONACHUS Bonaparte.

Five males, Likoepang, January 16–February 25, 1916; one male, Temboan, July 17, 1916; one male and one female, Toewo Mountain, Besoa, November 4, 1917.

Family FALCUNCULIDAE.

THICKHEADS.

166. MUSCITREA SULFURIVENTRA (Walden).

A good series of both sexes from: Goenoeng Kalabat, April 9, 10, 1916; Toemaratas, July 4–7, 1916; Koelawi, February 23, 1917; Goenoeng Lehio, January 12–20, 1917; Rano Lindoe, March 14, 1917; Toewo Mountain, Besoa, October 26–November 4, 1917; Rano Rano, December 9–31, 1917.

In the above series only two males and three females are from the extreme northern end of the island, the remainder are from the north-central part. As a rule the birds from middle Celebes seem to be paler, but right in the same locality with the paler specimens others occur that can not be told from northern examples, so the differences must be due more or less to individual variation and not to locality; there seems to be no difference in size. Meyer,[52] however, has recorded *Muscitrea meridionalis* (Büttikofer) from central Celebes, but gives no definite locality.

An immature female, not long from the nest, taken at Rano Rano, December 21, differs from the adult in having the head, back, flanks, and a band across the chest strongly washed with mikado brown, and only the under tail-coverts are yellow.

The female differs from the male in being browner above, especially noticeable on the frons, lores, ear coverts, and edges of the remiges, and has a slightly shorter wing.

[52] Notes Leyden Mus., vol. 23, 1903, p. 189.

A series of 10 males measure: Wing, 81–86.5 (82.5); tail, 58.5–64 (61.4); culmen, 13–15 (14.2); and 10 females: Wing, 77.5–83 (79.6); tail, 57.5–68.5 (61.6); culmen, 13–15 (14.1).

As Meyer and Wiglesworth [53] state this seems to be a mountain species; the above series having all been taken in the highlands.

The present species of *Muscitrea* [54] recalls birds of the genus *Cyclarhis* which Pycraft [55] has made the type of a family Cyclarhidae. In external structure the two genera are almost identical, except *Cyclarhis* has stronger feet and the frontal and rictal bristles are less developed. The unspotted condition of the young described above would seem to exclude *Muscitrea* from the *Muscicapidae* and *Laniidae*, but in this character it is almost identical with the *Cyclarhidae*. The latter is so far as known Neotropical, so the only alternative at present is to recognize the birds of this type as Falcunculidae.

167. PACHYCEPHALA PLUVIOSA Riley.[56]

A good series of both sexes and one immature, Rano Rano, December 11–27, 1917.

As the original description may not be accessible to all, it is repeated here:

Pileum and auriculars medal bronze, shading into buffy brown on the foreneck; across upper back a band of deep neutral gray; rest of back warbler green, becoming more yellowish on the rump; breast neutral gray, becoming much lighter on the abdomen; under tail-coverts cinnamon; flanks pyrite yellow; wings fuscous-black, the feathers edged outwardly with the color of the back, this edging on the outer primaries very narrow and grayish toward the tips; under wing-coverts and the inner margins of the remiges where they rest against the body, cinnamon; tail above deep neutral gray, the outer feathers fuscous-black on the inner web. Wing, 81.5; tail, 67; culmen, 13; tarsus, 21; middle toe, 13.5 mm.

The female resembles the male, except the pileum is saccardo's olive with a yellowish wash and the chin and throat cinnamon-buff, streaked with deep neutral gray.

It is evidently similar to *Pachycephala bonthaina* of south Celebes, but the pileum and throat are brown, not greenish yellow-olive. *Pachycephala bonensis* of north Celebes was described from an immature specimen. The immature specimen of *Pachycephala pluviosa* when compared with the plate of *Pachycephala bonensis* in Meyer and Wiglesworth [57] presents a number of differences; the former has the pileum saccardo's olive, the auriculars are like the pileum, there are no cinnamon edgings to the outer primaries, the breast is without a buffy-cinnamon band down the center, and there are other differences.

In the original description only the measurement of the type was given, the series measures as follows: Twelve males, wing; 80–83.5

[53] Birds of Celebes, vol. 2, 1898, p. 395.

[54] Matthews, Aus. Av. Record, vol. 2, 1913, p. 57, has shown that *Muscitrea* Blyth is the proper name to employ for this genus.

[55] Proc. Zool. Soc., 1907, pp. 377, 378.

[56] Proc. Biol. Soc. Wash., vol. 32, 1919, p. 95.

[57] Birds of Celebes, vol. 2, 1898, pl. 18.

(82); tail, 64–69.5 (67.2); culmen, 12.5–14 (13.3), and seven females wing, 78.5–85 (81.4); tail 61–69.5 (65.7); culmen 13–14 (13.4).

It is possible that the above is only *Pachycephala bonensis* redescribed, but I do not think so, as they both seem to be mountain species and their ranges are separated by a considerable stretch of country. Generally speaking the birds of central Celebes, with a few exceptions, are racially different and more closely related to those of the south. Then as far as can be told from the plate of *Pachycephala bonensis*, the immature of the two species are different, as mentioned above. This is not conclusive, however, as they might not be of the same age. The only way to settle the matter is to secure adults of the latter and carefully compare them with *Pachycephala pluviosa.*

Strictly, however, none of the Celebes species usually placed in *Pachycephala* Vigors and Horsfield (type *Muscicapa pectoralis* Latham) really belong there, but until the genus has been thoroughly revised, I do not know where else to place the above species.

Genus CORACORNIS Riley.[58]

The original description is as follows:

Apparently related to *Pachycephala* Vigors and Horsfield but the rictal bristles longer; the outer primary proportionally longer and broader; rectrices broader, bluntly pointed instead of obliquely rounded), and the webs at the end semidecomposed, giving a softer texture to the feathers; nostril oval and parallel with the tomia (instead of short ovate and oblique); tail rounded; and color pattern entirely different.

Type and only known species the following:

168. CORACORNIS RAVENI Riley.[59]

One female, Goenoeng Lehio, January 14, 1917; one adult male (type), one immature male, and one female, Rano Rano, December 9–28, 1917.

The original description of this species is as follows:

Chin, upper throat, sides of face, top of head, and hind neck sooty-black with a slight olive tinge on the hind neck; lesser wing-coverts, mantle, and rump, mahogany red; middle and greater wing-coverts, remiges, rectrices, and longer upper tail-coverts, black; lower throat, jugulum, and breast dark olive gray with a light yellowish olive wash; belly and crissum lighter than the breast and with a much heavier wash of light yellowish olive, hiding the under color; under wing-coverts like the breast; remiges below fuscous, the inner primaries and secondaries bordered slightly on the inner web with tilleul-buff. Wing, 82.5; tail, 67.5; culmen, 14; tarsus, 23; middle toe, 13.5 mm.

The female quite different, may be described as follows: Above, raw umber, lighter and with a grayish cast on top of head; tail sepia, the feathers edged

[58] Proc. Biol. Soc. Wash., vol. 31, 1918, p. 157.
[59] Idem, p. 157.

on the outer web with argus brown, but this color not quite reaching the tip; upper tail-coverts, argus brown; below buffy brown, lighter on the chin and with a pronounced lemon yellow wash on middle of belly; under tail-coverts ochraceous-tawny; wings prout's brown, the inner webs of the primaries and outer secondaries fuscous; under wing-coverts grayish olive with a slight yellowish tinge along the margin of the wing; the remiges where they rest against the body narrowly bordered with light ochraceous buff.

The wing and tail in the type specimen are in partial molt. The only female that has an apparently perfect tail has it slightly rounded.

The two females measure: Wing, 77.5–81; tail, 66.5–69; culmen, 12–13.5 mm.

The two females are much alike above, one is only slightly washed with brussels brown on the back; below the Rano Rano specimen is much lighter with a much more pronounced wash of yellow on the abdomen and the under tail-coverts are lighter.

The immature male is light below like the Rano Rano female but with the yellow wash on the abdomen very pale and only slightly indicated; above it is more of an olive brown. A few dark feathers are appearing on the pileum and sides of face and a few mahogany red feathers over each shoulder on the back.

Family ZOSTEROPIDAE.

SILVER-EYES.

169. ZOSTEROPS SARASINORUM Meyer and Wiglesworth.

Nine males and four females, Goenoeng Kalabat, 1,830 meters, April 7–11, 1916; one male, Toemaratas, July 9, 1916; two males and two females, Toewo Mountain, Besoa, October 26–27, 1917; one female, Rano Rano, December 9, 1917.

In the above series an occasional specimen shows an incipient yellow streak down the center of the breast.

Birds from the central mountains (Besoa-Rano) do not seem to differ from those from the type locality (Kalabat).

170. ZOSTEROPS INTERMEDIA Wallace.

A fair series from Koelawi, February 4–23, 1917; and Rano Lindoe, March 4–24, 1917.

Specimens from south Celebes (the type locality of the species is Macassar) are not available for comparison. The adults from central Celebes do not exactly fit the descriptions consulted, as for instance there is a dusky loral streak in all the specimens examined by me. Two specimens in the United States National Museum from Dodepo Island, Gulf of Tomini, are much lighter above and below with the loral streak less well defined and have larger bills than the series taken by Raven. It may well be that there is more than one form of the species in Celebes.

There are several sub-adult specimens from Koelawi and a young bird not long from the nest from Rano Lindoe, March 4. The young resembles the adult but is duller above and much lighter yellow below.

As this species has not been reported from north-central Celebes before, the measurements of the series in the United States National Museum are given below:

Museum No.	Sex.	Locality.	Wing.	Tail.	Culmen.
			mm.	*mm.*	*mm.*
251163	Male	Koelawi	52	36. 5	10. 5
251165	do	do	53. 5	40	10
251166	do	Rano Lindoe	53	40	10. 5
251169	do	do	53. 5	39	10. 5
251168	do	do	54	39. 5	10
251171	do	do	53	40	10. 5
251174	do	do	53	39	10
251176	do	do	54	40	10. 5
251177	do	do	53	39	10
251180	do	do	53	38. 5	10
251178	do	do	51. 5	39	10. 5
251179	do	do	51. 5	38. 5	10
251182	do	do	51. 5	39. 5	10
234132	do	Dodepo Island	54	42	12. 5
234131	do	do	55	38. 5	12
251164	Female	Koelawi	52	39	10
251170	do	Rano Lindoe	53	38. 5	10. 5
251172	do	do	52	38	10
251175	do	do	52	38. 5	10
251181	do	do	52. 5	40. 5	10. 5
251183	do	do	53	41	10
251184	do	do	53. 5	39	10

171. ZOSTEROPS ATRIFRONS ATRIFRONS Wallace.

A fine series from the following localities: Paleleh River, August 18, 1914; Toli Toli, December 4–19, 1914; Kampa, February 14, 1915; Ayermadidi, April 1–2, 1916; Manembo Nembo, June 22, 1916; Toemaratas, July 3–9, 1916.

The birds from Toemaratas are whiter on the breast and the yellow of the throats are deeper than the rest of the series, but this is probably due to the different season of the year in which they were collected. Specimens from the mountainous central part of the island are larger and duller than even winter specimens from the north and these I have separated below.

172. ZOSTEROPS ATRIFRONS SURDA Riley.[60]

A good series from the following localities: Koelawi, February 23, 1917; Rano Lindoe, March 5–24, 1917; Doda, Besoa, October 27, 1917; Toewo Mountain, Besoa, October 28–November 4, 1917.

[60] Proc. Biol. Soc. Wash., vol. 32, 1919, p. 95 (Rano Lindoe, Celebes).

This series when compared with a large series from north Celebes (the type of *Zosterops atrifrons* came from Menado) has the throat duller yellow, the chest grayer, the white eye-ring narrower, the back more greenish, the black suborbital streak more diffused, and the size larger.

Zosterops subatrifrons, from Peling Island, is described by Meyer and Wiglesworth [61] as having the throat clearer yellow and the breast whiter than in *Zosterops atrifrons atrifrons*, while in the present race the reverse is the case, so it is unlikely they are the same. Finsch [62] places *Zosterops subatrifrons* in the synonymy of *Zosterops atrifrons*, but whether he was justified in so doing, I am unable to say without an examination of specimens from Peling Island.

The measurements of the two series are as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Ten males, *Zosterops a. atrifrons*	52. 8	37. 2	10. 2
Eight males, *Zosterops a. surda*	57. 2	40. 9	11. 1
Ten females, *Zosterops a. atrifrons*	52. 5	37. 7	10. 2
Ten females, *Zosterops a. surda*	54. 9	39. 8	11. 1

173. PSEUDOZOSTEROPS STRIATICEPS (Riley).[63]

In addition to the type from Goenoeng Lehio, January 13, 1917, the collection contains a good series from Toewo Mountain, Besoa, November 1–3, 1917, and Rano Rano, December 10–27, 1917.

The following is the original description:

Above warbler green, the upper back with a few fine light yellowish shaft streaks; the top of head dark neutral gray with fine white shaft stripes; frons and lores buffy white; ear-coverts and cheeks lighter gray than top of head, the white shaft streaks a little coarser; throat and jugulum buffy white; rest of underparts lemon yellow; flanks pyrite yellow; wings the color of the back, the primaries and outer secondaries chaetura drab, except on the outer margin; bend of the wing margined with light yellow; under wing coverts white with a yellowish wash; primaries and secondaries where they rest against the sides of the body strongly margined on the inner web and basally with yellowish white; tail chaetura drab washed and margined with the color of the back. Wing, 63; tail, 45; tarsus, 16.5; middle toe, 10 mm.

Remarks.—The type, from Goenoeng Lehio, is brighter, more yellowish above and brighter below than the Rano-Besoa series. Judging from the description and plate in Meyer and Wiglesworth [64] the above is closely related to *Lophozosterops squamiceps*, from which it differs in lacking the terminal edges of silvery gray to the feathers of the top of the head; the throat buffy-white; the back of a different shade of green; the lower parts brighter yellow; and there are other slight differences.

[61] Birds of Celebes, vol. 2, 1898, p. 490.
[62] Das Tierreich, 15 Lief. 1901, p. 34.
[63] *Lophozosterops striaticeps* Riley, Proc. Biol. Soc. Wash., vol. 31, 1918, p. 157.
[64] Birds of Celebes, vol. 2, 1898, p. 485, pl. 29.

In the original description only the measurements of the type were given, the averages of the series are as follows: Ten males, wing, 62–67 (64.3); tail, 43.5–47 (45.2); culmen, 12.5–14 (13.4); and five females, wing, 60–64.5 (62.7); tail, 42.5–45.5 (43.9); culmen, 12.5–13.5 (13.1).

Since the above was written, J. H. Fleming has loaned the museum a small series of cotypes of *Pseudozosterops squamiceps* (Hartert) and upon comparison with the above species they are found to be even more distinct than first supposed. *Pseudozosterops squamiceps* appears to be slightly larger with a heavier bill; the feathers of the occiput broader and more rounded. The color differences are best given in parallel columns, as follows:

P. squamiceps.	*P. striaticeps.*
Above darker warbler green.	Above lighter warbler green.
Top of head chaetura drab, with a whitish shaft streak and silvery edges to the feathers.	Top of head dark neutral gray with more conspicuous shaft stripes, *but no* silvery edges to the feathers.
Frons hardly lighter than the crown.	Frons buffy white.
Ear coverts much darker with the light shaft streaks almost obsolete.	Ear coverts lighter with the light shaft streaks broad and pronounced.
Throat light olive-gray, the feathers edged with dusky, making it appear still darker.	Throat buffy white; no dusky margins to the feathers.
Breast oil yellow.	Breast lemon yellow.

When I named the above species, the United States National Museum did not contain a specimen of *Lophozosterops* or *Pseudozosterops* and I then thought they would prove synonymous. The museum has recently acquired a specimen of *Pseudozosterops müllerí* (the type of the genus) and structurally it is much like *Chlorocharis squamiceps* Hartert, especially in the rounded tip to the crown feathers. *Lophozosterops dohertyi* Hartert[65] (type of the genus), judging from figures and plate, in style of coloration comes very close to the Celebes species and *Lophozosterops subcristatus* Hartert is said to be very similar to *L. dohertyi*. *Pseudozosterops striaticeps* has the crown feathers less rounded than in *squamiceps* and approaches *Zosterops goodfellowi* of Mindanao, an aberrant member of the genus *Zosterops*, in structure. The latter has the crown unstreaked and the feathers of this part of the head of a looser texture, but otherwise the style of coloration is similar and it was probably derived from the same stock as the Celebes species, which undoubtedly were derived from the south. If all the above species were

[65] Nov. Zool., vol. 3, 1896, p. 568.

united generically, then *Lophozosterops* Hartert[66] would be the name to use, but out of deference to Finsch[67] and from a lack of proper material, the two Celebes species had better remain in *Pseudozosterops* for the present.

Family DICAEIDAE.

FLOWER-PECKERS.

174. DICAEUM CELEBICUM S. Müller.

A good series of both sexes and immature from: Paleleh, August 1, 1914; Paleleh River, August 10, 1914; Soemalata, September 3–7, 1914; Kapas Bay, November 22, 1914; Toli Toli, December 2–8, 1914; Kampa, February 14, 1915; Tandjong Penjoe, February 25–26, 1915; Likoepang, January 16, 1916; Manembo Nembo, June 23, 1916; Langowan, July 12, 1916; Parigi, September 28, 1916; Kasimbar, December 13, 1916; Laboea Sore, November 24, 1916; Gimpoe, August 2–September 1, 1917; Toare, Bada, September 20, 1917; Koelawi, February 4 and 23, 1917; Rano Lindoe, March 7–23, 1917; Pinedapa, January 12, and February 13, 1918.

Birds from the north when compared with a series from the north-central mountainous section have deeper purplish backs and the dark central pectoral patch is more pronounced. The series from the north-central country is more worn and the differences may be due to fading, however. There is little difference in size between the two series.

The majority of the adult males have the throat and jugulum scarlet-red, but one male (No. 248,743) from Tandjong Penjoe, February 26, has these parts geranium-red. It is peculiar in other particulars, also; the back is darker, less purplish, and the black pectoral spot extends clear across the chest, but in this latter character it is approached by a specimen from Toli Toli (No. 248,738), and others. The white chin spot varies from hardly any at all to the condition in which the whole throat is white and the scarlet-red reduced to a jugular patch, as in a specimen taken at Gimpoe, August 3 (No. 252,389). This later sems to be fully adult and is unique in the series.

Two young males, Gimpoe, August 21 and 28, have a few red feathers appearing on the throat and a few dark purplish feathers on the top of the head. Another young male taken at the same place, August 2, is much further advanced toward the adult plumage.

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[66] Nov. Zool., 3, 1896, 568.

[67] Das Tier., 15 Lief., 1901, p. 46.

175. DIACEUM NEHRKORNI W. Blasius.

Two males, Toemaratas, July 4, 8, 1916; one male, Rano Lindoe, March 8, 1917; two males, Toewo Mountain, Besoa, October 29, and November 3, 1917.

All the above males have a median sooty black line within the area of white of the abdomen, a feature not mentioned by Meyer and Wiglesworth [68] in their description, but as it is shown on the plate the omission must be an inadvertence.

The above series when compared with four males from Indrulaman, south Celebes, kindly loaned me by J. H. Fleming, appear to be lighter on the throats and foreneck; in size they are about the same. The differences are too slight for separation by name, however.

176. ACMONORHYNCHUS AUREOLIMBATUS (Wallace).

A good series of both sexes and immature from: Paleleh River, August 17–18, 1914; Kwala Besar, August 23–24, 1914; Soemalata, September 4–7, 1914; Toli Toli, December 4–14, 1914; Tandjong Penjoe, February 25–26, 1915; Likoepang, January 21, 1916; Goenoeng Lehio, January 18, 1917; Rano Lindoe, March 5–23, 1917; Gimpoe, August 3–September 1, 1917; Pinedapa, January 23, 1918.

The birds from the north-central mountain country are duller above and the yellow of the flanks is not so bright as in birds from the north end of the island, but it is not advisable to separate them at present.

Family NECTARINIIDAE.

SUN BIRDS.

177. AETHOPYGA FLAVOSTRIATA (Wallace).

Two adult males and three adult females, Toli Toli, December 2–9, 1914; one adult male, Tandjong Penjoe, February 26, 1915; one adult male, Lindoe Trail, February 28, 1917; one adult male, Rano Lindoe, March 25, 1917; one immature and two adult males and one adult female, Gimpoe, August 2–24, 1917.

The males from the central part of the island seem to have the metallic crown more restricted, and the red of the back brighter than northern specimens, but the series from the two localities are too small to reach any definite conclusions.

The young male taken at Gimpoe, August 11, is similar to the adult female, but has more red on the back, the jugulum is tinged with red, there is a small tuft of new red feathers in the center of the chest, and it has acquired a single central tail-feather of the adult plumage.

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[68] Birds of Celebes, vol. 2, 1898, p. 447, pl. 25.

The measurements of the series are as follows:

Museum No.	Sex.	Locality.	Wing.	Tail.	Culmen.
			mm.	*mm.*	*mm.*
251198	Male	Lindoe Trail	55	44. 5	18
251199	do	Rano Lindoe	53. 5	41	17
252433	do	Gimpoe	53	46	17. 5
252434	do	do	56. 5	43	18
248792	do	Toli Toli	54	42. 5	18
248791	do	do	54. 5	41. 5	18. 5
248793	do	Tandjong Penjoe	52. 5	41. 5	18. 5
252436	Female	Gimpoe	47	33. 5	17
248789	do	Toli Toli	48	32	18
248788	do	do	47. 5	33	17
248790	do	do	48	35	17. 5

178. HERMOTIMIA GRAYI (Wallace).

A good series of both sexes and immature from: Kapas Bay, July 22, 1914; Kwandang, October 7, 1914; Toli Toli, December 2–19, 1914; Kampa, February 14, 1915; Tandjong Penjoe, February 18–26, 1915; Likoepang, January 14–18, 1916; Ayermadidi, April 2–4, 1916; Kasimbar, December 13, 1916.

An apparently adult male (No. 248808) taken at Tandjong Penjoe, February 18, 1915, has the chest and upper back pyrite yellow with a reddish wash and is unique in the series of males, though a male (No. 248798) from Toli Toli, December 3, shows a slight yellowish tinge to the maroon of the chest. A perfectly normal male was taken on the same day as the unique Penjoe specimen.

The above series of males shows apparently two phases in the color of the crown; in one it is a beautiful shining golden green, while in the other it is more coppery. This is due to wear, I believe, as the phase without the golden sheen or little of it, shows more wear when examined under a lens. That it is not geographic is certain, as both phases were taken at the same locality.

179. HERMOTIMIA PORPHYROLAEMA PORPHYROLAEMA (Wallace).

Five adult males, one immature male, and three females, Gimpoe, August 2–September 3, 1917; two adult males and one female, Pinedapa, February 2–4, 1918.

No specimens of this species are available for comparison from the south, but the above birds do not fit the description of *Hermotimia porphyrolaema scapuluta* Meyer and Wigglesworth, which Doctor Sharpe finding preoccupied has renamed [*Hermotimia porphyrolaema*] *meyeri*,[69] so there is nothing left to do but refer them to the typical form for the present.

[69] Hand-list Birds, vol. 5, 1909, p. 43.

The immature male taken September 1 resembles the adult female very closely. The top of the head and throat are a little darker and the metallic rictal streak is making its appearance.

As specimens of the species seem to be rather scarce in collections the measurements of the series is appended:

Museum No.	Sex.	Locality.	Wing.	Tail.	Culmen.
			mm.	*mm.*	*mm.*
252458	Male	Gimpoe	57. 5	37	16
252459	do	do	60	38	15
252461	do	do	58	39	17
252462	do	do	58. 5	38	16. 5
252463	do	do	58	37. 5	16
252467	do	Pinedapa	59	38	14
252468	do	do	59. 5	37. 5	16
252460	Female	Gimpoe	50	30	15
252464	do	do	51	32	14. 5
252466	do	do	50. 5	31. 5	14. 5
252469	do	Pinedapa	49	30. 5	16. 5

180. CYRTOSTOMUS FRENATUS MEYERI, Hartert.[70]

A fine series of adults of both sexes and immature from: Kapas Bay, July 22 and November 18–23, 1914; Soemalata, September 3–7, 1914; Kwandang, September 15, 1914; Toli Toli, November 29–December 19, 1914; Kampa, February 14, 1915; Tandjong Penjoe, February 17–26, 1915; Likoepang, January 16 and 21–March 3 and 4, 1916; Ayermadidi, April 2, 1916; Koeala Prang, June 18, 1916; Manembo Nembo, June 22–24, 1916.

This series differs from typical *C. f. frenatus* in being darker and more greenish above, with larger bills.

181. CYRTOSTOMUS FRENATUS PLATENI (W. Blasius).

A good series of both sexes from: Parigi, September 19 and 28, 1916; Toboli, October 18–22, 1916; Manilili, December 16, 1916; Gimpoe, August 2–27, 1917; Koelawi, January 30–February 14, 1917; Toewo Mountain, Besoa, October 28 and November 2, 1917.

Specimens from Gimpoe, Koelawi, and Besoa seem to be a little lighter yellow on the breast, the backs duskier, and slightly smaller than specimens from the north (*C. f. meyeri*). The difficulty comes in assigning specimens from Parigi, Toboli, and Manilili, as they are intermediate, but they seem to be nearer the southern form and I have placed them here for the present. It is uncertain whether the central mountain race belongs to the southern form or to *Cyrtostomus frenatus dissentiens* of Bonthain Peak, adults of which are not available for comparison, but until more is known of the

[70] Nov. Zool., vol. 4, 1897, p. 156.

distribution of the forms inhabiting Celebes it is referred to the southern form.

A series of males from the north and central mountain region average as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Ten males, *C. f. meyeri*	53. 3	35	18. 6
Ten males, *C. f. plateni*	51. 5	32. 6	17. 7

A male taken at Gimpoe, August 11, (No. 252443) has the breast strongly washed with cadmium yellow, and there is a tendency in several other specimens from the mountains to have the chest a little deeper yellow than usual.

A young female not long from the nest was taken at Besoa, October 28, so the breeding season is probably in the autumn, or irregular.

182. ANTHREPTES MALACENSIS CELEBENSIS Shelley.

A large series of both sexes and immature: Kapas Bay, July 22 and November 18 and 23, 1914; Kwala Besar, August 23, 1914; Soemalata, September 3–8, 1914; Toli Toli, November 28–December 14, 1914; Kampa, February 14, 1915; Tandjong Penjoe, February 18–27, 1915; Likoepang, January 13–18, and March 9, 1916; Koeala Prang, June 14 and 18, 1916; Manembo Nembo, June 22–24, 1916; Toboli, October 18–23, 1916; Kasimbar, December 13, 1916; Tinomboe, December 15, 1916; Manilili, December 16, 1916; Gimpoe, August 2–29, 1917; Rano Lindoe, March 25, 1917.

Birds from Gimpoe are paler below but as they are August specimens this is probably due to bleaching as the Rano Lindoe birds taken in March are like northern skins of the same season. I have only one skin from the south of the island (near Macassar, December 18) and it has the breast a more greenish yellow and the throat duller than northern birds, but these may be only individual differences.

A. m. celebensis stands out from all its related forms in having the yellow of the breast in the male more greenish. The female is still more distinct from the related forms than the male. She has the lower parts grayish with only the breast and belly washed with a light shade of yellow, while in all other forms of the species the breast and belly are quite yellow and even the throat is washed with yellow or even concolor with the breast.

The immature *A. m. celebensis* has the throat washed with yellow and the remaining under parts are much deeper; in this condition they approach the adult female of *Anthreptes malaccensis wigles-*

worthi of the southern Philippines, which is undoubtedly the nearest relative.

A male in the United States National Museum from Great Sangi, in rather poor condition, has the breast a brighter yellow, the throat duller, and the cheeks without the reddish wash of *Anthreptes malacensis wiglesworthi* and it is extremely doubtful if they are the same.

This species has been revised by Doctor Hartert[71] but a number of races have been described since. He recognized six races, but included, *Anthreptes griseigularis*, which is a good species, more distinct from typical *Anthreptes malacensis* than is *Anthreptes rhodolaema*, that is recognized as such. The latter has the greenish breast and pronounced yellow pectoral tufts of *A. m. celebensis*, *A. m. chlorigaster*, *A. m. wiglesworthi*, and *A. m. cagayanensis*, and it may be that they have been derived from a separate stock. The Palawan bird *Anthreptes malacensis paraguae*[72] is derived from the same stock as *Anthreptes m. barnensis* of north Borneo and these have nothing to do with *Anthreptes rhodolaema*, which occurs at sea-level in north Borneo with the latter. It seems plausible that the southwestern Philippine forms were derived from the same stock as *Anthreptes rhodolaema* and that the Celebes bird came to the islands from the southern Philippines. The form from the Lesser Sunda Islands that resembles *Anthreptes m. wiglesworthi*, but is unnamed, that Doctor Hartert is at a loss to place, would be thus explained. The yellow-breasted forms derived from *Anthreptes malacensis* coming east along the Greater Sunda Islands, while the greenish-breasted birds derived from the same stock as *Anthreptes rhodolaema* have come also from the mainland by the way of Borneo, the southeastern Philippines, and Celebes into the Lesser Sunda Islands. This is mere speculation, however, and as the female of *Anthreptes rhodolaema* shows greater differences than the males (being much darker and greener than the same sex of *A. malacensis*) it had better be kept as a distinct species; our present nomenclature not being suitable to show lines of descent. On the other hand, the female of *A. m. celebensis* is just as distinct, so this objection would not hold. If the greenish-breasted forms are derived from the same stock as *A. rhodolaema*, then we would have *Anthreptes chlorigaster chlorigaster*, *A. c. wiglesworthi*, *A. c. cagayanensis*, *A. c. rhodolaema*, and *A. c. celebensis*. It is probable that *A. griseigularis* is also derived from the same stock as the southern forms, it being a greenish-breasted bird, that moved north early and through long isolation has developed into a distinct species, the other related forms coming into the islands at a later date.

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[71] Nov. Zool., vol. 9, 1902, p. 209; vol. 24, 1917, p. 323.
[72] Proc. Biol. Soc. Wash., vol. 33, 1920, p. 55.

Family MELIPHAGIDAE.

HONEYEATERS.

183. MYZOMELA CHLOROPTERA CHLOROPTERA Walden.

A fine series, mostly males, from Goenoeng Kalabat, April 12, 1916; and Toemaratas, July 4–9, 1916.

The series of adult males is very uniform. The breast and belly rather strongly washed with sulphur yellow; the scapulars, wings, and tail distinctly black; the remiges edged with warbler green. A series of five males from south Celebes and Saleyer Island, kindly loaned by J. H. Fleming and from which he permitted the United States National Museum to retain a pair in exchange, almost entirely lacks the sulphur wash from the breast and belly; the scapulars, wings, and tail are distinctly brown, not black; the reds are duller, and they average slightly larger, but this supposed character might disappear upon the measurement of a larger series. The color differences are very striking upon comparison, and I have named the southern form *Myzomela chloroptera juga*.[73]

An adult male from Saleyer Island, in the collection of J. H. Fleming, has the reds much paler than the southern form, but whether this difference would hold I am not prepared to say until a larger series has been examined.

An immature male (No. 249975) taken July 9, resembles the adult female but is acquiring red-tipped feathers on the top of the head, back, and rump, and three or four on the chest; the scapulars and lesser wing coverts are coming in sooty black. This shows that the adult plumage is assumed the first year after a postjuvenal molt.

A selected series of males of the northern form compares with the other series as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Ten males, north Celebes	55. 4	36. 7	14. 8
Four males, south Celebes	57. 5	37. 5	15. 5
One male, Saleyer Island	56	35	16

184. ORODYTES CELEBENSIS CELEBENSIS (Meyer and Wiglesworth).

One male and one female, Goenoeng Lehio, January 18 and 20, 1917; one male, Lindoe Trail, February 25, 1917; six males and two females, Rano Rano, December 9–31, 1917.

The above series is from the mountains of north-central Celebes and I have been able to compare them with topotypes of *Orodytes*

[73] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 56.

celebensis meridionalis (Meyer and Wiglesworth) through the kindness of J. H. Fleming. They are more distinct than one would be led to believe from descriptions alone. The southern form is much darker above, with less of a yellowish wash; below it is much darker, with the lighter edges of the feathers much reduced. *Orodytes c. celebensis* has the feathers of the lower parts strongly edged with dark olive buff while in *O. c. meridionalis* the edges on the feathers to the lower parts are narrow and more of a citrine, which makes the darker centers of the feathers more conspicuous. If these two forms occurred on different islands there is not much question but that they would be ranked as distinct species. It may well be that the series from north-central Celebes does not belong to the northern form at all but to an intermediate race. Meyer[74] reports the southern form from central Celebes; this I can not well understand, unless the ranges of the two forms end rather abruptly.

The two series average as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Eight males, north-central Celebes	85. 7	73. 4	29. 7
Three males, south Celebes	83. 7	69. 7	27. 7
Three females, north-central Celebes	75	66. 2	26. 3

From the above measurements it will be seen that the females are considerably smaller than the males; this seems to be the only sexual difference.

As previous authors have had difficulty in placing this species in the currently accepted genera, I have erected *Orodytes*[75] for it as a solution of the difficulty.

Since writing the foregoing the United States National Museum has acquired a specimen of *Melilestes megarhynchus* (type of the genus) and the differences between it and *Orodytes* are given below in parallel columns:

Melilestes.

Bill proportionately longer and heavier; depth at base about equal to the width; culmen about equal to tarsus and middle-toe with claw; ridge of culmen rounded and expanded at base; serrations on the cutting edge of upper mandible at the tip more pronounced; operculum to nostril proportionally weaker; a distinct line or stria

Orodytes.

Bill proportionally shorter, weaker, and more compressed; depth at base greater than the width; culmen less than tarsus and middle-toe with claw; ridge of culmen not expanded at base but compressed; serrations on the cutting edge of upper mandible of the tip less pronounced; operculum to nostril proportionally greater; no dis-

[74] Notes Leyden Mus., vol. 23, 1903, p. 189.
[75] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 52.

running from forward border of nostril toward tip of bill.

Ramus to symphysis with gonys nearly equal to the latter.

Lores more or less naked, except for the eye-ring.

Frontal antiae poorly defined and sparsely feathered and not extending far forward on the bill.

Bare superciliary and post-ocular space small.

Outer primary greater than half the second, broader.

Feet proportionally heavier and longer; middle-toe and claw equal to four-fifths tarsus; outer-toe without claw extending to about the middle of the ultimate joint of middle-toe.

Tail-feathers narrower and rounded at the tip; the two outer on each side only very slightly shorter than the others.

tinct line or stria from the forward border of the nostril toward tip of bill.

Ramus to symphysis with gonys less than one-half the latter.

Lores feathered.

Frontal antiae well defined and well feathered, extending well forward on the bill.

Bare superciliary and post-ocular space proportionally greater.

Outer primary equal to about one-half the second, narrower.

Feet proportionaly weaker and shorter; middle-toe and claw equal to three-fourths tarsus; outer-toe without claw extending beyond the middle of the ultimate joint of middle-toe.

Tail-feathers broader and obliquely rounded at the tips; the two outer on each side appreciably shorter than the others.

Some of the above differences are only relative and probably specific, yet there are so many structural differences remaining between the two genera that to think of uniting them would be unreasonable. Judging from what specimens I have seen and the literature, *Melilestes* is monotypic, so far as known at present, which agrees with Stresemann's[76] conclusions. The genera *Arachnothera* and *Arachnorhaphis* superficially resemble some of the Meliphagidae and have the commissure serrated at the tip, but so do some of the other genera of the Nectariniidae. If *Toxorhamphus* Stresemann (type *Cinnyris novaeguineae* Lesson) is allowed to remain in the Meliphagidae, then it would appear as if *Arachnothera* and *Arachnorhaphis* should be placed near it in the same family. Hartert[77] in discussing *Melilestes fergussonis* has already questioned the right of *Arachnothera* as a member of the Nectariniidae.

Family MOTACILLIDAE.

PIPITS, WAGTAILS.

185. MOTACILLA CINEREA CASPICA (S. G. Gmelin).[78]

A small series of both sexes from Goenoeng Lehio, January 15, 1917; Koelawi, January 30–February 10, 1917; Rano Lindoe, March 9, 1917; Toewo Mountain, Besoa, November 1, 1917.

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[76] Nov. Zool., vol. 21, 1914, p. 394.

[77] Idem, vol. 3, 1896, p. 237.

[78] For the use of this name in place of *Motacilla cinera melanope* Pallas, see Stresemann, Orn. Monats., vol. 30, 1922, p. 89.

Some of the specimens in the above series have dark tarsi, but in the majority they are light colored; the birds with dark tarsi seem to be older, and this character may be due to age.

186. BUDYTES FLAVUS SIMILLIMA (Hartert).

A good series of both sexes in various stages of plumage from: Dolo, December 25–26, 1916; Koelawi, January 30–February 10, 1917; Rano Lindoe, March 3–25, 1917; Doda, Besoa, October 23–26, 1917; Toewo Mountain, Besoa, October 29–November 2, 1917; Napoe, Watoetaoe, November 20, 1917.

The few birds in the above extensive series in nearly adult plumage, I have compared with *B. f. plexus* and *B. f. simillima.* From the former, the Celebes birds differ in having the pileum, lores, and auriculars much lighter, but from Kamchatkan skins of the latter the differences are slight and may be due to the different seasons at which the two series were collected, the Kamchatkan specimens having been taken in the breeding season. Hartert [79] did not designate a type in the original description of *Motacilla flava simillima*, but later [80] stated that the type came from Sulu Island. Specimens from Luzon and Celebes agree in size, but the latter appear to average a little lighter on the top of the head. This may be seasonal, the Luzon birds being taken later in the season; at any rate the differences are very slight.

All the specimens taken in Celebes from the latter part of December to the latter part of March are in molt and in none is it completed. There seems to be a complete spring molt with the exception of the wings and tail.

187. ANTHUS GUSTAVI Swinhoe.

One adult female, Tandjong Penjoe, February 20, 1915.

Family PLOCEIDAE.

WEAVER BIRDS.

188. MUNIA ATRICAPILLA BRUNNEICEPS (Walden).

A good series of both sexes, adult and immature from: Likoepang, March 2–9, 1916; Dolo, December 25, 1916; Rano Lindoe, March 3–23, 1917; Doda and Toewo Mountain, Besoa, October 23–31, 1917; Napoe, Watoetaoe, November 20–December 4, 1917.

The nearest relative of the Celebes bird is *Munia atricapilla jagori* from the Philippine Islands (except northern Luzon), and when compared with it very little difference can be detected. *Munia*

[79] Vögel paläark. Fauna, vol. 1, Heft 3, 1905, p. 289 (Kamchatka to Maluscas, etc.).
[80] Nov. Zool., vol. 26, 1919, p. 167.

atricapilla brunneicaps when laid out in series alongside *Munia atricapilla jagori* seems to have the black breast patch more restricted, the head probably averages a little browner black, and there is more of a tendency for the edges of the tail feathers to become yellowish above; there appears to be no difference in size. Individuals can be picked out of either series that almost match in coloration and size. Specimens from northern Luzon have the black of the head shade off into smoky brown on the nape, and these have been assigned to the Formosan form *Munia atricapilla formosana.* That both the above are only subspecies of *Munia atricapilla*, there can be little doubt. Stresemann[81] has called attention to the fact that *Fringilla minuta* Meyen[82] is the young of *Munia atricapilla jagori* Martens,[83] and has advocated the adoption of Meyen's name on the ground of priority, but he has overlooked the fact that *Fringilla minuta* Temminck,[84] which appears to be a synonym of *Fringilla flavirostris* Linnaeus. (*Acanthis flavirostris* Authors), would preclude such action.

There are fully grown young without any sign of molting into the adult plumage taken as late as December 25, and others that have begun to molt into the adult dress as early as October 23. As a matter of fact, the breeding period is probably a long one, and the young doubtless molt into the adult plumage the first season. The only spring bird showing any trace of the immature plumage is a female taken March 11. This specimen is in worn plumage and has not as yet fully acquired the black breast of the adult.

Mathews[85] unites *Munia* Hodgson[86] with *Lonchura* Sykes,[87] for which Cabanis[88] substituted *Uroloncha*, *Lonchura* being preoccupied and designated as its type, *Loxia molucca* Linnaeus. If *Munia* and *Uroloncha* are united, and I think they should be, then *Munia* is the name to use.

189. MUNIA PUNCTULATA PARTICEPS Riley.[89]

One immature and four adult males, and one immature female, Rano Lindoe, March 15–25, 1917; two immature males and one immature female, Gimpoe, August 6–20, 1917; one adult female, Toewo Mountain, Besoa, November 2, 1917; two adult females, Napoe, Watoetaoe, November 20, and December 4, 1917.

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[81] Orn. Monats., vol. 30, 1922, p. 88.
[82] Verh. Carol.-Leopold. Akad. d. Natur., vol. 16, suppl., prim., 1834, p. 86, pl 12, fig. 2.
[83] Journ. f. Orn., 1866, p. 14.
[84] Cat. Sys. Cab. Orn., 1807, errata to p. 112.
[85] List Birds Australia, 1913, p. 300.
[86] Asiatic Research., vol. 19, 1836, p. 153.
[87] Proc. Zool. Soc. Lond., 1832, p. 94.
[88] Mus. Hein., vol. 1, 1851, p. 173.
[89] Proc. Biol. Soc. Wash., vol. 33, 1920, p. 57 (Rano Lindoe).

The original description is as follows:

Similar to *Munia punctulata cabanisi* of the Philippines, but darker above, the closed wing outwardly deeper more rusty brown, the throat and cheeks deeper brown, especially on sides of face and lores, the barring on the breast and flanks much coarser and darker brown. Wing, 50.5; tail, 40; culmen, 11 mm.

The type is an adult male from Rano Lindoe, March 15, 1917 (U. S. National Musuem, No. 251332).

This is the bird described as *Munia punctulata nisoria* by Meyer and Wiglesworth,[90] but they could hardly have compared specimens from Celebes with those from Java, or they certainly would have seen how different they are. The Javan bird has the rump barred with white and the tail gray above, while the Celebes form has the rump unbarred and the tail buffy citrine; the latter race is also darker above and on the throat, with the white of the belly more restricted, and is smaller.

Walden[91] had noticed the difference between the color of the tails of the Java race and that of the only specimen he had from Celebes. Stresemann[92] has indicated the Celebes bird as probably a distinct form, but did not name it, probably because his series was inadequate. As a mater of fact, in size and in the color of back and tail, the Celebes bird approaches the Philippine form, but in the coarser markings of the breast and flanks it more closely resembles Javan specimens. It is perfectly distinct from either and well merits recognition.

Two female specimens (Nos. 252529 and 252530) from Napoe have slight grayish bars on the rump but nothing like the coarse white bars of *Munia punctulata nisoria.*

In the original description only the measurement of the type was given. The four adult males measure as follows: Wing, 50–51 (50.5); tail, 36.5–40 (38.7); culmen, 11–11.5 (11.1); and the three adult females: Wing, 48–52 (50); tail, 36.5–39 (37.8); culmen, 10.5–11 (10.7).

The immature is buffy brown above and a light wood brown to cinnamon-buff below. A young male (Rano Lindoe, March 24, No. 251336), just beginning to molt into the adult plumage, has a few new feathers appearing on the mantle and on the throat and chest. An immature female (Gimpoe, Aug. 20, No. 252531) has almost assumed the adult plumage, except for the crown and some of the feathers on the throat, so it would appear that the adult plumage is assumed the first year and that the breeding season is irregular.

190. MUNIA MOLUCCA MOLUCCA (Linnaeus).

A good series of both sexes and immatures from: Kapas Bay, November 23, 1914; Toli Toli, December 9–18, 1914; Tandjong Pen-

[90] Birds of Celebes, vol. 2, 1898, p. 548.
[91] Tr. Zool. Soc. Lond., vol. 8, 1872, p. 73.
[92] Nov. Zool., vol. 19, 1912, p. 317.

joe, February 17, 1915; Likoepang, March 2–6, 1916; Koeala Prang, June 17, 1916; Temboan, July 25–30, 1916; Koelawi, February 2–9, 1917; Gimpoe, August 2–27, 1917; Toewo Mountain, Besoa, October 29, 1917.

I have no specimens of typical *Munia molucca*, but am referring the above series to the typical form on geographic grounds.

Family EULABETIDAE.

GLOSSY STARLINGS.

191. BASILEORNIS CELEBENSIS G. R. Gray.

One male, Soemalata, September 9, 1914; one male, Kwandang, October 9, 1914; one male and one female, Temboan, July 30, 1916; two males, Rano Lindoe, March 16 and 21, 1917; one male, Gimpoe, August 21, 1917.

192. LAMPROCORAX PANAYENSIS NEGLECTUS (Walden).

A large series of adults of both sexes and immature from: Kwala Besar, August 23–24, 1914; Soemalata, September 8–9, November 3, 1914; Kapas Bay, November 23, 1914; Tandjong Penjoe, February 23–26, 1915; Koeala Prang, June 4–18, 1916; Parigi, September 12–24, 1916; Toboli, October 24–25, 1916; Tinomboe, December 15, 1916.

Adults of the above series when compared with Philippine specimens of typical *L. p. panayensis* are duller and darker, not so glossy, and with a tendency to have a bluish cast on the back; the upper surface of the tail and wings is also darker. There seems to be little or no difference in size, as the following will show:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Ten males from Celebes	109. 2	74	20. 5
Ten males from the Philippines	110. 2	75	20. 6
Ten females from Celebes	104. 5	68. 5	19. 3
Ten females from the Philippines	105. 9	69. 3	19. 1

Eggs fully developed (Parigi, Sept. 23, 1916).—H. C. R.

193. LAMPROCORAX MONTOSA Riley.[93]

A good series of both adults and immature from Rano Lindoe, March 4–16, 1917.

The following is the original description:

Similar to *Lamprocorax minor*, but feathers of the throat, jugulum, and sides of neck almost plain shining green, only a slight purplish sheen seen

[93] Proc. Biol. Soc. Wash., vol. 34, 1921, p. 57.

in certain lights; averaging slightly smaller. Wing, 99; tail, 59.5; culmen, 16; tarsus, 21; middle-toe, 17.5 mm.

Remarks.—The above species is founded upon 11 males, 8 females, and 3 immatures, all taken at the type locality, March 4–16, 1917. For comparison I only have three females of *Lamprocorax minor* from Pendek and Tobea Islands, Buton Strait. There appears to be little difference in the sexes the female only being smaller and duller than the males. The series of *Lamprocorax montosa* is quite uniform, the purplish sheen on the throat and jugulum being faint and only seen in a favorable light and absent or nearly so from the sides of the neck.

In *Lamprocorax minor* the purplish sheen is much more pronounced on the throat and jugulum and even extends to the side of the neck; it is also apparently larger. The type of *Lamprocorax todayensis* (a female) from Mount Apo, Mindanao, resembles *Lamprocorax montosa* very much, but the feathers of the throat and jugulum are more lanceolate and the purple sheen is still fainter, almost lacking; the wings are duller. I attach no importance to the latter, as the series of *L. montosa* shows that as the plumage fades the iridescent green of the wings disappears and they become brownish and the backs steely. *Lamprocorax todayensis* and *montosa* are both mountain forms derived from the same stock, probably *Lamprocorax minor*, but as the latter appears to be even a later immigrant from the south into Celebes, it is better to treat them all as species for the present until more is known of their distribution and relationship.

Since writing the above the United States National Museum has acquired a specimen of *Lamprocorax minor* from Sumba Island. This has the purplish sheen on the throat and jugulum even more extensive than in the specimens from south Celebes; in fact it extends clear around the hind-neck, forming a collar.

The various series average as follows:

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
Ten male, *L. montosa*	98. 7	60. 3	15. 3	20. 2	16. 4
Eight females, *L. montosa*	91. 2	54. 3	14. 2	19. 5	16.
Three females, *L. minor*, from S. Celebes	95. 8	59. 8	15. 2	20	16. 7
One female, *L. minor*, from Sumba	95. 5	53	14. 5	19. 5	15. 5
One female, *L. todayensis*, the type	95. 5	56	14	20	16. 5

191. STREPTOCITTA TORQUATA (Temminck).

A good series of adults and immature from: Paleleh, August 19 and November 13, 1914; Soemalata, September 4 and 7, 1914; Kwandang, September 16, 1914; Kapas Bay, November 20–21, 1914; Toli Toli, November 28, 1914; Kampa, February 14, 1915; Tandjong Penjoe, February 17–20, 1915; Likoepang, February 24–March 12, 1916; Manembo Nembo, June 23, 1916; Toemaratas, July 4, 1916; Temboan, July 17–30, 1916; Parigi, September 16–17, 1916; Laboea

Sore, November 19, 1916; Koelawi, January 27–28, 1917; Rano Lindoe, March 5–19, 1917; Tamboe, June 13, 1917; Gimpoe, August 3–23, 1917; Toare, September 20–23, 1917; Pinedapa, January 13 and February 8, 1918.

There appears to be no constant differences in birds from the north and the north-central mountainous country.

Two immature specimens, male and female, from Manembo Nembo, June 23 (249789–790), in worn abraded plumage, with short crests, have the scapulars, lesser wingcoverts, tips of the remiges, occiput, ear-coverts, and a central band down the rump cinnamon-brown; the backs have begun to acquire the shining bluish black of the adults; the chin blackish; the crest has begun to develop slightly; the male has the chest spotted with brownish, the female not; the breasts have a brownish cast; the tails are much as in the adults, except the feathers are tipped with brownish. Another stage of the immature is much like the adult, except only the chin is black, there is a band of black spots across the chest, and the white on the hind neck is less developed. Still another stage of immature has no black on the chin whatever and no chain of black spots across the chest and evidently represents an older stage than the above, as they were taken later in the year (Gimpoe, August 10, 252556–252257).

195. ENODES ERYTHROPHRYS ERYTHROPHRYS (Temminck).

A good series of both sexes from Goenoeng Kalabat, 1,700 meters, April 6–9, 1916, and Toemaratas, July 4 and 9, 1916.

196. ENODES ERYTHROPHRYS CENTRALIS Riley.[94]

One male, the type, Goenoeng Lehio, January 13, 1917; one male, Winatoe, January 21, 1917; one male and two females, Lindoe Trail, February 28, 1917; three males and two females, Toewo Mountain, Besoa, October 29–November 3, 1917; one male, Rano Rano, December 28, 1917.

All the specimens from the northern part of the island have the peculiar superciliary feathers flame scarlet, while the above series from the north central region has them orange chrome; this is the most striking difference and seems to be constant, although there are other minor and inconstant characters that are only average. For the above reason I have ventured to separate the north-central bird, with the following description:

Similar to *Enodes erythrophrys erythrophrys*, but superciliaries orange chrome, not flame scarlet; rump and crissum lighter yellow; outer margin of wing feathers and upper surface of tail more greenish; and wing and tail shorter. Wing, 109; tail, 106.5; culmen, 19; tarsus, 26.5; middle toe, 21.5 mm.

[94] Proc. Biol. Soc. Wash., vol. 33, 1920, p. 56 (Goenoeng Lehio).

The two series average as follows:

	Wing.	Tail.	Culmen.
	mm.	*mm.*	*mm.*
Seven males, north Celebes	115	113. 2	17. 8
Six males, north-central Celebes	111. 2	104. 6	18
Eight females, north Celebes	107. 2	104. 1	17. 7
Four females, north-central Celebes	104. 6	98. 3	16. 6

A bird of the year that seems to be fully grown, taken at Besoa, November 2, is lighter above and below than the adult and the superciliaries are light cadmium instead of orange chrome.

197. SCISSIROSTRUM DUBIUM (Latham).

A good series of both sexes of nearly all ages from: Soemalata, September 8–9, 1914; Likoepang, February 23–March 10, 1916; Ayermadidi, May 6, 1916; Rano Lindoe, March 4–15, 1917; Gimpoe, August 5–24, 1917; Pinedapa, February 7, 1918.

After comparing a series from the north with another from the north-central mountainous area there appear to be no constant differences in size or color.

The majority of the specimens taken at Rano Lindoe in March are molting from a brownish-gray plumage to a slaty one; quite a number are undoubtedly immature as the red tips to the rump feathers are duller, but the brownish plumage must be due to fading, for a young bird just from the nest does not differ materially from the adult, except the lores are lighter and the red tips to the rump feathers are duller. The adult specimens taken at Gimpoe in August have the dark color of the lores and chin much reduced and are lighter than freshly molted March birds; this is probably due to fading, but some of the Gimpoe specimens are also molting. This would tend to show that they have two molts a year, or that individual birds may be found molting at any time.

Young, apparently taken from the nest and others barely able to fly, with short stumpy tails, were collected at Gimpoe August 24. The younger stage, with feathers only just appearing on the feather tracts, shows the red tips to the rump feathers where the tips are breaking through the sheath. A young female, about half grown, was taken at Rano Lindoe March 6; this seems to indicate that the breeding season must be irregular.

Judging from the series taken, this must be an extremely abundant bird on the island.

Family ORIOLIDAE.

ORIOLES.

198. ORIOLUS CELEBENSIS CELEBENSIS (Walden).

A good series of both sexes from: Kapas Bay, July 22 and November 22, 1914; Kwala Besar, August 23, 1914; Soemalata, September 4–8, 1914; Kwandang, September 17–October 26, 1914; Paleleh, November 9, 1914; Toli Toli, December 6, 1914; Tandjong Penjoe, February 17–26, 1915; Likoepang, January 14–March 12, 1916; Ayermadidi, May 5, 1916; Koeala Prang, June 5 and 15, 1916; Batoe Hangoes Baroe, June 11, 1916; Temboan, July 17, 1916; Toboli, October 21–25, 1916; Laboea Sore, November 26, 1916; Lindoe Trail, February 25, 1917; Rano Lindoe, March 7–21, 1917; Gimpoe, August 3–25, 1917; Toare, September 23, 1917; Parigi, September 16–20, 1917; Pinedapa, February 9 and 21, 1918.

The majority of the specimens with the black occipital band interrupted or entirely absent are designated as females by the collector; some of the females possessing the black occipital band, have this character less developed than in the fully adult males. Specimens indicated as males, with the occipital band interrupted behind, are probably younger males that have not acquired the fully adult plumage. In other words, the specimens before me seem to bear out Meyer and Wiglesworth's[95] belief that the interrupted occipital band is more or less sexual, it being united in the males and to a less extent in the old females. The variation in the tail pattern is more or less of a variable character, birds with the outer tail feather nearly solidly yellow, or with the base black outwardly, not being confined to either sex or age, except that the tails of the males average a greater amount of black. One female (No. 248581), taken at Tandjong Penjoe, February 17, has scarcely any black in the tail whatever, it being lemon chrome and pyrite yellow in the usual pattern, only slightly blackish next the yellow tip on the three pairs of feathers next the central pair. No other specimen approaches it.

A male in apparently adult plumage taken at Soemalata, September 8 (No. 248570), and another male taken at Parigi, September 20 (No. 250264) have the bills black, but that this is an immature character still retained is shown by an undoubted immature shot at Rano Lindoe, March 15 (No. 251032); all three have the black occipital band indicated.

No specimens from south Celebes are available for comparison but there are apparently no constant differences in color or size between

[95] Birds of Celebes, vol. 2, 1898, p. 587.

birds from the extreme north and the north-central mountainous country. The majority of northern birds are said to have the occipital black band interrupted, but in the extensive series before me this does not prove to be the case and as mentioned above there are grounds to suspect that this character is one of age, or to a certain extent sexual.

In any event *Oriolus celebensis meridionalis* Hartert[96] is preoccupied by *Oriolus meridionalis* Brehm.[97]

Family DICRURIDAE.

DRONGOS.

199. DICRUROPSIS LEUCOPS (Wallace).

A good series of both sexes and nearly all ages from the following localities: Kwala Besar, July 29–31, 1914; Paleleh, August 1–19, 1914; Soemalata, September 6–8, 1914; Kwandang, September 16–October 8, 1914; Toli Toli, December 1, 1914; Tandjong Penjoe, February 17, 27, 1915; Likoepang, January 16–March 12, 1916; Teteamoet, February 3, 1916; Ayermadidi, April 1, 1916; Manembo Nembo, June 22, 23, 1916; Toemaratas, July 8, 1916; Toboli, October 26, 1916; Laboea Sore, November 21, 1916; Kasimbar, December 13, 1916; Rano Lindoe, March 7, 1917; Gimpoe, August 4–25, 1917; Pinedapa, January 14–February 20, 1918.

There are two young, with short stumpy tails, apparently just from the nest, taken at Teteamoet, February 3, and Pinedapa, February 20. Judging from this, the breeding season must be very early in the year.

Birds from the central and northern parts of Celebes do not appear to differ in size or color and a female in the United States National Museum from near Macassar is not essentially different.

The various series average as follows:

	Wing.	Tail.	Culmen.	Tarsus.	Middle toe.
	mm.	*mm.*	*mm.*	*mm.*	*mm.*
Ten males, North Celebes	162. 4	140. 2	33. 5	24. 5	18. 4
Ten males, Central Celebes	163. 3	142. 7	32. 9	25. 6	18. 2
Ten females, North Celebes	159. 5	138. 9	32. 6	24. 7	18
Ten females, Central Celebes	161. 5	143. 3	32. 3	25	18. 6
One female, South Celebes	159	136	32	23	18. 5

200. DICRUROPSIS MONTANA Riley.[98]

One female, Goenoeng Lehio, January 20, 1917; one male (type) and one female, Toewo Mountain, Besoa, October 28–29, 1917; one female, Rano Rano, December 22, 1917.

[96] Nov. Zool., 1896, p. 155.
[97] Isis, 1845, p. 332.
[98] Proc. Biol. Soc. Wash., vol. 32, 1919, p. 94 (Besoa, Celebes).

The original description is as follows:

Similar to *Dicruropsis leucops* but much smaller, especially the bill and feet; the metallic colors duller, more bronzy, and spots on the chest reduced in size; the tail more forked, the feathers narrower, and the outer pair less flared outwardly. Wing, 131; tail, 138; culmen, 24; tarsus, 19; middle toe, 14 mm.

In this genus there is practically no difference in color between the sexes and very little difference in size; females average slightly smaller. The three females of *Dicruropsis montana* measure as follows: Wing, 133.5–140 (137.5); tail, 133–152.5 (142.2); culmen, 24–24.5 (24.3); tarsus, 19.5–20 (19.7); middle toe, 14–14.5 (14.2). Nine females of *Dicruropsis leucops* measure: Wing, 154–167 (159.4); tail, 131–150 (138.6); culmen, 29–35.5 (32.6); tarsus, 24–26 (24.8); middle toe, 17–19 (18.2). From the above it will be seen how greatly the two above species differ in size; differences that can not be explained in any other way than that the smaller bird is specifically distinct.

To the original description there is one correction to be made, the locality given on the label, Besoa, proves to be a district; in Mr. Raven's field catalogue the precise locality is given as Toewo Mountain.

All the above localities are in the mountains, in the general region of Lake Lindoe.

This is one of Raven's most interesting discoveries and I am not realy sure that it belongs in the same genus with *Dicruropsis leucops*, as the rictal bristles are longer, the bill and feet weaker, and the tail structurally different, but there seems no other place for it and it has been clearly derived from the lowland species.

Family CORVIDAE.

CROWS.

201. NESOCORAX TYPICA (Bonaparte).

A pair from Toewo Mountain, Besoa, October 26 and 30, 1917; and another pair from Pinedapa, January 14, 1918.

The above specimens were taken considerably north of any hitherto reported locality. They measure as follows:

No.	Sex.	Locality.	Wing.	Tail.	Culmen.
			mm.	*mm.*	*mm.*
252239	Male	Besoa	218. 5	115. 5	48. 5
252238	do	Pinedapa	232	123. 5	50
252240	Female	Besoa	229	121. 5	48
252237	do	Pinedapa	229	122	48

These birds are all similar and differ somewhat from Meyer and Wiglesworth's [99] description. The black of the throat is not sharply

[99] Birds of Celebes, vol. 2, 1898, p. 584.

defined but encroaches upon the white of the lower parts where it becomes fuscous-black; the white collar is bordered narrowly posteriorly with fuscous; there is a tuft of elongate white feathers, tipped with fuscous, on the flanks; the thighs are black like the back; and there are other slight discrepancies.

Seen only about patches of isolated woods or along the edge of heavy forest. Its call is very much like that of a jay, not at all like *Corvus*. Nest a structure somewhat like that of a crow, placed high in a tall tree at the border of a clearing, and composed of twigs, etc. Eyes hazel brown. Locally known as *koki* (Pinedapa).—H. C. R.

As Walden[1] has clearly shown that *Gazzola* Bonaparte can not be used for this genus and as no one has apparently proposed a substitute, I have reluctantly renamed it *Nesocorax*.[2]

202. CORVUS ENCA Horsfield, subspecies?

A good series of both sexes and young from: Tandjong Tango, August 28, 1914; Soemalata, September 3–7, and November 3, 1914; Kwandang, September 20, 1914; Paleleh, November 9, 1914; Boesak, November 16, 1914; Kapas Bay, November 18–22, 1914; Toli Toli, November 25–December 20, 1914; Tandjong Penjoe, February 17–27, 1915; Likoepang, January 16–March 11, 1916; Ayermadidi, April 4–May 16, 1916; Batoe Hangoes Baroe, June 11, 1916; Manembo Nembo, June 22, 1916; Temboan, July 20, 1916; Parigi, September 9–10, 1916; Toboli, October 12–27, 1916; Tinomboe, December 15, 1916; Koelawi, January 6–7, 1917; Winatoe, January 10, 1917; Rano Lindoe, March 9, 1917; Gimpoe, August 5, 1917; Toeare, Bada, October 3, 1917; Pinedapa, February 14, 1918.

The above large series of crows shows quite a little individual variation in size. I have been able to compare them with only two Javan specimens (a male and female), and while the latter seem to have the bill proportionately slenderer and less arched, the series is too unequal to form any definite opinion, except that I believe with Meyer and Wiglesworth[3] that they are hardly the same. Even if they should prove to be racially separable, the proper name could only be determined by an examination of Brüggemann's types of the several species described by him from Celebes.

Birds from the north end of Celebes average slightly larger than those from the north-central part, but the differences are not great enough to warrant recognition by name.

Generally common; it seems to prefer coconut groves.—H. C. R.

[1] Trans. Zool. Soc., vol. 8, 1872, p. 74.
[2] Auk, vol. 38, 1921, p. 458.
[3] Birds of Celebes, vol. 2, 1898, p. 581.

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