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ON VARIOUS FORMS OF THE GENUS *TYTO*.

By ERNST HARTERT.

TYTO ALBA AND ITS SUBSPECIES.

THE examination of a Barn-Owl, the first recorded from the Solomon Archipelago, which had been collected by R. H. Beck on Vella Lavella Island, 11 Nov. 1927, when he was leader of the first Whitney South Sea Expedition, led me to revise the Barn-Owls, a genus of birds which contains some of the most beautiful birds, and of which I have been always particularly fond.

When Sharpe monographed this group in vol. ii of the Cat. B. Brit. Mus. (1875), he did much the same as we do now, as regards species, distinguishing specifically "*Strix flammea* and allies," *Strix novae-hollandiae*, *tenebricosa*, *capensis*, and *candida*, but he declared all the various names given to subspecies of "*flammea*" to be, in his opinion, *synonyms*, while he separated the closely allied *castanops* as a subspecies of *novae-hollandiae*. This was not consistent or logical, as many of the subspecies of "*flammea*," which he treated as synonyms, are much more different from the first-named, European, form, than *castanops* is from *novae-hollandiae*.

Sharpe's volumes of the Catalogue of Birds are immortal, and generally the best of that famous series, but it must not be forgotten that the idea of subspecies was then very vague, and the following quotation will show how little material was expected at the time. Sharpe wrote in 1875, i.e. over half a century ago: "It is seldom that an opportunity is afforded to the ornithologist of examining such a fine series of birds as has been permitted to use in the case of the Barn-Owls; and it would be difficult to find a more comprehensive collection that at present exists in the British Museum." Yet he had only 116 specimens from all over the world of what he called *Strix flammea*, while the Museum now contains many many more, and there are now before me in the Tring Museum no less than 435 skins. Moreover, when Sharpe wrote that, there were vast regions of the world unexplored, and especially many of the Indo-Malayan and Australian Islands were only touched or entirely unexplored.

While some forms are fairly widely spread, others are more local, and insular forms are often very well marked.

I can now distinguish the following subspecies:

Tyto alba alba (Scop.).

Strix alba Scopoli, Annus I, *Hist. Nat.* i, p. 21 (1769—"Ex Foro Juli" = Friaul).

The above name must be used for the continental Mediterranean Barn-Owl, which has the underside as a rule white, with a few blackish or brown-grey spots on the sides of the body, which are nearly always present, though often very small. Underside rarely suffused with brownish yellow. The tail is pale yellowish brown or pale brownish yellow, with the usual cross-bars, sometimes wider, sometimes very narrow. The upperside is of course lighter than in the usual dark specimens of *Tyto alba guttata* from Central Europe, but does not differ from the typical British ones or from Spanish ones. It seems that specimens with pure white underside, without any spots, are rare, but possibly more frequent than we know in Greece. Wings, 281-296, once 310; metatarsus, 56-63 mm.

This form inhabits Italy, north to southern slopes of the Alps, Sicily, apparently also Greece (rare!), Corfu, Crete, and Cyprus, and in the west apparently through the Balearic Isles and Spain, westernmost France to the Channel Islands to British Isles and Ireland. In France brown and white forms occur, but the ones with white underside are more common than in Germany, but in westernmost and southernmost France the white underside is apparently commoner than in eastern and northern France. Cf. notes in *Vög. pal. Fauna*, pp. 1030 and 1033-1034.

Kleinschmidt separates the Barn-Owls of the Rhine-valley as *T. a. rhenana*,¹ not because he can distinguish any specimens from either the Central European ones, or from the Mediterranean form, but because there is a greater percentage of underside white specimens than in other parts of Germany, and more brown ones than in Southern Europe. This is quite true, of course, but the conclusion that they must therefore have a special name is, in my opinion, not correct. We cannot explain every phenomenon by our clumsy nomenclature. Nomenclature must be able, and its object is, to distinguish by names forms which can be distinguished, but not forms which are not distinguishable, though a certain proportion of specimens differ. And it is not possible to say how many differ, as we generally can only compare an infinitesimal proportion of the actual population. To talk of an "average" ("Durchschnitts") size or coloration, when only a few or a dozen specimens have been examined, is doubtless a great mistake!

I consider *Tyto alba kleinschmidti* Jordans² an undoubted synonym of *T. alba alba*. The author has been kind enough to send me six beautiful skins which he collected in Mallorca. He described the form in 1924 from nine specimens. He explains (what we all know) that many specimens ("grosses Material") are necessary to see the "Variationsbreiten"—but he did *not* have large series, but only nine specimens! Judging from these nine specimens he talks of the normal type ("Mittelwert"), which, however, he could hardly know. He knew well the great variability of Barn-Owls, but did not take the consequences into account. Jordans says that such heavily spotted undersides as are common in Spain are not found in Mallorca. He could not know this, as he had only nine; moreover, that heavily spotted underside is not, apparently, usual in Spain, as I have not seen one that was heavier spotted than the most spotted

¹ *Strix flammea rhenana* Kleinschmidt, *Berajah, Strix Flammea*, p. 20.

² *Tyto alba kleinschmidti* Jordans, *Journ. f. Orn.* 1924, p. 409 (Balearic Isles, type in Jordans' collection from Mallorca).

Mallorcan. He says that such dark uppersides are not found in Mallorca, but the darker Mallorcans are quite as dark as the darker Spaniards. Jordan says that the upperside is much heavier spotted in Mallorca than in Spain—this is not the case in comparison to our Spanish examples. I cannot at all see that the "Variationskurve" is different, but even if it was, that could not suffice in the genus *Tyto*, where often, when one has a good series, other specimens turn up which are strikingly different, as for example in a fine series of South-Sea Barn-Owls (*T. alba lulu*), which has usually a white underside, specimens with brown breast and abdomen occur. Similar "irregularities" are found among the other species, *Tyto longimembris (candida auct.)*.

Dr. von Jordans also shot an abnormal specimen with a white upperside. It is obviously an aberration and as such can have no importance at all for the discussion of the subspecies. The reasoning of Jordans was the same as that of the late Carlo von Erlanger, when he described "*Phylloscopus sibilatrix flavescens*" and made an obviously aberrant luteism or albinism the type. I don't see that the suggestion is justified that this is an extreme of the subspecies, as the supposed differences are *not* exaggerated—on the contrary, the great amount of grey which Jordans mentions, and which is present in some of his specimens, is quite absent.

Kleinschmidt¹ separates the British Barn-Owl under the name "*Strix hostilis*." He compared at the time 6 British specimens with 10 from Siena and Ravenna "and with many *S. ernesti* from Sardinia." He says that they differ by showing a length of tarsus ranging between lower extremes. No measurements given.—It is true that I too found lower extremes, but by far the majority do not range under the majority of Spanish and Italian specimens. I quite agree that variable forms are most interesting, but do not take the consequence that populations of which only a minor percentage can be distinguished should receive names. My view is that of older ornithologists, but to call it antiquated is a presumption. It is surely not antiquated because half a dozen or more recent ornithologists have named such forms?

The few Barn-Owls I have been able to see from Cyprus are rather uniform, with light upperside, underside white with a few blackish spots, one without the latter. Wings 290–305 mm. They seem to be the same as Palestine and presumably Asia Minor birds, which I have not compared. It is for me impossible to say how they vary, and I see no reason to separate them from *T. a. alba*.

***Tyto alba ernesti* (Kleinschm.).**

Strix ernesti Kleinschmidt, *Orn. Monatsber.* 1901, p. 168 (Sardinia).

"*Strix Flammea ernesti*" Kleinschmidt "Berajah," *Strix Flammea*," p. 20, and instructive photos of underside of series on pl. vi (1906).

Tyto alba ernesti Hartert, *Vög. pal. Fauna*, p. 1036 (1913).

This island form is recognizable. Its characters are perhaps most comprehensively described in the *Vög. pal. Fauna*, where measurements are also given. The whiter tail and the great amount of white or whitish colour on the wings are characteristic. The tail is not rarely white or whitish without bars, more often with narrow cross-bars, the underside is very often pure white without any spots, and if they occur they are very small. It is true that absolutely similar specimens occur in England, but they are very rare. As is the case in

¹ *Strix hostilis* Kleinschmidt, *Falco*, xi, p. 18 (1915—England),

other species, the form from Sardinia and Corsica is well recognizable, while the surrounding Mediterranean countries and the Balearic Isles have not developed a practically separable form.

Sardinia and Corsica.

(Females are often darker than males ; there is in underneath white specimens often a light but bright buffish band across the breast. In British specimens all such specimens that were sexed by me or in my presence were females, in pairs the males were uniform white, the females had the buffish band. This is the rule in Barn-Owls ; even in Javan *javanica* the males are whiter, females browner underneath. Some few specimens in collections which do not confirm this rule are probably wrongly sexed !)

This owl is one of the most beautiful of all birds !

Tyto alba schmitzi (Hart.).

Strix flammea schmitzi Hartert, *Nov. Zool.* 1900, p. 534 (Madeira).

Madeira.

Tyto alba gracilirostris (Hart.).

Strix flammea gracilirostris Hartert, *Bull. B.O. Club*, xvi, p. 31 (1905—Fuertaventura and Lanzarote)

Eastern Canaries : Fuertaventura and Lanzarote.

Tyto alba pusilla subsp. ?

About the North-African Barn-Owls, I mean those from Africa Minor and Egypt (I know nothing of the occurrence in Cyrenaica and have not seen any from Tripolitania), I have written all I knew in *Vög. pal. Fauna*, p. 1035. Though I have now more specimens, I can say nothing more about them. Many specimens are indistinguishable from S.W. European ones, but specimens with more heavily spotted undersides are more frequent, though they occur with unspotted undersurface. The tarsi are often thinner feathered, and sometimes longer. The wings range longer, but the majority of specimens are not larger. I measure, however, a number of specimens with wings of 300 and exceptionally to 310 mm. I never measured even 300 in British ones, but Kleinschmidt, measuring 6 specimens, mentions a British wing of 308 mm., but among the many measured by Witherby and myself is not one with such a long wing.

If anyone wishes to attach a special name to Barn-Owls from Egypt (and Africa Minor) I am afraid he must call it *Tyto alba pusilla*. This name is misleading and stupid, when compared with *T. a. alba*, but it was given¹ from comparison with the much larger Indian Barn-Owl, which at the time was supposed to be the same as "European" Barn-Owls. The name was given to a bird without locality, but in *Ibis*, 1866, p. 250, it was added that it came from Egypt. Before the author knew this he gave another name, *parva*, for the same reason, to a still smaller bird from Egypt. Five years after C. L. Brehm gave the name *splendens*² to specimens from N.E. Africa and the Rhine, and in 1885 he mixed up with this also Sennaar examples, and said he received also one from Strassburg.

¹ *Strix pusilla* Blyth, *Journ. As. Soc. Bengal*, xviii, p. 801 (1850—From a specimen with unknown locality, but *Ibis*, 1866, p. 250, declared to be from Egypt !).

² *Strix parva* Blyth, *l.c.*, p. 801 (Egypt).

³ *Strix splendens* Brehm, *Vogelfang* (partim !), p. 40 (1855).

Tyto alba guttata (Brehm).

Strix guttata Brehm, *Handb. Naturg. Vög. Deutschl.* p. 107 (1831—Rügen, in winter in Germany).

From South Sweden and Denmark throughout Central Europe to Rhineland, where it begins to merge into *alba*, a process which continues through France, also the Alps, Austria, Hungary, Bohemia, to Bulgaria and Roumania.

This form is very variable. Specimens with quite white underside, like *alba*, occur exceptionally in most parts of its range, but they become more numerous on the Rhine and in Eastern France, also apparently in the Alps. In Great Britain this form is an occasional and rare visitor.

Tyto alba affinis (Blyth).

? *Strix Poënsis* Fraser, *Proc. Zool. Soc. London*, pt. x. 1842, p. 189 (1843—Island of Fernando Po. Specimens from Fernando Po could not be examined).

Strix maculata nec Vieillot, Brehm, *Vogelfang*, p. 40 (1855—Nordost-Afrika); *Naumannia*, 1858, p. 220 ("Sennaar." In the collection are now only examples labelled Chartum, which are the types). See *Nov. Zool.* xxv, p. 41, 1918.

Strix affinis Blyth, *Ibis*, 1862, p. 388 (Cape of Good Hope).

Distinguishable from *T. alba alba* by having stronger toes, and generally longer and often thinner feathered tarsi. The underside is usually pale rusty-yellow, rarer browner, often more whitish, but not as a rule snow-white, the jugulum and sides remaining rusty brownish. Snow-white examples are very rare, and even then there are dark brown spots, sometimes almost black and more or less angular, frequently arrow-shaped and cross-lines on the sides and abdomen. Upperside with fairly large black and white spots, ground-colour with much grey. Wings (20) 286–305, tarsi 63–70 mm.

This form inhabits tropical Africa from Southern Nubia and Khartum to Senegambia and South Africa.

Tyto alba hypermetra Grote.

Tyto alba hypermetra Grote, *Orn. Monatsber.* 1928, p. 79 (Madagascar).

Madagascar and Comoro Islands.

In *Vög. pal. Fauna*, p. 1038, I pointed out the specimens from Madagascar and the Comoros agreed in coloration with *T. a. affinis*, but were larger: wings 300–320 mm. Grote found this confirmed by specimens in the Berlin Museum, and I have also received further specimens, which confirm my statement of 1913. In consequence of this Grote named the larger form, for which no name was available.

Tyto alba detorta Hart.

Tyto alba detorta Hartert, *Bull. Brit. Orn. Club*, xxxi, p. 38 (Santiago, Cape Verde Islands).

This is a darker form, like darkest *guttata*, but with larger spots on the upper-side, rectrices strongly barred. This is the "*Strix insularis*" of older authors, but the name *insularis* was given to specimens from St. Vincent in the West Indies, and not from the Cape Verde Islands!

Tyto alba erlangeri Scl.

Tyto alba erlangeri W. Sclater, *Bull. Brit. Orn. Club*, xlii, p. 24 (1921—Lahej in South Arabia).

South Arabia: Aden, Lahej, Muscat, and "apparently extending to Mesopotamia and Palestine," if the latter is true, it would only be South Palestine, not the whole; more Palestine material is however desirable!

Sclater found my remarks, *Vög. pal. Fauna*, p. 1038, confirmed.

Tyto alba thomensis (Hartl.).

Strix thomensis Hartlaub, *Rev. et Mag. Zool.* 1852, p. 3 (Sao Thomé Island in the Gulf of Guinea).

Only known from this island.

Very dark form. Upperside dark grey, almost blackish, the black and white spots very conspicuous. Face very brown. Underside of the known specimens almost golden brown, sometimes with very large black and white, sometimes with much smaller spots. Wings of three specimens in the Tring Museum, collected by A. Moequerys in 1901, only 250–260 mm. Feet powerful.

Tyto alba stertens subsp. nov.

Strix indica Blyth, nec Gmelin!

The Indian *Tyto* is a real "Barn-Owl," one hears it snorting (hence *stertens*) round buildings and ruins, in gardens, etc. It has generally been called *javanica* (if not "*Strix flammea*"), but differs rather from specimens from Java, Kangean, and Lombok, specimens in Tring, the British and Berlin Museums having been compared. The upperside in the Indian form is lighter, paler grey, and the black and white spots are usually smaller, the brownish parts yellower. The underside is white or very pale brownish yellow, in parts or throughout, the spots nearly always present and smaller, if the underside is brown it is less deep than in typical *javanica*. Dimensions similar.

Type: ♂ ad., caught on nest in the roof of the Forest Offices, Silehar, Cachar, November 1895, by E. C. Stuart Baker.

There is not enough material from Ceylon to prove that Ceylonese specimens are smaller than continental Indian ones, though some of ours are very short-winged. Legge also says they have the same dimensions.

Tyto alba subsp. ?

Specimens from French Indo-China (Tonkin, ex Alan Owston, and Delacour's in the British Museum) are more like Javanese than like Indian ones, but richer on the upperside than the former, the spotting on the underside often very heavy. More material, however, is required to prove that they have sufficient constancy for a special name.

Tyto alba javanica (Gm.).

Strix javanica Gmelin, *Syst. Nat.* i, p. 295 (1788—Java). See remarks under *T. a. stertens*.

I have seen specimens from Java, Kangean and Lombok (Rensch coll.) only, but the form must be wider spread.

Tyto alba de-roepstorffi (Hume).

Strix De-Roepstorffi Hume, *Stray-Feathers*, iii, p. 390 (1875—South Andamans).

This dark form—the darkest are all island birds: *thomensis* from Sao Thomé, *detorta* from the Cape Verde Islands, *punctatissima* from the Galápagos, *nigrescens* from Dominica—is extremely rare, for it seems that only two specimens have ever been recorded: the type, obtained by De Roepstorff, and an adult male shot by A. L. Butler at Port Blair, South Andamans. This is marked on the label: "Iris brown. Bill whitish. Feet whitish. Length $13\frac{1}{2}$, wing $10\frac{1}{8}$, tail $4\frac{5}{16}$, tarsus $2\frac{1}{4}$. Bill (gape to tip of upper

mandible $1\frac{3}{4}$, expanse 36. Port Blair, January 1898.—A. L. B.” The spots on the dull chocolate upperside with reddish brown, not white and black spots. The usually light ochre portions are replaced by rich rufous. The underside in our specimen is much lighter than in the type, ochre with dark brown spots, not deep brownish rufous! Belly in our specimen white.

Tyto alba kuehni subsp. nov.

In coloration like *T. a. delicatula* but larger, wings considerably longer, toes much more powerful. Wing: ♂ 297, unsexed 288, ♂ 300 mm.

Three specimens collected on Kisser in May and June 1901 by Heinrich Kühn. The subspecies is named in memory of this excellent collector.

There is also a ♂ shot at Atapupu, Timor, by Alfred Everett 17.viii.1897, with a wing of 293 mm. which fully resembles the Kisser examples.

The Indian Barn-Owls, called *T. a. javanica*, resemble this form, but they are usually much more ochraceous on the upperside and have mostly larger black and white spots, also the underside is as a rule tinged with buff on ochraceous, a character hardly ever seen in *T. a. delicatula* and its closest allies.

Type of *T. alba kuehni*: ♂ ad. Kisser, 11.v.1901, No. 4103, Heinrich Kühn leg.

Probably this form is much wider spread, and may occur on Flores, Sumbawa, etc., but series from other localities are wanting.

Tyto alba everetti subsp. nov.

A series of 9 Barn-Owls from the little island of Savu west of Timor, between Timor and Sumba, are in colour inseparable from *T. alba kuehni*, but differ in being smaller! The wings that are measurable (others too much in moult) measure: ♂ 247, 253, ♀ 265, 283. The males moult, but have nearly completed their moult. Bills and feet much smaller than in *kuehni*.

Type: ♂ Savu, August 1896. Alfred Everett leg.

Named after the collector, another of the fine collectors of bygone days, when not only new subspecies, but fine new species could be discovered in numbers.

Tyto alba sororcula (Scl.).

Strix sororcula Sclater, *Proc. Zool. Soc. London*, 1883, p. 52 (Timorlaut Islands).

A small form with wing 227 mm., reminding one of the small forms from the Galápagos and other islands.

Timorlaut or Tenimber Islands.

Tyto alba sumbaënsis (Hart.).

Strix flammea sumbaënsis Hartert, *Nov. Zool.* iv. p. 270 (1897—Sumba Island).

Only known from Sumba or Sandalwood Islands. This as well as *meekei* are characterized by their very pale, almost whitish, tails.

Tyto alba meeki (R. & H.).

Strix flammea meeki Rothschild and Hartert, *Nov. Zool.* 1907, p. 446 (Collingwood Bay, S.E. New Guinea).

We have specimens from Collingwood Bay, Dampier and Vulcan Islands.

Tyto alba delicatula (Gould).

Strix delicatulus Gould, *Proc. Zool. Soc. London* 1836, p. 140 (1837—New South Wales).

Australia generally. *T. alba alexandrae* Mathews 1912 is a synonym and admitted as such by the author.

Tyto alba lulu (Peale).

Strix lulu Peale, *U.S. Expl. Exp.*, p. 74 (1848—Upolu, Samoa, “also one from Fiji Is.” “Lulu” is the native name at Upolu, Samoa).

Samoa, Tonga, Society Islands, perhaps also Fiji Islands.

The Barn-Owls from the South Sea Islands are comparatively little known and generally recorded as *Tyto alba delicatula* (terra typica, New South Wales), or *Tyto alba lulu* (terra typica Upolu, Samoa).

They are indeed so similar to the Australian *delicatula* that they cannot be separated without measuring. They are however smaller. While Australians have wings generally from 280–290, sometimes to 292 and 293, rarely under 280, i.e. 278, 276, 275, eight Samoan skins, mostly collected by R. H. Beck, have wings from 273–278, once 279; these are then true *T. a. lulu*. To this form seem also to belong specimens from Tonga (one: 273), Nine (two: 268, 273), New Caledonia (two: 265, 273), New Hebrides (two: 265, 280), Sta. Cruz (two: 275, 270).

Probably the form from the Fiji Islands (Viti) is smaller, as three specimens have wings of 265, 265, 265 mm., 1 sexed ♂, 1 ♀, and 1 doubtful. Considering, however, that on Nine, New Hebrides, and New Caledonia there are differences from 5 to 15 mm., this can only be surmised at present.

That no importance can be attached to colour alone, unless its width of variation is known, is beautifully illustrated in two specimens from Vanikoro (Santa Cruz), one of which has the upperside much richer, and the underside a rich brownish ochre, while that of the other specimen from the same locality is white with only a slight buffy tinge. Similar variations are of course well known in Central Europe, while in South and West Europe the specimens are nearly always white underneath, with a buffy wash in the females only. Among all the examples from Australia I have seen there is not one with a brownish ochre underside.

An adult male from Nissan Island, east of South New Ireland, shot by Eichhorn 11. ix. 1924, has a wing of 289 mm. and cannot be distinguished from Australian *delicatula*. One from Vella Lavella in the American Museum (R. H. Beck coll.) has a wing of 279 and must also be called *delicatula*.

A single male from Kalao south of Celebes cannot be discussed without more material from these regions.

Brasil¹ states that *Tyto alba lulu* occurs on New Caledonia, while on Lifu another subspecies occurs which he calls *T. a. lifuensis*, which is to be distinguished by a spotless white underside: this is, however, a character not to be relied on; I have seen one from Samoa with a spotless white underside, and in many subspecies that varies individually. It would also be very peculiar if *lulu* spread as far as New Caledonia, and in between were another form. I, therefore, think that *lifuensis* is not separable.

¹ *Rev. Française d'Orn.* iv. p. 202 (1915).

Tyto alba guatemalae (Ridgw.).

Strix flammea var. *guatemalae* Ridgway, *Bull. Essex Inst.* v. p. 200 (1873—"Panama to Guatemala").
Tyto perlata guatemalae Ridgway, *Bull. U.S. Nat. Mus.* no. 50, vi, p. 610 (1914—Nicaragua is here given as the type locality).

Central America from Guatemala to Panama, and perhaps farther spread.

Tyto alba pratincola (Bp.).

Strix pratincola Bonaparte, *Geogr. & Comp. List*, p. 7 (1838—based on Audubon, *Orn. Biog.* ii, p. 403, pl. 171, where specimens from the south-eastern U.S.A. are described).

United States and Mexico—said to go to Nicaragua in winter!

Tyto alba furcata (Temm.).

Strix furcata Temminck, *Pl. Col.* 432, livr. 73 (1838—Cuba).

Remarkable by the white area on the secondaries, which, however, is not constant, and the white tail, either barred or unbarred.

Cuba with Isle of Pines and Jamaica.

Tyto alba tuidara (Gray).

Strix tuidara Gray, in Griffith ed. Cuvier, *Anim. Kingd.* 6, p. 75 (1829—Brazil).

Strix perlata nec Vieillot 1817, Lichtenstein, *Verz. Doubl. Berlin*, p. 59 (1823—Brazil).

From Argentina throughout Brazil.

Cory suggested that Patagonian specimens may be smaller?

Tyto alba contempta (Hart.).

Strix flammea contempta Hartert, *Nor. Zool.* v. p. 500 (1898—Cayambe, 9,223 feet, N.W. Ecuador).

Strix stictica Madarász, *Ann. Mus. Hung.* ii, p. 115 (1904—Description of one female in the Hungarian Museum, from Merida, 1,630 m.)

Ecuador, Colombia, and Venezuela.

Very variable in coloration of upper- and underside.

Tyto alba lucayana Riley.

Tyto perlata lucayanus Riley, *Proc. Biol. Soc. Washington*, p. 153 (1913—New Providence Island, Bahamas).

Bahamas.

I have not examined specimens from the Bahamas!

Tyto alba bargei (Hart.).

Strix flammea bargei Hartert, *Bull. Brit. Orn. Club*, iii, p. xiii (1892—Curaçao).

Only known from one locality, the rock with the fortifications on Curaçao.

Tyto alba glaucops (Kaup).

Strix glaucops Kaup, in Jardine's *Contr. Orn.* 1852, p. 118 ("Jamaica," errore, only found on Haiti or San Domingo).

San Domingo or Haiti Island.

We have beautiful specimens, collected by Kaempfer.

Tyto alba insularis (Pelzeln).

Strix insularis Pelzeln, *Journ. f. Orn.* 1872, p. 23 (St. Vincent).

Lesser Antilles: St. Vincent, Grenada, Carriacou, Union and Bequia Islands.

(*Hybris nigrescens noctividus* Barbour, *Proc. Biol. Soc. Washington*, xxiv, p. 57, 1912, Grenada, is a synonym!)

Tyto alba nigrescens (Lavr.).

Strix flammea var. *nigrescens* Lawrence, *Proc. U.S. Nat. Mus.* i, p. 64 (1878—Dominica).

Only known with certainty from Dominica in the West Indies, and very much like *nigrescens*, only larger.

Tyto alba punctatissima (Gray).

Strix punctatissima Gray, in *Zool. of the Voyage of the Beagle, Birds*, p. 34, pl. iv (1841—James I., Galápagos).

Only known from the Galápagos Islands.

Tyto rosenbergi (Celebes), *cayeli* (Burn), *inexpectata* (North Celebes), *manusi* (Admiralty Is.), and *aurantia* (New Britain), seem not to be subspecies of *alba*, and seem to belong to *Tyto novae-hollandiae*, an Australian species. I hope to be able to review the subspecies of *T. novae-hollandiae* before long.

Quite different from *T. alba*, the "Barn-Owls," are the long-legged "Grass-Owls," which live and nest on the ground.

There is one species in Southern Africa, *Tyto capensis* (Smith), of which *cabrae* Dubois, from the Congo, and perhaps also *damarensis* Rob., seem to be synonyms.

Another species inhabits India to the Philippines and Australia, *T. longimembris*, *candida* auctorum.

TYTO LONGIMEMBRIS AND ITS SUBSPECIES.

The "Grass-Owls" of the Eastern Continent and Islands down to Australia were known as "*Strix candida*" Tick., but in 1912 Mathews discovered that unfortunately that name was anticipated by *Strix candida* of Latham, who used it for a "Snowy Owl." Therefore the specific name became *Tyto longimembris*. Mathews then called the Australian form *Tyto longimembris walleri*, thus suggesting that it differed from the Indian birds, but he did not enlighten us about the differences. In a recent anonymous list of Owls the same is done. This separation into two subspecies is correct, but there are more than two forms. I think at least the following should be recognized:

Tyto longimembris longimembris (Jerd.).

Strix longimembris Jerdon, *Madras Journ. Lit. Sci.* x, p. 86 (1839—Neilgherries, Southern India).

Upperside dark rich brown, a sort of chocolate-brown, the bases of the feathers orange-buff and showing through in many places, on the wings large light patches, each feather with a small white spot near the tip. Tails white or with a tinge of brownish yellow, and with very dark brown bars and some mottling

near the tip. Underside white, generally suffused with buff on breast and flanks. One specimen is underneath rich yellowish brown.

India generally in suitable places from Dehra Dun to East Assam and south to Nellore, the Carnatic, Neilgherries, etc.

Tyto longimembris walleri (Diggles).

Strix walleri Diggles, *Ornith. Austr.* pt. vii. (1866—Queensland, Brisbane).

Tyto longimembris georgiae Mathews, *Austral. Avian Rec.* i, p. 75 (1912—Victoria River, Northern Territory. The type shows that this supposed subspecies is not separable, and Mathews himself admits this in 1927, *Syst. Av.* p. 281).

Australian specimens differ from Indian ones in being darker on the upperside, more blackish, more or less mottled with whitish, and in having larger white spots near the tips of the feathers, and there are less light bases of the feathers showing through, especially on the wings, also the tails are as a rule much darker, light brown! The underside as a rule much more brownish.

One skin from Palm Island (Queensland) is almost like Indian birds. In the plate (273) in Mathews' *B. of Australia*, vol. v., the feet are wrongly coloured yellow.

This subspecies is spread over large parts of Australia; Mathews mentions Northern Territory, Queensland, New South Wales, and Victoria, the latter, however, not any longer in 1927, p. 281. We also have a ♀ collected by Kühn on Kalidupa, Tukang Besri Island (S.E. of Celebes).

Tyto longimembris papuensis subsp. nov.

This form differs at a glance from both *T. l. longimembris* and *walleri*, by its upperside being more uniform, duller and paler, with only some very small, tiny white spots near the tips of the feathers. The tails are yellowish or brownish, with the usual dark cross-bars. Underside white to brownish yellow with small dark brown spots.

New Guinea, so far only known from the eastern parts: ♂ ♀ Ougarra, Angabunga River, 27.xi.1904 and 29.I.1905, collected by Meek and Eichhorn. 1 (unsexed) from the mountains west of the Huon Gulf, collected by Herr Keysser.

Type of *Tyto longimembris papuensis*: ♀ ad. Ougarra, Angabunga River, British New Guinea, not less than 6,000 feet alt., 27.xi.1904. A. S. Meek coll., No. A 1888 (A. F. Eichhorn praep.), in the Tring Museum.

Tyto longimembris subsp. nov. ?

1. Hartlaub, *Proc. Zool. Soc. London*, 1879, p. 295, named a Grass-Owl as *Strix oustaleti*, from a pair collected in the island of Viti Levu, Fiji Islands. He described it as different, having compared it with various Barn-Owls and *Strix novae-hollandiae* apparently in ignorance of *T. longimembris*. The types, if possible, must be compared, in order to say whether this is a separable subspecies or the same as one of the other forms.

2. R. Swinhoe, *Ibis* 1866, pp. 396 and 397, described a Grass-Owl under the name of *Strix pithecops*, which is not like the Chinese form but looks like the Indian subspecies, and it will be necessary to examine more, in order to see if it differs, as one would expect from the different locality. A specimen from Taihaisa, Formosa, 1.vi.1909, bought from the late O. E. Janson in London, probably

collected by Mr. Wileman, is like Indian specimens, but the ground-colour of the upperside is darker, more blackish. Specimens in the British Museum did not seem to differ from Indian ones.

3. Specimens from the Philippines in Tring and London do not seem to differ from Australian ones! In view of the Kalidupa example the question may be raised, if the Australian form could not extend over Celebes to the Philippines? A series from the latter islands must be examined. A Luzon specimen was described as *Strix amaurota* by Cabanis, *Journ. f. Orn.*, 1872, p. 316, but it was only compared with "*Strix flammea*," apparently in ignorance of *longimembris*.

***Tyto longimembris chinensis* subsp. nov.**

Upperside chiefly buffish ochraceous, the feathers being dark chocolate-brown with wide bases and edges being buffy ochraceous, and near the tip is a small buff to whitish spot. The tail is a bit lighter, almost orange-buff, with the usual blackish cross-bars. Underside paler, ochraceous-buff with a few tiny dark brown spots. Facial disk like the ground-colour of the upperside. We have a skin, with wing 340 mm., shot at Suey Kow, in South-eastern China, in December 1889 by C. B. Rickett, and there are two like it in the British Museum from Foochow. This extraordinary coloration seems to be the usual one in South China, while it is not, as a rule, found elsewhere, except that there is one from Raipur in India like it, if the label has not been exchanged?

Type in Tring Museum, Suey Kow, C. B. Rickett coll.

It will be seen from the foregoing treatise, that material of Grass-Owls is wanting from many parts: from Indo-China, from Celebes, and probably the species may occur on the Sunda Islands, the Moluccas, and on some other islands than the Fiji Islands in the South Sea.
