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A Journal of Zoology

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LORD ROTHSCHILD, F.R.S., PH.D.,

DR. ERNST HARTERT, AND DR. K. JORDAN.

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BRITISH MUSEUM ZOOD NATURAL HISTORY

NOVITATES ZOOLOGICAE.

Vol. XXVIII. MAY 1921. No. I.

CAPTAIN ANGUS BUCHANAN'S AÏR EXPEDITION.

II.

ON THE MAMMALS (OTHER THAN RUMINANTS) OBTAINED DURING THE EXPEDITION TO AÏR (ASBEN).

By OLDFIELD THOMAS AND MARTIN A. C. HINTON.

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IN a previous number of *Novitates Zoologicae*,[1] we gave an account of the small mammals collected by Captain Angus Buchanan when stopping at Kano on his way northwards towards Aïr.

Thanks to the kindness of Lord Rothschild we are now able to give a list of the complete collection made by Captain Buchanan, both of such further mammals as he obtained in the Kano region and of those which he got northwards to Aïr itself, which he explored most successfully.

As this is a country which has been hitherto entirely out of the ken of mammalogists, we were prepared to expect a considerable number of new forms to be discovered, but we certainly never expected that so very high a proportion of the species would be new. Indeed, we believe it may safely be said that in the history of mammalogy no collection containing so high a proportion of novelties has ever come to Europe from a Continental locality.

In all, the collection contains 36 species and subspecies, of which no less than 18 are new, 6 of these latter having been described in our previous paper. Considering the comparatively barren nature of the country, and the number of mammals usually found to occur in any given area, the capture of 36 forms indicates that Captain Buchanan has been highly successful in getting a full representation of the fauna of the districts he has worked in.

The area dealt with extends from Kano, lat. 12° N., long. 8·30° E., northwards through Zinder and Agades, to the great mountains in Aïr, Mt. Baguezan, 17·30° N., 9° E., and Iferouan, a strip therefore about 500 miles due nearly north and south.

From Kano northwards the country steadily becomes more and more desert; it is thin bush to commence with, then dwarf bush, and in the north absolute desert.

[1] XXVII, p. 315, 1920.

Further details about the country and Captain Buchanan's expedition will be given in connection with the working out of the birds by Dr. Hartert.

As already stated, the National Museum has to thank Lord Rothschild for a full set of the mammals dealt with, including all the types. The skins are all beautifully prepared, and Captain Buchanan is to be congratulated on the great value that his collection has proved to possess.

The additional species are all local representatives of forms known either in North Nigeria, in Algeria, or in the Egyptian Sudan, the nearest relationship being evidently with the last-named. No further mammals so peculiar as the short-tailed gerbil, *Desmodilliscus*, previously obtained in Kano, have to be added to the list, but the occurrence of a new Gundi, which we have named in honour of Lord Rothschild, greatly extends the range of that most interesting group.

All the species, of both collections, obtained by Captain Buchanan are here mentioned, those of which no list of specimens is given being those recorded by us from Kano in our previous paper.

1. **Epomophorus anurus** Heuglin.

♀ 23. Farniso, near Kano. 1,700 ft.

This is a great extension of range for this species, which has not hitherto been recorded west of the Bahr-el-Ghazal.

2. **Nycteris thebaica** Geoffr.

41. Farniso, near Kano. 1,700 ft.
♂ 87 ; ♀ 85, 86. Zinder. 1,500 ft.

3. **Hipposideros caffer tephrus** Cabrera.

♀ 6, 27. Farniso, near Kano, 1,700 ft. (and two previously recorded).

4. **Pipistrellus culex** Thos.

Farniso, near Kano.

5. **Scotoinus schlieffeni** Peters.

♀ 111. Zinder. 1,500 ft.
♂ 119. Takoukout, Damergou. 1,550 ft.
♀ ? 116. Azzal, Asben. 1,825 ft.

6. **Atelerix spiculus** Thos.

♂ 2, ♀ 3. Kano. 1,700 ft.
♀ 11, 12 (young). Farniso, near Kano. 1,700 ft.

7. **Felis haussa** sp. n.

♀ 34, 83 (juv.). Farniso, near Kano. 1,700 ft.
♂ 108. Zinder. 1,500 ft. Hausa name Sawala wala.

A small and exceptionally pallid representative of *F. ocreata*. Size small. General colour sandy above, white below ; the body and limbs without conspicuous spots or stripes. Centre of forehead and cheeks pale buff ; eye-rings

white. Top of head, nape, and back darker buff, ticked with dusky hair-tips. Mid-dorsal stripe represented by an inconspicuous rufous streak, extending from the lumbar region to the root of the tail. Flanks and outer surfaces of limbs pale buff; spots on flanks inconspicuously represented by brighter and deeper buff hairs. Underparts white, with a narrow ochraceous throat band and obscure traces of yellow spots on belly. Hands and feet white above. Tail coloured like body proximally, its distal half greyer with three or four black annulations, of which the last two are complete.

Skull and teeth smaller than in *ocreata*, otherwise not essentially different.

Measurements of type taken in the flesh:

Head and body, 470 mm.; tail, 255; hindfoot, 114; ear, 57.

Skull, ♂ (type); and ♀: condylo-basal length, 80·8, 74·7; zygomatic breadth, 64, 57·1; width of brain-case, 41·8, 40·1; front of canine to posterior angle of carnassial, 27·9, 24·2; length of upper carnassial, 10·5, 9·9.

Hab. As above.

Type. Adult male, B.M. No. 21.2.11.16, original No. 108, collected at Zinder, February 16, 1920.

This animal is undoubtedly worthy of specific recognition, differing in a quite striking manner from all other members of the *ocreata* group by its considerably smaller size and marked desert coloration.

We ought to mention that the adult female, although equally pallid, has the upper parts rather greyer and less buffy in tone than they are in the male; the vestigial mid-dorsal stripe is ticked with dusky hair-tips, while in the male the tint is clear, the dusky hair-tips being apparently segregated to form a feeble black streak on either side of the rufous central area. The kitten is rather darker than either of the adults, and has the spots and stripes more strongly developed.

8. **Caracal caracal poecilotis** subsp. n.

♀ 145. Mt. Baguezan, Asben. 5,200 ft.

A desert-coloured form with whitish ear-pencils.

Fur short, about as in specimens from Kordofan and Somaliland. General colour sandy above, white below. Mid-dorsal region scarcely darker than the flanks and limbs, with practically no trace of a transverse stripe across the withers. Ears with ectote clothed with numerous fine silvery-white hairs lying upon a black ground; terminal pencil composed of black and white hairs in about equal numbers, the white hairs preponderating in the antero-internal portion of the pencil. Throat pale buff. Chest with brighter buff spots. Other underparts pure white. Tail pointed at tip, resembling the back in colour, but a little more pallid below.

Skull and teeth normal.

Dimensions of type measured in the flesh:

Head and body, 690; tail, 255; hindfoot, 156; ear (without tufts), 76 mm. Weight, 13 lb.

Skull: condylo-basal length, 106·1; basal length, 97·2; zygomatic breadth 81·8; cranial breadth, 51·2; interorbital breadth, 22·1; base of canine to m^1 37·4; p^4 length, 15; m_1 length, 11·4 mm.

Hab. As above.

Type. Adult female. B.M. No. 21.2.11.19, original No. 145. Collected May 24, 1920.

This animal differs conspicuously from all other caracals in the national collection by its exceptionally pallid coloration and silvery ears. So far as we can judge from descriptions, it makes a nearer approach to *C. c. nubicus* Fisch., described from the region between the Atbara and the Blue Nile, than to any other subspecies. With regard to the forms treated by Matschie as distinct species (*berberorum* and *nubicus*, with subspecies), we prefer to regard them all as subspecies of the widely distributed *C. caracal.*

9. **Ichneumia albicauda** F. Cuv.

♂ 81 juv. Farniso, near Kano. 1,700 ft.

10. **Canis anthus** F. Cuv.

♀ 116. Takoukout, Damergou. 1,550 ft.

11. **Vulpes pallida edwardsi** Rochebr.

♂ 78. Farniso, near Kano. 1,700 ft.
♀ 102, 109. Zinder. 1,500 ft.

Referred provisionally to the Senegal *edwardsi* of Rochebrune, as was done by Thomas when writing about a specimen from Kontagora, N. Nigeria, in 1918. This western form is undoubtedly very close to the true *V. pallida* of Kordofan. On the other hand, Captain Buchanan obtained some specimens of this group farther north in Damergou, and representing a form which we think should be subspecifically separated. Hausa name Yinyowya.

12. **Vulpes pallida harterti** subsp. n.

♂ 117. Takoukout, Damergou. 1,550 ft.

Two further hunter's skins from Takoukout and one from Agades.

Smaller and paler than *V. p. edwardsi.*

Size of a male about equal to that of the female *edwardsi.* General colour above near pale ochraceous buff, slightly darkened along the middle dorsal area, paling on sides to "light buff," and gradually passing to quite white below. Head mostly like body, the crown ochraceous buff like back, the cheeks whitish; preocular brown patch and pale-brown muzzle as dark as in *edwardsi.* Ears very pallid, "light buff," with white edges. Forelimbs whitish, with a pale brown line running from the elbows down their outer side. Hind limbs similarly white, with a pale-brown edging running down from the hips. Tail, apart from the usual white-based, black-tipped terminal hairs, light buff above, slightly lined with blackish, ochraceous buff below.

Skull of the single male specimen smaller, smoother, and more rounded than those of the two available male skulls of *edwardsi.* Post-orbital processes less developed, in fact less even than in the female *edwardsi*, which have about the same skull-lengths. Bullae smaller than in *edwardsi.*

Hab. As above.

Dimensions of the type:

Head and body, 400 mm.; tail, 270; hindfoot, 95; ear, 63.

Skull, greatest length, 94 ; condylo-basal length, 91·5 ; zygomatic breadth, 52 ; interorbital breadth, 18 ; breadth on postorbital processes, 24·3 ; breadth of brain-case, 39·5 ; length of p^4 on outer edge, 7·9.

Type. Adult male. B.M. No. 21.2.11.23, original No. 117. Collected March 12, 1920.

This very pretty little desert fox is a pale local race of the widely spread *V. pallida*, its browner allies of Nigeria being far more like the original Kordofan form than it is. The skull of the type is curiously small and smooth, although its basilar suture is completely closed.

"Weight, 2½ lb."

We have much pleasure in naming it after Dr. E. Hartert, of Tring, who was himself one of the first Europeans, and the first naturalist, to visit the regions north of Nigeria. He was at Kano in 1885, but was at the time very ill with fever.

13. **Vulpes rüppelli caesia** subsp. n.

♂ 125. South side Mt. Baguezan, Asben. 3,300 ft.

♂ 179. Aouderas, Asben. 2,700 ft.

An almost wholly blue-grey race of *V. rüppelli*.

General characters as in true *rüppelli*, but the reddish wash along the dorsal area, so prominent in *rüppelli*, and reduced in subsp. *somaliae*, here almost obsolete, practically the whole back being a beautiful silvery grey. Just along the middle line of the back there is a suffusion of dull ochraceous practically confined to the under-fur, and hardly affecting the general colour. Buffy of head and neck of rather a warmer tone than in *rüppelli*. Colours elsewhere as in light-coloured specimens of that animal. White tail-tuft well developed. Skull without special characteristics.

Dimensions of the type, measured in the flesh :

Head and body, 455 ; tail, 355 ; hindfoot, 120 ; ear, 98 mm.

Skull, greatest length, 110 ; zygomatic breadth, 58 ; palatal length, 56·5 ; length of p^4 on outer edge, 10·5.

Hab. Asben, on high ground. Type from Mt. Baguezan. 3,300 ft.

Type. Adult male. B.M. No. 21.2.11.26, original No. 125. Collected May 4, 1920.

This beautiful silvery-grey fox is evidently closely allied to the Sudan *V. rüppelli*, but is distinguishable by the nearly complete disappearance of the ochraceous on the back, and its consequently more wholly grey colour.

"The natives say that this animal is only to be found in the mountains—not heard of at Agades in the low country."—A. B.

14. **Poecilictis rothschildi** T. & H.

Farniso, near Kano. (Type B.M. No. 21.2.11.29.)

The skull of the type has now arrived, and shows that the specimen was somewhat immature. The dimensions of a fully adult skull were given with the original description.

15. **Euxerus erythropus chadensis** Thos.

♂ 88, 110 ; ♀ 96, 97. Zinder. 1,500 ft.

16. **Euxerus erythropus agadius** subsp. n.

♀ 122. Agades. 1,710 ft.

Like *erythropus chadensis*, but smaller and more pallid; the skull with smaller bullae and shortened rostrum.

Size small, the hindfoot only 56 instead of 60 mm. or more. Pattern as in *e. chadensis*, but upper parts yellower and paler.

Skull much smaller than in *chadensis*, with smaller, shorter, and rounder bullae. Rostrum peculiarly short, but the cheek-teeth absolutely as large as in *chadensis*; p^3 in type unusually minute.

Dimensions of type taken in flesh:

Head and body, 200; tail, 180; hindfoot, 56; ear, 13 mm.

Skull (measurements of ♂ and ♀ *chadensis* in parentheses): condylo-incisive length, 47·9 (56·6, 54); zygomatic breadth, 27·8 (33·1, 31·1); dental length, 26 (29·6, 28·4); cheek-teeth (on crowns), 12·1 (12·3, 11·9); bullae, 11·7 × 8·2 (13·2 × 9, 12·8 × 9).

Hab. As above.

Type. An adult female, B.M. No. 21.2.11.32, original No. 122. Collected April 15, 1920.

In the type and only specimen, p^4 is in place, but unworn; m^3 is slightly worn; and the basal suture, although visible, is practically closed, so that the animal is fully adult. The temporal ridges are weakly developed, as compared with those of skulls of *chadensis* in similar stages of dental development; and this character and the shortening of the rostrum (which may be appreciated by comparing the dental and molar lengths given above) suggest that in spite of its advanced dentition the type may, in terms of time, be actually younger than specimens of *chadensis* in corresponding stages of dental development. Agades is, of course, in the true desert, while Yo (the type locality of *chadensis*) and Zinder are in far more richly vegetated country. Teeth are more rapidly worn away in the desert than elsewhere, and it may be that dental development is sometimes hastened in compensation.

There can be no doubt that the present form should be distinguished from *chadensis*; the only doubt we have had has been as to whether we should accord it full specific rank or not. But on the whole we think it better to treat it merely as a subspecies of *erythropus*.

17. **Taterillus gracilis angelus** T. & H.

Farniso, near Kano. (Type B.M. No. 21.2.11.36.)

18. **Gerbillus nigeriae** T. & H.

♂ 99, 112, 113, 101; ♀ 100, 98. Zinder. 1,500 ft.
Farniso, near Kano. (Type B.M. No. 21.2.11.52.)
Hausa name daska.

19. **Gerbillus gerbillus** Oliv.

♂ 170; ♀ 162, 163, 169. Azzal, Asben. 1,825 ft.
♂ 185, 189, 190; ♀ 195. Aderbissinat, Asben. 1,525 ft.
Tuareg name aquotie.

20. **Gerbillus pyramidum** Geoff.

♀ 127, 157, 158. Mt. Baguezan, Asben. 5,200 ft.
♂ 161 ; ♀ 160, 164, 171. Azzal, Asben. 1,825 ft.

21. **Dipodillus campestris** Levaill.

♀ 135, 141, 146 (juv.), 152. Mt. Baguezan, Asben. 5,200 ft.

22. **Dipodillus garamantis** Lataste.

♂ 159. Agades. 1,710 ft.
♂ 167 ; ♀ 168, 174, 175, 176. Azzal, Asben. 1,825 ft.
♀ 194. Aderbissinat, Asben. 1,525 ft.
♂ 124. South of Baguezan Mount. 3,300 ft.
♂ 131 ; ♀ 151, 154, 155, 156. Mt. Baguezan, Asben. 5,200 ft.

This species and *D. campestris*, together with *Gerbillis gerbillus* and *G. pyramidum*, are proved by Captain Buchanan's collecting work to have far more extensive ranges than was previously supposed. The four species named were obtained by Dr. Hartert and Mr. Hilgert in the neighbourhood of In Salah ; and they are now shown to range southwards completely across the desert.

23. **Desmodilliscus buchanani** T. & H.

Farniso, near Kano. (Type B.M. No. 21.2.11.81.)

24. **Steatomys cuppedius** T. & H.

Farniso, near Kano. (Type B.M. No. 21.2.11.85.)

25. **Cricetomys gambiannus oliviae** Dollm.

♀ 9. Farniso, near Kano. 1,700 ft.
Hindfoot, 62 mm. Hausa name gafia.

26. **Cricetomys buchanani** sp. n.

♂ 10. Farniso, near Kano. 1,700 ft.

A harsh-furred, bright-coloured species of large size.

Size approaching that of *ansorgei*, considerably larger than *gambianus* ; hindfoot, 71 ; condylo-basal length of skull, 77·8 mm.

Fur harsh ; on underparts dense, the hairs rather stiff or spiny. General colour exceptionally bright and yellow for a *Cricetomys*. Back clothed with a grizzle of tawny olive, dark brown and black, the dark hair-tips becoming fewer, and the colour brightening to a yellowish brown upon the flanks. Top of muzzle dark brown ; forehead greyish. Eye-rings and upper cheeks dusky, inconspicuously lined by yellowish hairs, in sharp contrast with the pallid lower cheeks ; the latter clear, pale yellow, continuous below and behind with the colour of the undersurface. Ears dusky, in sharp contrast with the general dorsal colour. Outer surfaces of limbs like back and flanks. On dorsal surfaces of hands the tint deepens and clears to form a median stripe of sepia traversing the metacarpus ; outer margins of hands and bases of digits 3, 4, and 5 pale buff ; digits otherwise white. Feet with a broad stripe of sepia on upper surface, traversing

outer half of metatarsus and ending at bases of digits 2, 3, and 4; outer margins narrowly bordered with white; inner half white, washed with pale buff; digits white. Underparts pale buff throughout, this colour running up on to the lower cheeks; inner surfaces of limbs more nearly white. Tail dusky proximally, white distally; the white portion forming rather more than half the length of the tail.

Skull agreeing in general form and proportional measurements with that of *gambianus*; differing from the latter in its much greater size, strongly developed supraorbital ridges and postorbital processes, in which respects it resembles the skull of *ansorgei*. From the latter species it differs in its more normal nasals and lighter cheek-teeth. Temporal ridges parallel and straight, not bowed outwards in parietal region.

Dimensions taken on the skin:

Head and body, 400; tail, 415; hindfoot, 71; ear, 36 mm.

Dimensions of skull: condylo-basal length, 77·8; condylo-incisive length, 75; zygomatic breadth, 38·1; interorbital constriction, 11·7; mastoid breadth, 26·7; nasals, 31·8 × 10·7; dental length, 41·7; diastema, 25·7; length of anterior palatal foramina, 8·7; cheek-teeth (crowns), 11·1.

Hab. As above.

Type. Adult male. B.M. No. 21.2.11.87, original No. 10. Collected December 16, 1919.

We have much pleasure in associating this fine species with the name of its discoverer. *C. buchanani* is a very striking animal. Its large size and strongly ridged skull suggest comparison with the Angolan *C. ansorgei*; but in all essential respects it shows itself to be more nearly allied to true *gambianus*.

27. **Rattus (Mastomys)** sp.

Farniso, near Kano.

♂ 107, ♀ 84. Zinder. 1,500 ft.

28. **Rattus (Myomys) daltoni** Thos.

Farniso, near Kano.

29. **Leggada haussa** T. & H.

Farniso, near Kano. (Type B.M. No. 21.2.11.106.)

♀ 103. Zinder. 1,500 ft.

30. **Acomys airensis** sp. n.

♂ 129, 132, 149, 153; ♀ 133, 142, 144, 147.

♀ juv. (in blue pelage), 148, 150. Mt. Baguezan, Asben. 5,200 ft.

Closely resembling *A. witherbyi* in outward appearance.

Size larger than in *witherbyi*; hindfoot about 17 instead of 15 mm., extreme length of skull about 29·3 instead of 28 mm. Colour as in *witherbyi*; but hairs at base of procctote lighter in colour than elsewhere, instead of being concolor with the rest of the head.

Skull with the brain-case relatively narrower and slightly less depressed than in *witherbyi*; greatest width of brain-case, measured across temporal ridges,

averaging 46 instead of 48 per cent. of condylo-incisive length. Interorbital region a little more constricted, and the supraorbital beads a little stronger and more sharply defined anteriorly. Other characters, making allowance for the greater size, essentially as in *witherbyi*.

Dimensions taken in the flesh :

Head and body, 102 ; tail, 95 ; hindfoot, 17·5 ; ear, 16 mm.

Skull of type (and of 147 ♀ ad., in parentheses) : condylo-incisive length, 26·8 (27·5) ; occipito-nasal length, 29·7 (29·8) ; zygomatic breadth, 14·4 (14·4), interorbital constriction, 4·6 (4·8) ; greatest width of brain-case across temporal ridges, 12·7 (12·4) ; nasals, 12 × 2·6 (12·1 × 2·6) ; dental length, 13·8 (14·3) ; cheek-teeth (on crowns), 4·1 (4·2).

Hab. As above.

Type. Adult male. B.M. No. 21.2.11.109, original No. 149. Collected May 25, 1920.

This animal, " taken among the great rocks of the Baguezan Hills on the plateau," is a western representative of *A. witherbyi*. Having regard to the cranial differences and to its isolated situation, we think it better to treat it as a distinct species rather than as a mere subspecies of the animal described by de Winton.

31. **Arvicanthis testicularis** Sund.

♀ 82. Farniso, near Kano. 1,700 ft. (Other specimens previously recorded.)
♂ 89, 90, 93 ; ♀ 91, 92, 94, 96. Zinder. 1,500 ft.
♂ 123. Agades. 1,710 ft.

32. **Lemniscomys olga** sp. n.

♂ 121. Takoukout, Damergou. 1,550 ft.

An exceedingly pale species, even paler than *dunni*.

Size and proportions as in *dunni*, but tail shorter than head and body. Fur unusually spiny, the back feeling almost like that of a young, or fine-spined, *Acomys*. General pale ground-colour, very light, almost " cream-buff " ; the lateral darker stripes rather lighter and relatively narrower than in *dunni*. Top of head nearly clear buff, lightly lined or grizzled by darker hairs. Central dorsal stripe obsolete beyond nape, narrower and less black than in *dunni*. Lateral stripes essentially as in *dunni* and other members of the group ; the striping unusually fine, the light areas somewhat, the dark areas considerably, narrower than in *dunni*, which species, in turn, differs from *zebra* in a similar way. Cheeks and eye-ring clear buff. Ears clear " isabella," without any dark marking. Arms and legs still lighter than in *dunni* ; dorsal surfaces of feet cream-coloured. Underparts pure white. Tail rather more hairy than in other forms, very finely scaled ; 13 scales, instead of 9 as in *dunni*, occupying 10 mm. near the middle of its length ; dorsal surface of tail scarcely darker than ventral surface ; no trace of a caudal prolongation of the central dorsal stripe.

Skull and teeth essentially as in *dunni*.

Dimensions of the type measured in the flesh :

Head and body, 91 ; tail, 77 ; hindfoot, 23 ; ear, 13·5 mm.

Skull of type (an adult, cheek-teeth half worn) : condylo-basal length, 24·3 ;

zygomatic breadth, 13; interorbital breadth, 4·3; dental length, 13·2; upper cheek-teeth (crown length), 4·9 mm.

Hab. As above.

Type. Adult male. B.M. No. 21.2.11.128, original No. 121. Collected March 28, 1920.

We have great pleasure in naming this pretty mouse after Mrs. Buchanan. Captain Buchanan says: "My old native Berber Bushman states that this species lives solitary—never in numbers. Taken among the undergrowth of low bush."

33. **Jaculus jaculus airensis** subsp. n.

♀ 120. Takoukout, Damergou. 1,550 ft.

♂ 191, 192; ♀ 186, 187, 188, 196. Aderbissinat. 1,525 ft.

In 1913 [1] Thomas sorted the Jerboas of the *J. jaculus* group into five subspecies, mainly according to size, those from the Algerian Sahara, from Biskra to Lake Chad, all being put under the name of *J. j. deserti* Loche.

We have now taken the opportunity to lay out geographically all the specimens of "*deserti*," and find to our great interest that they are themselves readily divisible, by colour, into no less than four local races, which we have no alternative but to call subspecies.

Fortunately the British Museum now possesses the typical specimen (and lectotype [2]) of Lataste's *darricarrerei* from Bou Saada, and also a specimen which is nearly a topotype of Loche's *deserti* (type locality Ouargla), having been obtained by Dr. Hartert on the "plateau 46 km. east of Ghardaia," so that we are in a position properly to identify these names. Their respective localities are the farthest north and the farthest south of the form to which we apply the name *deserti*, those still farther south towards In Salah being different.

The following are the subspecies we should recognise:

1. *J. j. deserti* Loche (syn. *Dipus darricarrerei* Lataste).

General colour drabby grizzled with brown from the fine brown tips to the dorsal hairs. Sides lightly washed with brown. Darker colour of crown and face passing more or less down on to the cheeks. Middle white ring on tail little marked, often absent. Hindfeet about 60 mm. in length.

Hab. Northern Algerian Sahara, from Bou Saada to Ouargla. Very common round Biskra, whence we have a large series.

2. *Jaculus jaculus sefrius* subsp. n.

General colour stronger, darker, more cinnamon-buff, the darker upper colour descending quite low on the sides and the cheeks. Tips of dorsal hairs prominently darkened. Middle white ring of tail almost or quite absent. Hindfoot comparatively long, 63–64 mm.

Dimensions of type:

Head and body, 110 mm.; tail, 177; hindfoot, 64; ear, 25.

Skull, incisor-bulla length, 35·2; condylo-incisive length, 30·5.

Hab. Aïn-Sefra, S.W. Algeria. Alt. 1,100 m.

[1] *Ann. Mag. N.H.* (8), xi. p. 482, 1913.

[2] Cf. *Ann. Mag. N.H.* (9), iv. p. 353, 1919.

Type. Adult male. B.M. No. 13.8.6.80, original No. 100. Collected May 10, 1913, by A. Ruddle. Presented by Lord Rothschild. Six specimens.

Distinguished by its strong cinnamon-buffy colour, equally unlike the drabby of *deserti* and the clearer buffy of *centralis*.

3. *J. j. centralis* subsp. n.

General colour clear buffy, little or not grizzled with brown. Sides and cheeks washed with buffy. Middle white ring of tail, before the subterminal dark one, prominently marked. Hindfeet, 63–64 mm.

Dimensions of type:

Head and body, 127 mm.; tail, 178; hindfoot, 63; ear, 20.

Skull, length from front of incisors to back of bullae, 34·7; condylo-incisive length, 30·6.

Hab. Central Algerian Sahara. Type from Oued-el-Abiad, north of In-Salah. Other specimens from 160 km. south of Ghardaia, and 25 km. south of El-Golea.

Type. Adult female. B.M. No. 12.11.14.52, original No. 30. Collected April 25, 1912, by E. Hartert and C. Hilgert. Presented by Lord Rothschild.

4. *J. j. airensis* subsp. n.

General colour clear pale buffy, with scarcely any darker grizzling; narrowed laterally, where the sides are almost white. Cheeks wholly white, the white passing above the eye to the base of the ears, which have prominent basal white patches. Hairs of nape also tending to be whitish. Middle white tail-band well marked. Hindfoot about 60 mm. Hausa name damberia, Tuareg eddoie.

Measurements of type:

Head and body, 109 mm.; tail, 195; hindfoot, 60·5; ear, 19·5.

Skull, incisor-bulla length, 34.

Hab. Aïr. Type from Aderbissinat. 1,525 ft.

Type. Adult female. B.M. No. 21.2.11.131, original No. 186. Collected August 19, 1920.

This beautiful little jerboa is readily distinguishable by its white sides and white cheeks. Its feet are shorter than in *centralis* and *serius*, about as in *deserti*, but the skulls of all are of very much the same size.

34. **Massoutiera rothschildi** sp. n.

♂ 130, 134, 137; ♀ 136, 138, 140. Mt. Baguezan, Asben. 5,200 ft.

Most like *M. mzabi*, but the colour darker and the bullae smaller.

Size about as *mzabi*. General colour slightly darker, the tone with rather more brown and less yellow in it, but the difference is not very strongly marked. Below the colour is generally darker and more drabby, though in some specimens the hairs are tipped with white. Feet smoke-grey, less white than in *mzabi*. Tail as in *mzabi*, not so bushy as in *harterti*.

Skull on the whole very like that of *M. mzabi*, but it is rather less heavily built, and flatter, less convex, on the crown. The bullae, whose size is here of such systematic importance, are rather smaller in the upper view, and this difference is intensified below owing to the antero-inferior part of the bullae,

between the lower side of the meatus and the middle line, being markedly less inflated. And of course, in comparison with *M. harterti*, with its extremely inflated bullae, the difference is still greater. Interorbital space decidedly narrower than in the other species. Interparietal smaller. Front edge of anteorbital plate rather more slanted.

Teeth as in *M. mzabi*, except that the highly opisthodont condition of the incisors is even more marked, the incisive angle being only 53°, one of the lowest indices known in rodents.

Dimensions of the type :

Head and body, 185 mm. ; tail, 37 ; hindfoot, 34 ; ear, 16.

Skull, greatest median length, 45 ; greatest diagonal length, 46·7 ; condylo-incisive length, 41 ; zygomatic breadth, 28 ; length of nasals, 17·5 ; interorbital breadth, 10·6 ; greatest breadth on bullae, 28 ; interparietal, 7·7 × 10 ; palatilar length, 20 ; palatal foramina, 6·5 ; upper molar series (crowns), 8·5 ; bulla, greatest diagonal horizontal diameter, as seen from above, 16·3 ; ditto, below 18 ; height, 15·8.

Hab. As above.

Type. Adult female. B.M. No. 21.2.11.136, original No. 138. Collected May 18, 1920.

This Gundi is curiously more similar to the North Saharan *Massoutiera mzabi* than to its nearer neighbour, the species discovered by Dr. Hartert in the Central Sahara, *M. harterti*. It is, however, clearly different from both, as is natural from its geographical isolation.

It is with special pleasure that we find an opportunity to name a member of this most interesting group in honour of Lord Rothschild, who has himself taken so much interest in Gundis, and to whose generosity the National Museum owes so large a proportion of its material in the group. Many of its examples of *Ctenodactylus gundi*, its only useful specimens of *Massoutiera mzabi*, the type of *Massoutiera harterti*, and now this typical series of the new form are all results of explorations carried out either by him personally or on his behalf, and it is therefore peculiarly fitting that a member of the group should bear his name.

35. Lepus canopus sp. n.

♂ 73 ; ♀ 74, 20 juv. Farniso, near Kano. 1,700 ft.

A short-eared hare of unusually pallid colour.

Size and general characters as in *senegalensis* and *zechi*, but general colour much lighter than in either. Back a mixture of tawny and black, lightening to clear buff upon the flanks ; underparts generally, pure white. Crown a fine grizzle of black and tawny, bordered by dusky hairs above the eyes, and in sharp contrast with the facial stripes. The latter form, on each side, a broad fusiform stripe, extending from the upper lip backwards to a point midway between the eye and the ear, and completely encircling the eye-ring. Cheeks below facial stripes greyish. Proectote isabella with a buff-coloured fringe along its anterior margin ; tips black. Nape patch clear dull buff. Outer sides of limbs and pectoral collar bright buff. Underparts, other than chest, pure white. Tail with a narrow median stripe of black, bordered by buff above ; the sides and lower surface pure white.

Skull as in *senegalensis*. Grooves of upper incisors simple, deep, and filled with cement.

Dimensions of type taken in the flesh :

Head and body, 430 ; tail, 70 ; hindfoot, 108 ; ear, 100 mm.

Skull of type : condylo-basal length, 74·3 ; extreme length, 82·7 ; zygomatic breadth, 39·2 ; postorbital constriction, 13·7 ; nasals, 35·8 × 18·6 ; dental length, 41·1 ; cheek-teeth (alveoli), 15·3.

Hab. As above.

Type. Adult male. B.M. No. 21.2.11.138, original No. 73. Collected December 3, 1919. Hausa name zomo.

Apart from its more pallid coloration, this species differs from both *senegalensis* and *zechi* most strikingly in possessing sharply defined white facial stripes. From *zechi* it differs further in having the median dorsal surface of the scut definitely black. In the Togoland species, the range of which, judging from our material, extends to the Bawchi Plateau, the scut is rusty brown, or at the most dusky, above, never actually black.

(Hares were also numerous at Agades, Mt. Baguezan, and Damergou.)

36. **Procavia buchanani** sp. n.

♂ 139 (immature). Mt. Baguezan, Asben. 5,200 ft.

♀ 177 (stage viii). Aouderas, Asben. 2,700 ft.

A small species of the *P. ruficeps* group.

Size about as in *P. ruficeps*. General colour above grizzled buffy greyish, paler than in any of the described West African species, the hairs brownish at base, then dull buffy, brown subterminally, and with buffy whitish tips, which give a general grizzled effect. Undersurface dull buffy, not sharply defined, the hairs pale brownish at base. Head coarsely grizzled grey, not buffy, the crown dull rufous brown. Ears with blackish edges ; pale buffy postauricular patches behind them. Dorsal patch oval, ochraceous buffy, the hairs mostly buffy to their bases. Forearms and hands, hindlegs and feet coarsely grizzled grey, neither darker nor lighter terminally.

Skull of about the size and shape of that of *P. ruficeps*, conspicuously different from the much larger and more heavily built skull of *P. goslingi*, the Dassie of Nigeria. Teeth of even proportions, not markedly hypsodont, much as in *P. ruficeps*.

Dimensions of the type :

Head and body, 335 mm. ; hindfoot, 66 ; ear, 28.

Skull, condylo-basal length, 84 mm. ; zygomatic breadth, 49 ; nasals, median length, 24·5 ; posterior breadth, 20 ; diastema, 10·2 ; upper cheek-tooth series, 35 ; molars only, 18 ; width of m^1, 7.

Hab. Aïr, as above. Type from Aouderas. Tuareg name akoka.

Type. Female, adult but not old ; just in stage viii. B.M. No. 21.2.11.141, original No. 177. Collected July 22, 1920.

This Dassie, which we have named after its discoverer, is a pale and strongly grizzled West African representative of the group of small species of which the Soudan *P. ruficeps* is the best known. From the other West African species, *P. kerstingi* and *goslingi*, it is distinguishable by its paler colour and much smaller size.

ON A COLLECTION OF BIRDS FROM WEST-CENTRAL AND NORTH-WESTERN YUNNAN.

By LORD ROTHSCHILD, F.R.S., Ph.D.

THIS collection was made by the well-known botanical collector, George Forrest, for Colonel Stephenson Clarke, during the years 1918—1919, and consists of 1,442 specimens of 278 species and subspecies. Colonel Stephenson Clarke is most generously presenting the types of new forms and half the remainder to the British Museum and the other half to the Tring Museum.

The principal places collected in were the Lichiang Range of mountains and the hills and valleys surrounding Tengyueh. The few other places are T'ong-Shán, Yangtze Valley, the Shweli-Salwin Divide, and the Shweli Valley.

The Lichiang or Likiang Range is in N.W. Yunnan, and the portion collected in lies about 27·20° N. latitude and 100·22° E. longitude. Tengyueh and District is about 25° N. latitude by 98·28° E. longitude. The Shweli-Salwin Divide, i.e. the portion collected over, is about 25·40° N. latitude by 98° E. longitude. The character of the avifauna is distinctly Himalayan, but many migrants from the north pass the winter in Yunnan, and the Tengyueh and Shweli districts show a decided Burmese preponderance.

Two lists have been published lately on the birds of Yunnan. One by Collingwood Ingram in 1912 in the *Novitates Zoologicae*, in which he included all records up to date, and the second in 1914, by Outram Bangs and John C. Phillips, in the *Bulletin of the Museum of Comparative Zoology* for 1914, only giving an account of the actual collection dealt with. Ingram enumerates 352 forms and Outram Bangs 238; 78 of the latter are not contained in the former, so that up to 1914 430 forms had been recorded from Yunnan, of which 7 are undoubtedly recorded in error, so that 423 remain. S. Uchida and N. Kuroda, in *Annotationes Zoologicae Japonenses*, 1916, record a further 46 forms, of which 33 had already been recorded, owing to the authors having overlooked Bangs and Phillips's paper, so that the total number up to 1921 was 436. The number of forms in the present collection new to the Yunnanese avifauna are 59, so that we now know 496 forms from Yunnan.

Considering the almost total absence of large birds from this collection, and the smallness of the series aimed at, the proportion of 278 out of 496 species known is remarkably large. In the second collection sent were 192 birds with Chinese labels, or in a few cases no labels. These, owing to illness and departure on a fresh expedition, Mr. Forrest was temporarily unable to label; and as they are all from the Tengyueh District (including the Shweli-Salwin Divide), I have recorded them here as from the **Tengyueh District** simply.

1. **Francolinus chinensis** (Osb.).

Tetrao chinensis Osbeck, *Voy. en Chine*, vol. ii. p. 326 (1771) (China).

One strongly marked and bright-coloured ♂, no data.

2. **Bambusicola fytchii fytchii** Anders.

Bambusicola fytchii Anderson, *P.Z.S.*, p. 214. pl. xi. (1871) (Ponse, W. Yunnan).

Collingwood Ingram merely records Anderson's specimens. Bangs and Phillips record one specimen from Mengtze which they describe as new under the name of *Bambusicola oleagina*. They evidently compared their bird with a specimen of *B. fytchii hopkinsoni* Godw.-Aust. from Assam, at the same time not realising that the type locality Ponse is in Yunnan. The differences on the breast and flanks are not valid (i.e. those given by Bangs and Phillips); but *f. fytchii* differs from *f. hopkinsoni* in having a less rufous more olive-grey crown, back, and rump, and the spots on the back and interscapulium are black, edged with rufous, **not** entirely rufous as in *f. hopkinsoni*; the chin and throat are buff, **not** rufous buff.

2 ♂♂, Tengyueh District.

3. **Coturnix coturnix japonica** Tem. and Schl.

Coturnix vulgaris japonica Temminck and Schlegel, *Siebold's Faun. Jap. Aves.* p. 103. pl. 61 (1849) (Japan).

1 ♂, July 1918, 8,500 ft., cornfields. (Iris soft brown; bill dark brown; legs and feet dark brown.)

4. **Ithaginis clarkei** Rothsch.

Ithaginis clarkei Rothschild, *Bull. B.O.C.* xl. p. 67 (1920) (Lichiang Range, Yunnan).

This is a most interesting discovery, as it is from the same country as *I. kuseri* Beebe.

1 adult ♂, 3 ♂♂ juv., 1 ♀ July 1918, 12,000—14,000 ft., pine forest. (Iris orange-yellow; bill black; legs and feet scarlet; nails dark brown.)

The principal differences of this species from *cruentus* are the longer crest, long pointed ear coverts, and in younger birds the black mask in the ♂♂; and the greyer uniform upper and under surface in the ♀♀.

5. **Crossoptilon crossoptilon crossoptilon** (Hodgs.).

Pharianus crossoptilon Hodgson, *Journ. As. Soc. Bengal*, vii. p. 864 (1838) (no exact locality).

The three specimens of this bird, obtained by Forrest, appear at first sight very different from *C. crossoptilon*, as the general tone of colour is not white, but very pale blue-grey, and the throat is dirty brownish grey. However, on closer examination the colour of the throat proves to be due to staining. As regards the blue-grey tinge, the birds are in moult and one or two fresh feathers are much paler and others are pure white. I therefore cannot separate this Yunnan form until we get further specimens full moulted and proving distinct.

In his *Monograph of Pheasants* Mr. Beebe expresses the view that in *Crossoptilon* the number of tail feathers being variable is of no diagnostic value, and in consequence expresses some novel views on the status of the several forms. I cannot agree with him at all, as the tail feathers and ear tufts by their structure at once divide the species of *Crossoptilon* into two sharply separated groups, each at present containing two species as follows:

Group I.—Tail feathers with plumules more or less disconnected, 22—24; ear tufts long and pointed. *C. mantschuricum*, *C. auritum*.

Group II.—Tail feathers with plumules more united, 20; ear tufts short and blunt. *C. harmani*, *C. crossoptilon*.

2 ♂♂, 1 ♀, August—September 1918, pine forests 13,000—14,000 ft. (Iris golden yellow; bill reddish yellow; legs and feet scarlet-crimson; nails dark brown.)

Mr. Hartert points out that this bird was actually described under the name of *Phasianus crossoptilon* in the text, and that the name *thibetanum* only occurs under the plate.

6. **Phasianus colchicus elegans** Elliot.

Phasianus elegans Elliot, *Ann. Mag. Nat. Hist.* (4), vi. p. 312 (1870) (Sechuen).

All recent ornithologists have united *P. elegans* Elliot and *P. sladeni* Elliot, nom. nud., from Sechuen and Yunnan respectively, and from material at present available no other course is possible. Should, however, larger series from Yunnan make it possible to separate the two races, a name must be created for the Yunnan birds. It is regrettable that Forrest sent no adults.

1 pullus, July 1918, 9,000—11,000 ft.

7. **Amaurornis phoenicura chinensis** (Bodd.).

Fulica chinensis Boddaert, *Tabl. Pl. Eul.* p. 54 (1783) (terra typ. restr. Hongkong).

1 ♀, June 1918, 8,500—9,000 ft., marshes, Lichiang Valley. (Iris dark brown; bill green; base of upper mandible dull red; legs and feet olive-yellow.)

8. **Rostratula benghalensis benghalensis** (Linn.).

Rallus benghalensis Linnaeus, *Syst. Nat.* ed. x. i. p. 153 (1758) (Asia).

1 ♂, Tengyueh, 5,000 ft., October 1919, ricefields. (Iris blue-black; bill dark brown above, pale below; legs and feet dull dark green.)

9. **Scolopax rusticola rusticola** Linn.

Scolopax rusticola Linnaeus, *Syst. Nat.* ed. x. i. p. 146 (1758) (Europe—Sweden).

1 ♀, hills and side valleys round Tengyueh, 5,000—7,000 ft., October 1919. (Iris dull purple; bill dark brown above, pale below; legs and feet grey-brown.)

10. **Limosa limosa melanuroides** Gould.

Limosa melanuroides Gould, *Proc. Zool. Soc. London*, p. 84 (1846) (Port Essington).

1 ♀, Tengyueh, 5,300 ft., October 1919, marshes and ricefields. (Iris deep purple; bill pinkish brown; legs and feet dark greenish grey.)

11. **Tringa hypoleucos** Linn.

Tringa hypoleucos Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758) (Europe—Sweden).

2 ♂♂, 4 ♀♀, Tengyueh, 5,000 ft., March and October 1919, ricefields, streams, and marshes. 1 ♂, Lichiang Range, 10,000 ft., October 1918. (Iris blue-black or dark brown; bill black-brown; legs and feet light greyish green.)

12. **Tringa glareola** Linn.

Tringa glareola Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758) (Europe—Sweden).

1 ♂, Tengyueh Valley, 5,000—5,500 ft., October 1919, ricefields and marshes. (Iris deep purple; bill black-brown; legs and feet olive-green.)

13. **Tringa ocrophus** Linn.

Tringa ocrophus Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758) (Europe—Sweden).

1 ♂, Yangtze Valley, 6,000 ft., September 1918; 2 ♂♂, 1 ♀, Tengyueh, 5,000 ft., October 1919; 1 ♀, Shweli Valley, August 1919. (Iris blue-black; bill black-brown; legs and feet light greyish green.) 1 ♀, Tengyueh District.

14. **Tringa nebularia** (Gunn).

Scolopax nebularia Gunnerus, in Leem, *Beskr. Finm. Lapp.* p. 251 (1767) (Norway).

1 ♀, Shweli Valley, 6,000 ft., November 1919. (Iris brown; bill greenish brown; legs and feet dark brownish green.)

15. **Sarcogrammus indicus atronuchalis** (Blyth).

Lobivanellus atronuchalis Blyth, Jerdon's *Birds India*, iii. p. 648 (1864) (Burmah).

1 ♀ juv., Tengyueh Valley, 5,000 ft., August 1919, marshes. (Iris black-brown; bill basal half orange-red, rest black; cere orange-red; legs and feet dull brownish yellow; claws black.)

16. **Microsarcops cinereus** (Blyth).

Pluvianus cinereus Blyth, *Journ. As. Soc. Bengal*, xi. p. 587 (1842) (Calcutta).

1 ♂, Tengyueh Plain, 5,300 ft., October 1919, ricefields and marshes. (Iris orange-red; bill orange, tip black; legs and feet lemon-yellow; claws black.)

17. **Charadrius dominicus fulvus** Gm.

Charadrius fulvus Gmelin, *Syst. Nat.* i. 2. p. 687 (1789) (Tahiti).

1 ♂, 1 ♀, Tengyueh, 5,300 ft., October 1919, ricefields. (Iris deep purple; bill black-brown; legs and feet greenish grey.)

18. **Charadrius placidus** Gray.

Charadrius placidus Gray, *Cat. Mamm. Birds, etc., of Nepal and Tibet in Brit. Mus.* 2nd ed. p. 70 (1863) (Nepal).

3 ♀♀, Shweli Valley, 6,000 ft., June and September 1919, by streams; 2 ♀♀, Tengyueh Valley, 5,300 ft., August and October 1919, ricefields and marshes. (Iris reddish brown, brown-purple, or black; bill black-brown; legs and feet creamy yellow, biscuit brown, or dull yellow; claws black.)

19. **Charadrius dubius dubius** Scop.

Charadrius dubius Scopoli, *Del. Faunae et Florae Insubr.* ii. p. 93 (1786) (Luzon).

1 ♀, juv., Tungyueh Valley, 5,300 ft., October 1919, ricefields and marshes. (Iris deep brown; bill black-brown; legs and feet olive-brown.)

20. **Sphenurus sphenurus** (Vig.).

Vinago sphenurus Vigors, *P.Z.S.* p. 173 (1831) (Himalayas).

The single ♀ is rather darker green above, and the head and underside less yellow, than our Kashmir and Sikkim ♀♀, but until we can compare ♂♂ I prefer not to separate it.

1 ♀, June 1919, Shweli-Salwin Divide, pine forests. (Iris reddish scarlet; bill blue; legs and feet pale crimson; nails grey.)

21. **Oenopopelia tranquebarica humilis** (Temm.).

Columba humilis Temminck, *Pl. Col.* livr. 44. pl. 259 (1824) (Bengal, Luzon).

1 ♀, Yangtze Valley, 7,000 ft., September 1918; 1 ♀, Tengyueh Valley, 5,000 ft., August 1919, mixed forest, bamboo thickets.

(Iris yellow; bill dark brown; legs and feet dark brown. Iris black-brown; bill dull black; legs and feet pinkish grey.)

22. **Streptopelia chinensis vacillans** Hart.

Streptopelia chinensis vacillans Hartert, *Nov. Zool.* xxiii. p. 83 (1916) (Yunnan).

1 ♂, Tengyueh Plain, bamboo thickets, August 1919, 5,000 ft. (Iris orange; bill ruddy brown; legs and feet dull pink.)

23. **Streptopelia orientalis orientalis** (Lath.).

Columba orientalis Latham, *Ind. Orn.* ii. p. 606 (1790) (China).

Forrest only sent 1 ♂ of this species.

1 ♂, Lichiang Range, pine forest, 10,000 ft., September 1918. (Iris orange; bill dull crimson; legs and feet deep magenta.)

24. **Columba hodgsoni** Vig.

Columba hodgsoni Vigors, *P.Z.S.* p. 16 (1832) (Nepal).

The ♀♀ sent by Forrest have the mantle and wings, where they are maroon in the ♂, of a deep slate blue glossed with steel blue, not dark grey as Salvadori states.

1 adult ♂, 2 adult ♀♀, Lichiang Range, 9,000—13,000 ft., June—September 1918; 1 ♂ imm. Shweli-Salwin Divide, 10,000—11,000 ft., November 1919. (*Adult*, Iris creamy white; bill dull magenta, tip black; legs and feet dull olive-green; nails yellow. *Imm.*, Iris pale red; bill black; legs and feet dull black; nails yellow.)

25. **Podiceps ruficollis poggei** (Rchw.).

Colymbus nigricans poggei Reichenow, *Journ. f. Orn.* p. 125 (1902) (Tschili, China).

I am of opinion that the Yunnan Little Grebe belongs to the above subspecies. Mr. Collingwood Ingram (*Nov. Zool.* xix. (1912), p. 273) quotes them ex Anderson as *P. fluviatilis philippensis*, but I do not agree with Anderson's identification.

2 ♂♂, 2 ♀♀, Tengyueh Valley, August 1919, 5,300 ft., streams and ponds. (♂, Iris greyish white; bill brownish red; legs and feet dark grey-green. ♀, Iris pale orange; bill black, centre pale olive-green; legs and feet dark grey-green.)

26. **Ixobrychus cinnamomeus** (Gm.).

Ardea cinnamomea Gmelin, *Syst. Nat.* i. 2. p. 643 (1789) (China).

1 ♂, 1 ♀, Shweli Valley, 5,000 ft., June 1919, ricefields and marshes. (Iris orange-yellow; bill dark brown above, dull brownish yellow beneath; legs olive-green; feet above olive-green, below orange; nails dull brown.)

27. **Nycticorax nycticorax nycticorax** (L.).

Ardea nycticorax Linnaeus, *Syst. Nat.* ed. x. i. p. 142 (1758) (Southern Europe).

1 ♂ ad., Lichiang Range, 9,000 ft., October 1918, marshes; 1 ♀ juv., hills N.W. of Tengyueh, 5,000—6,000 ft., October 1919, streams and marshes. (♂ ad., Iris bright crimson; bill black and pale greenish yellow; legs and feet pale yellow; nails brown. ♀ juv., Iris reddish orange; bill above black tinged with green, below greenish; legs and feet bright yellowish green, toes dark olive-green.)

28 **Butorides striatus javanicus** (Horsf.).

Ardea javanica Horsfield, *Trans. Linn. Soc. London*, vol. xiii. p. 190 (1821) (Java).

1 ♂, Tengyueh Plain, 5,300 ft., April 1919, marshes and ricefields. (Iris yellow; bill black above, yellow below; bare skin round eye yellowish green; legs and feet olive-yellow.)

29. **Ardeola bacchus** (Bp.).

Buphus bacchus Bonaparte, *Consp. Gen. Av.* ii. p. 127 (1855) (Malay Peninsula).

1 ♀ (winter plumage), Lichiang Range, October 1918, 10,000 ft., pools and swamps; 1 ♀ (winter plumage), October 1919, Tengyueh Plain, 5,300 ft., ricefields. (Iris golden yellow; bill brown-black above, greenish orange; cere greenish yellow; feet and legs clear olive-green; nails dark olive.)

30. **Bubulcus ibis coromandus** (Bodd.).

Cancroma coromanda Boddaert, *Tabl. Pl. Enl.* p. 54 (1783) (Coromandel).

1 ♀, Tengyueh Valley, August 1919, 5,000 ft., ricefields. (Iris pale yellow; bill light reddish orange; cere yellow; legs dull black; feet black above, dull green below.)

31. **Accipiter nisus melanochistus** Hume.

Accipiter melanochistus Hume, *Ibis*, p. 356 (1869) (Simla).

1 ♀, Lichiang Range, 9,000—12,000 ft., October 1918, cliffs and pine forests. (Iris orange-yellow; bill black; cere grey; legs and feet yellow; claws black.)

32. **Accipiter gentilis schvedowi** (Menzb.).

Ashur palumbarius schvedowi Menzbier, *Orn. Geogr. Eur. Russl.* in *Mém. Scient. Univers. Imp. Moscow Hist. Nat.* p. 439 (1882) (Transbaicalia).

1 ♀ juv., Mekong Salwin Divide, 6,000—12,000 ft., forests and cliffs (1919). (Iris golden yellow; bill grey; cere yellow; legs and feet golden yellow; claws black.)

33. **Circus cyaneus cyaneus** (Linn.).

Falco cyaneus Linnaeus, *Syst. Nat.* ed. xii. i. p. 126 (neighbourhood of London).

1 ♂, north of Tengyueh, 6,000 ft., October 1919, open country. (Iris light yellow ; bill black ; cere yellow ; legs and feet orange ; claws black.)

34. **Circus melanoleucus** (Forst.).

Falco melanoleucus Forster, *Ind. Zool.* p. 12. pl. ii. (1781) (Ceylon).

1 ♂, 1 ♀, hills N.E. of Tengyueh, 5,500—8,000 ft., October 1919, open moorland. (♂, Iris pale clear amber yellow ; bill black ; cere dull pale greenish yellow ; legs and feet pale orange ; claws black.)

35. **Aquila nipalensis nipalensis** Hodgs.

Aquila nipalensis Hodgson, *Asiatic Res.* xviii. pt. ii. pl. i. pp. 13–16 (1833) (Nepal Plain).

♀ juv., Lichiang Range, 11,000—15,000 ft., October 1918, cliffs and pine forests. (Iris yellow ; bill black-brown ; cere yellow ; legs and feet golden yellow ; claws black.)

36. **Falco tinnunculus saturatus** (Blyth).

Tinnunculus saturatus Blyth, *Journ. As. Soc. Bengal*, xxviii. p. 277 (1859) (Tenasserim).

1 ♀ (sexed ♂), Lichiang Range, 9,000—12,000 ft., pine forests, August 1918. (Iris dull deep brown ; bill blue-grey ; cere yellow ; legs and feet orange ; claws black.)

37. **Falco subbuteo streichi** Hart. and Neum.

Falco subbuteo streichi Hartert and Neumann, *Journ. f. Orn.* p. 592 (1907) (Swatari).

1 ♀ ad., hills S.W. of Tengyueh, 7,000 ft., October 1919. (Iris black-brown ; bill blue-grey ; cere pale orange ; legs and feet orange ; claws black-brown.)

38. **Strix aluco nivicola** (Blyth). ?

Syrnium nivicola Blyth, *Journ. As. Soc. Bengal*, xiv. p. 185 (1845) (Himalaya).

The adult ♀ sent by Forrest is considerably larger than La Touche's *S. aluco harterti*, and has larger white markings on the lower abdomen, but without a large series it is impossible to separate these highly variable birds.

1 ♀ ad., 2 ♀♀ juv., Lichiang Range, 12,000—13,000 ft., July and September 1918, pine forests. (Iris brown-grey ; bill olive-grey.)

39. **Otus bakkamoena glabripes** (Swinh.).

Ephialtes glabripes Swinhoe, *Ann. Mag. Nat. Hist.* (4) vi. p. 152 (1870) (S. China and Formosa).

1 ♀, Tengyueh Valley, 5,400 ft., April 1919 (4 eggs No. I.), trees and habitations ; 1 ♂, hills N.W. of Tengyueh, 6,000 ft., October 1919. (Iris brown ; bill brown or greenish grey ; legs and feet brownish grey.)

Ingram has recorded a specimen from Mengtze as *Otus lempiji erythrocampe* Swinh., but the specimen agrees with the above birds in size, while *erythrocampe* is larger and has yellow iris ; whereas in Forrest's two specimens and Owston's the iris is described as dark brown.

O. b. glabripes is recorded from Formosa and S. China and *O. b. umbratilis* from Hainan, and our series of the former is from Formosa alone. These two forms and *O. b. erythrocampe* will require revision when a larger series is available.

Bangs and Phillips quote *O. malayana* ♂ and ♀, but their measurements are quite absurd, being 100 mm. out for *bakkamoena* races and from 55 to 60 mm. out for *malayana*. I am convinced they omitted the 1 before the 85 and 93. and that they had the same birds as Ingram and myself.

40. **Cuculus sparverioides** Vig.

Cuculus sparverioides Vigors, *Proc. Com. Zool. Soc. London*, pt. i. p. 173 (1832) (Himalaya).

Forrest's three specimens are all young birds, the ♂ from T'ong Shán is probably in its second year (two years old), the other two being birds of the year or one year old.

♂ ♀ juv., T'ong Shán, 9,000—10,000 ft., August 1918; 1 ♂ juv., hills around Tengyueh, 5,000—6,000 ft., June 1919, pine forest and open plains. (Iris light orange; bill greenish black; legs, feet, and claws orange.)

41. **Cuculus intermedius intermedius** Vahl.

Cuculus intermedius Vahl, *Skriv. of Nat. Selskabet, Kjöbenhaven*, iv. p. 58 (1789) (Tranquebaria).

1 ♂, 2 ♀♀, Lichiang Range, 9,000—10,000 ft., June and August 1918, pine forests and open country. (♂, Iris brownish yellow; bill greyish black; legs and feet dull orange; ♀ dark brown or brownish yellow.) 1 ♂, Shweli, 8,000 ft., May 1919. (♂ Iris dark yellow.)

42 **Cuculus optatus** Gould.

Cuculus optatus Gould, *P.Z.S.* pt. xiii. p. 18 (1845) (Port Essington).

2 ♂♂ ad., 1 ♀ juv., Lichiang Range, 8,500—10,000 ft., May and September 1918, pine forests. (♂ ad., Iris greyish yellow; bill dark brown, yellow at base; legs and feet brown. ♀ juv., Iris dark brown; bill purplish; legs and feet orange.)

43. **Cuculus canorus telephonus** Heine.

Cuculus telephonus Heine, *Journ. f. Orn.* p. 352 (1863) (Japan).

1 ♂ ad., Lichiang Range, October 1918; 1 ? juv., Talifu, Central Yunnan, 6,500 ft., April 24, 1918. (Iris dark brown; feet dull orange; bill black-brown.) 1 ♂ ad., Tengyueh Valley, July 1919.

44. **Cacomantis merulinus querulus** Heine.

Cacomantis querulus Heine, *Journ. f. Orn.* p. 352 (1863) (India, Nepal, Burma).

1 ♂, hills round Tengyueh, 6,000 ft., June 1919; 1 ♂ ad., Shweli-Salwin Divide, 7,000 ft., May 1919; 1 ♂ juv., Shweli, 7,000 ft., August 1919, forest and open thickets. (Iris light red, light orange, or yellowish brown; bill dark brown; legs and feet orange-yellow, yellow, or light brown.)

45. **Centropus bengalensis bengalensis** (Gm.).

Cuculus bengalensis Gmelin, *Syst. Nat.* vol. i. p. 214 (1788) (Bengal).

One young bird in half plumage; head, neck, interscapulium, and rump as in adult; tail, wings, and thighs as in first plumage.

1 ?, Lichiang Range.

46. **Pyrotrogon erythrocephalus yamakanensis** (Rich.).

Harpactes yamakanensis Rickett, *Bull. B.O.C.* viii. p. xlviii. (1899) (Fokien).

Distinguished from *E. erythrocephalus* by its darker, more olivaceous upper side and black chin and throat.

1 ♂, 1 ♀, Shweli-Salwin Divide, 8,000—9,000 ft., December 1919, mixed forests. (Iris light crimson; bill black; legs and feet pale greyish brown.)

47. **Yynx torquilla japonica** Bp.

Yunx japonica Bonaparte, *Consp. Gen. Avium*, i. p. 112 (1850) (Japan).

1 ♂, Lichiang Range, 10,000 ft., pine forests, September 1918. (Iris deep orange; bill greyish brown; legs and feet dull olive.)

48. **Picumnus innominatus chinensis** (Harg.).

Vivia chinensis Hargitt, *Ibis*, p. 228. pl. vii. (1881) (May-chee, China).

1 ♂, Yangtze Valley, 9,000 ft., September 1918, thickets. (Iris brown; bill grey-black; legs and feet grey-black.)

49. **Dryobates pygmaeus scintilliceps** (Swinh.).

Picus scintilliceps Swinhoe, *Ibis*, p. 96 (1863) (Peking).

2 ♂♂, 4 ♀♀, Lichiang Range, 10,000 ft., June—October 1918, pine forests. 1 ♀, Shweli-Salwin Divide, August 1919, 8,000 ft.; 1 ♂, Yangtze Valley, September 1918; 1 ♀, T'ong Shán, 10,000 ft., August 1918; 3 ♀♀, hills N.W. of Tengyueh, thickets, March and October 1919. (Iris dark brown; bill dark grey; legs and feet olive to blackish grey.) 2 ♀♀, Tengyueh District.

50. **Dryobates hyperythrus subrufinus** (Cab. and Heine).

Xylurgus subrufinus Cabanis and Heine, *Museum Heineanum*, iv., *Picidae*, p. 50 (June 1863) (North China).

3 ♂♂, 3 ♀♀, Lichiang Range, June and July 1918, 11,000—12,000 ft., pine forests. (Iris deep brown; bill, upper mandible black, lower yellow; legs and feet dark olive.)

51. **Dryobates darjellensis** (Blyth).

Picus (Dendrocopus) darjellensis Blyth, *Journ. As. Soc. Bengal*, xiv. i. p. 196 (1845) (Darjeeling).

1 ♂, 3 ♀♀, Shweli-Salwin Divide, 1 ♀ juv., Shweli Valley, 8,000—9,000 ft., May—November 1919, pine forests. (Iris dark brown; bill, upper mandible black, lower grey; legs and feet blackish grey.)

52. **Dryobates cabanisi cabanisi** (Malh.).

Picus cabanisi Malherbe, *Journ. f. Orn.* p. 172 (1854) (China).

2 ♂♂, Shweli-Salwin Divide, 8,000—9,000 ft., June and November 1919; 1 ♂, 3 ♀♀, Lichiang Range, June, September, and October 1918, pine forests. (Iris dull red; bill dark bluish grey; legs and feet dull black.)

53. **Picus canus sordidior** (Rippon).

Gecinus sordidior Rippon, *Bull. B.O.C.* xix. p. 32 (1906) (Yangtze Big Bend).

1 ♂, 1 ♀ ad., 4 ♂♂, 4 ♀♀ juv., Lichiang Range, 9,000 ft., May, July, and August 1918. (Iris dull grey; bill fawn-brown to black; legs and feet steel to greenish grey.) 2 ♀♀ ad., Tengyueh Valley, June 1919; 1 ♂, Tengyueh District.

54. **Cyanops franklini** (Blyth).

Bucco franklini Blyth, *Journ. As. Soc. Bengal*, xi. p. 167 (1842) (Darjeeling).

2 ♂♂, 1 ♀, Shweli Valley, 6,000 ft., streams, May and August 1919. (Iris light brown; bill black, lower mandible greyish; legs and feet grey-black.) 1 ♂, Tengyueh District.

55. **Cyanops asiatica** (Lath.).

Trogon asiaticus Latham, *Ind. Orn.* vol. i. p. 201 (1790) (India).

1 ♂, Shweli Valley, 6,000—7,000 ft., mixed forest, August 1919. (Iris light yellow; bill dull grey-blue, lower mandible pale olive; legs and feet dull olive-green.)

Oustalet quotes *davisoni* Hume from Yunnan (Prince Henri d'Orleans), but there is evidently an error of locality, as this species is confined to Tenasserim and is probably the representative there of *asiatica*.

56. **Alcedo atthis bengalensis** Gm.

Alcedo bengalensis Gmelin, *Syst. Nat.* i. 1. p. 450 (1788) (Bengal).

One ♂ from Tengyueh Valley has a very strongly marked pectoral blue band.

1 ♂ ad., 2 ♀♀ juv., Tengyueh Valley, 5,000 ft., July 1919, near streams. (Iris and bill black; legs and feet red.) 1 ♂ ad., Lichiang Range, no data.

57. **Halcyon smyrnensis fusca** (Bodd.).

Alcedo fusca Boddaert, *Tabl. Planch. Enl. d'Hist. Nat. de d'Aub.* p. 54. pl. 894 (1783).

1 ♂, Tengyueh District.

58. **Ceryle rudis leucomelanura** (Reichenb.).

Ceryle leucomelanura Reichenbach, *Handb. Alced.* p. 21. pl. 409 B. f. 3,488 (1851) (Ceylon).

4 ♂♂, 1 ♀, Tengyueh Valley, 5,300 ft., streams, April 1919. (Iris black-brown; bill black; legs and feet black.)

59. **Palaeornis schisticeps finschi** Hume.

Palaeornis finschi Hume, *Str. Feath.* ii. p. 509 (1874) (Kollidoo, Salwin R.).

Unfortunately all Forrest's 7 specimens are in strong moult.

2 ♂♂, 1 ♀ ad., Yangtze Valley, 7,000—9,000 ft., September 1918, pine forests. (Iris pale yellow; bill orange and red; legs and feet greenish grey.) 1 ♂, 2 ♀♀ juv., Shweli-Salwin Divide, 9,000 ft., July 1919; 1 ♀ juv., Lichiang Range, 9,000—11,000 ft., July 1918.

Ingram gives *cyanocephala* Linn., the record being founded on some young ♂♂ recorded by Anderson from Momier. These were probably wrongly identified and were young of this species.

60. **Coracias affinis** McClell.

Coracias affinis McClelland, *P.Z.S.* p. 164 (1839) (Assam).

The adult birds sent by Forrest are in very worn plumage.

1 ♂, 1 ♀ ad., Shweli-Salwin Divide, 5,000—7,000 ft., open country, May 1919; 1 ♀ juv., Shweli Valley, 6,000—7,000 ft., June 1919. (Iris dark blue; bill black; legs and feet dull black. 1 ♂, Tengyueh District.

61. **Upupa epops indica** Reichenb.

Upupa indica Reichenbach, *Handb. spec. Orn. Scansores*, p. 320, pl. dxcvi. f. 4,037 (India).

Collingwood Ingram identifies some Mongtse specimens (4 ♂♂, 1 ♀) as *U. e. saturatus* Lönnb., but the present specimen appears to me to be *U. e. indica*. Outram Bangs enumerates 10 specimens from Mongtse as *saturatus*, so that the Siberian and Mongolian *saturatus* appear to frequent the valleys of Yunnan in winter at low elevations.

However, the status of *U. e. saturatus* is very uncertain and its distinctness requires confirmation by the study of a series from its breeding haunts. Bangs and Phillips enumerate *U. e. indica* under *U. epops* subsp.

1 ♂, Lichiang Valley, 8,000—9,000 ft., cultivated areas, September 1918. (Iris black; bill black-brown, greyish at base; legs and feet dull greyish brown.)

62. **Caprimulgus macrurus ambiguus** (Hart.).

Caprimulgus macrurus ambiguus Hartert, *Ibis*, p. 373 (1896) (Malay Peninsula, Burma, etc.).

1 ♂, T'ong Shán, 9,000 ft., September 1918.

63. **Caprimulgus indicus jotaka** Temm. and Schleg.

Caprimulgus jotaka, Temminck and Schlegel, *Siebold's Fauna Japonica, Aves*, p. 37. pl. 12 (1847) (Japan).

It is quite a surprise to find this form, and not *indicus indicus*, as the resident race, but the great elevation (11,000 ft.) evidently produces palaearctic conditions.

2 ♀♀, Lichiang Range, 11,000 ft., dry clearings in pine forest, June and August 1918. (Iris purplish brown; bill black; feet and legs grey-black.)

64. **Lyncornis cerviniceps** Gould.

Lyncornis cerviniceps Gould, *Icon. Av.* pt. ii. pl. iv. (1838) (China or adjacent islands).

1 ♀, hills south of Tengyueh, 5,000—6,000 ft., mixed forest, July 1919. (Iris deep reddish brown ; bill black-brown ; legs and feet grey-black.)

This appears to be the first certain record for China.

65. **Hirundo rustica gutturalis** Scop.

Hirundo gutturalis Scopoli, *Del. Flor. and Faun. Insubr.* ii. p. 96 (1786) (New Guinea) (ex Sonnerat).

1 ♂ ad., Tali Valley, 6,500 ft., May 1918 ; 1 ♂ juv., Lichiang Valley, 8,500 ft., August 1918, open country. (Iris dark brown ; bill, legs, and feet black.) 1 ♂, Tengyueh, 5,500 ft., open country, June 1919.

66. **Tesia cyaniventer** Hodgs.

Tesia cyaniventer Hodgson, *Journ. As. Soc. Bengal*, vi. p. 101 (1837) (Nepal).

1 ♂, Shweli-Salvin Divide, 7,000 ft., December 1919. (Iris dark brown ; bill brown, lower mandible orange ; legs and feet dark olive.) 1 ♀, Tengyueh District, 1919.

67. **Tesia castaneo-coronata** (Burton).

Sylvia ? castaneo-coronata Burton, *P.Z.S. Lond.* iii. 1835. p. 52 (1836) (Himalaya).

3 ♂♂, 1 ♀, 1 ?, Lichiang Range, 13,000—14,000 ft., July—September 1918, pine forests. (Iris brown ; bill brown, lower mandible olive-yellow ; legs and feet olive-yellow.) 1 ♂, Shweli-Salwin Divide, 7,000—8,000 ft., November 1919.

68. **Spelaeornis kauriensis** (Har.).

Urocichla kauriensis Harington, *Ann. Mag. Nat. Hist.* (8) ii. p. 246 (1908) (Watan, Bhamo District).

1 ♀, Shweli-Salwin Divide, 8,000 ft., December 1919, thickets. (Iris crimson ; bill dark brown ; legs and feet brown.)

69. **Spelaeornis souliei** Oust.

Spelaeornis souliei Oustalet, *Bull. Mus. d'Hist. Nat. Paris*, p. 257. no. 6 (1898) (Tsé-kou).

Forrest sent 1 ♂, 1 ♀, 1 juv. of this hitherto unique bird.

The young is undescribed ; it differs from the adult above in having the head and hind neck bright rufous, each feather edged with black, and the back olive rufous barred with black lines ; below it has the throat and whole underside deep rufous.

70. **Troglodytes troglodytes talifuensis** (Sharpe).

Anorthura talifuensis Sharpe, *Bull. B.O.C.* xiii. p. 11 (1902) (Gyi-dzin-shán).

3 ♂♂, 2 ♀♀, 2 ?, Lichiang Range, 14,000 ft., thickets, July—October 1918. (Iris dark brown or black-brown ; bill dark brown ; legs and feet brown.)

71. **Prunella immaculata** (Hodgs.).

Accentor immaculatus Hodgson, *P.Z.S. Lond.* xiii. p. 34 (1845) (Nepal).

2 ad., Lichiang Range, 1918 ; 1 ♀, Tengyueh District, 1919.

72. **Prunella strophiatus multistriatus** (David).

Accentor multistriatus David, *Ann. Mag. Nat. Hist.* (4), vii. p. 256 (1871) (Moupin).

2 ♀♀, 7 ?, Lichiang Range, 9,000—13,000 ft., August—October 1918, thickets by streams. (Iris pale reddish brown; bill black-brown; legs and feet light pinkish brown.)

73. **Prunella collaris ripponi** Hart.

Prunella collaris ripponi Hartert, *Vög. paläarkt. Faun.* i. p. 766.

The type specimen at Tring is dated May, while Forrest's birds are dated October, which accounts for the still purer grey of the breast.

5 ♂♂, Lichiang Range, 14,000 ft., October 1918. Cliffs and rocky meadows. (Iris bright reddish brown; bill black, basal two-thirds of lower mandible yellow; legs and feet dull yellowish brown.)

74. **Enicurus sinensis** Gould.

Enicurus sinensis Gould, *P.Z.S. London.* p. 665 (1865) (Shanghai).

2 ♀♀, Lichiang Range, 9,000—10,000 ft., sheltered water courses, June 1918. (Iris dark brown; bill black; legs and feet flesh pink.)

75. **Enicurus maculatus guttatus** Gould.

Enicurus guttatus Gould, *P.Z.S. London*, p. 664 (1865) (Sikkim ?).

Outram Bangs has described the Yunnan birds as a distinct race under the name of *bacatus*, and gives as the difference the larger and more numerous spots on the back. The single bird sent by Forrest has these spots not larger than the usual run of Indian *guttatus*. The Yunnan specimens in the British Museum certainly have rather big spots, but several Indian ones have them still larger, so that I cannot acknowledge the validity of Mr. Bangs's *maculatus bacata*.

1 ♀, Shweli-Salwin Divide, 8,000 ft., streams and shady ravines, May 1919. (Iris black; ; bill black; legs and feet transparent pearly white.) 1 ♂ ad., 1 ♂ juv., Tengyueh District, 1919.

[**Enicurus maculatus omissus** subsp. nov.

While comparing the above specimen of *m. guttatus* I was struck by the large size of a bird from Fokien in the Tring collection. Mr. Hartert kindly examined the Fokien material in the British Museum, and we both agree that the Fokien *guttatus* are a distinct local race and require a name.

♂ ad. differs from *m. guttatus* in its larger size, larger white spots on the back, and much larger white neck band.

Length of wing: *E. m. guttatus*, 95–102 (1·107) mm.

Length of wing: *E. m. omissus*, 112–115 mm.

Hab. Fokien, Tang Wangwang coll. Type in Tring Museum.]

76. **Enicurus schistaceus** Hodgs.

Enicurus schistaceus Hodgson, *Asiat. Res.* xix. p. 189 (1836).

2 ♂♂, Shweli-Salwin Divide, 9,000 ft., May 1919; 1 ♀ ad., 1 ♀ juv., Tengyueh District.

77. **Hodgsonius phoenicuroides** (Gray).

Bradypterus phoenicuroides Gray, *Cat. Mamm., etc., Nepal*, p. 70 (Nepal).

1 ♂, 3 ♀♀, Lichiang Range, 10,000—12,000 ft, pine forests and thickets, May —September 1918. (Iris black-brown; bill dark brown; legs and feet light brown.)

78. **Luscinia davidi** (Oust.).

Calliope davidi Oustalet, *Bull. Mus. Paris*, p. 222 (1892) (Ta-tsien-lu).

The single ♂ sent by Forrest is in full moult and not absolutely adult, so that the orange-scarlet of the throat and breast is more restricted than in our two very bad skins. The presence, however, of a few isolated orange feathers on the breast indicates that it would have extended.

1 ♂, Lichiang Range, 12,000—13,000 ft., pine forests, July 1918. (Iris black, bill black; legs and feet greyish black.)

79. **Luscinia brunnea** (Hodgs.).

Larvivora brunnea Hodgson, *Journ. As. Soc. Bengal*, vi. p. 102 (1837) (Nepal) ♀.

Forrest sent 1 ♂, 2 ♀♀, adult and one very young bird. The labels on the ♂ and one ♀ adult appear to have been reversed.

The young bird has upperside deep olive-brown; feathers of head and hind neck with rusty shaft stripes and indistinct blackish edges; upper tail coverts olive-rufous; primaries blackish with olive-brown outer webs; tail slaty black; feathers of cheeks, throat, and breast whitish rufous edged with sooty black; abdomen buffish white, feathers more or less edged with narrow sooty lines.

1 ♂ ad., Yangtze Valley, 8,000 ft., September 1918; 1 ♀ ad., T'ong Shán, 9,000—10,000 ft., August 1918; 1 ♀ ad., 1 ? juv., Lichiang Range, 10,000—12,000 ft., July 1918, pine forests and thickets by streams. (Iris dark brown; bill brown-black; legs and feet blackish grey; ♀ et juv., iris black-brown; bill brown; legs and feet pale brown.) 1, Tengyueh District, 1919.

80. **Notodela leucura** Hodgs.

Muscisylvia leucura Hodgson, *P.Z.S. Lond.* p. 27 (1845) (Nepal).

The average Indian and Assam ♂♂ show a wing measurement from 89 to 94 mm., but 1 Margharita ♂ and 1 ♂ from Darjeeling reach 97 mm. Two Bhamo ♂♂ and the present Yunnan ♂ measure 97 mm., and 1 Annam ♂ 99 mm., the remaining Annam ♂♂ recorded by Messrs. Robinson and Kloss would run from 92 to 98 mm. if the bird I measure as 99 is really the bird they quote as 97 mm. It thus would seem that a more eastern larger race is in the process of being evolved.

1 ♂, hills round Tengyueh, 6,000 ft., thickets by streams, August 1919. (Iris black-brown; bill, legs, and feet black.)

81. **Phoenicurus schisticeps** (Gray).

Ruticilla schisticeps Gray, *Cat. Mamm. B. Nepal*, pp. 69, 153 (1846) (Nepal).

1 ♂, 1 ♀, Lichiang Range.

82. **Phoenicurus frontalis sinae** Hart.

Phoenicurus frontalis sinae Hartert, *Bull. B.O.C.* xxxviii. p. 78 (1918) (Kansu).

Although the colour of the forehead and throat of the ♂ is certainly paler, it is the ♀ which is most distinct from *f. frontalis*.

8 ♂♂ ad., 6 ♀♀ ad., 1 ♀ jun., 1 ♀ juv., Lichiang Range, 12,000 ft., August—October 1918, pine forests; 1 ♂ ad., Tengyueh Valley, 5,300 ft., November 1919; 4 ♂♂ (1 sexed ♀), Tengyueh District, 1919.

83. **Phoenicurus auroreus leucopterus** Blyth.

Phoenicura leucoptera Blyth, *Journ. As. Soc. Bengal*, xii. 1. p. 962 (1843) (Malacca).

5 ♂♂ ad., 1 ♀ ad., 3 young, Lichiang Range, 10,000—11,000 ft., thickets by streams, July and October 1918; 1 ♂ ad., Yangtze Valley, September 1918; 1 ♂ ad., T'ong Shán, October 1918; 2 ♂♂ ad., 1 ♀ ad., hills N.W. of Tengyueh, 5,300—6,000 ft., thickets and meadows, October 1919; 2 ♂♂, 2 ♀ ad., Tengyueh Valley, 5,300—5,500 ft., March and November 1919. (Iris dark brown; bill, legs, and feet black.)

The breeding-place of this race was unknown, but it evidently breeds in N.W. Yunnan, though the birds wintering in Eastern India probably do not breed in Yunnan.

84. **Phoenicurus hodgsoni** (Moore).

Ruticilla hodgsoni Moore, *P.Z.S. London*, p. 26. pl. Aves lviii. (1854) (Nepal).

2 ♀♀ ad., Lichiang Range, 10,000—11,000 ft., thickets by streams, October 1918. (Iris black; bill dark brown; legs and feet black.)

85. **Chaimarrornis fuliginosa fuliginosa** (Vig.).

Phoenicura fuliginosa Vigors, *Proc. Comm. Zool. Soc. London*, i. p. 35 (1831) (Himalayas).

It is remarkable that in this species of the genus there should be extreme dimorphism in the sexes, while they are alike in *leucocephala* and almost so in *bicolor*.

4 ♂♂, hills round Tengyueh, 6,000 ft., April—September, 1919, thickets by streams; 1 ♀ ad., Tengyueh Valley, April 1919, 5,500 ft.; 2 ♂♂, Shweli Valley, 7,000 ft., September 1919; 3 ♂♂ ad., 1 ♀ nestling, Lichiang Range, 9,000 ft., by streams. May—June 1918. (Iris blackish blue; bill, legs, and feet black.)

86. **Chaimarrornis leucocephala** (Vig.).

Phoenicura leucocephala Vigors, *Proc. Comm. Zool. Soc. London*, i. p. 35 (1831) (Himalayas).

The sexing in this series is all wrong; out of 7 adults all labelled ♂, 6 are ♀♀ and only 1 ♂; the two immature birds are correctly sexed.

1 ♂, 4 ♀♀ ad., 1 ♂, 1 ♀ juv., Lichiang Range, 9,000—10,000 ft., water courses, August and October 1918; 2 ♀♀ ad., Shweli Valley, June 1919. (Iris dark brown; bill, legs, and feet black.) 1 ♂, Tengyueh District, 1919.

87. **Tarsiger cyanurus** (Pall.).

Motacilla cyanurus Pallas, *Reise Prov. Russ. Reich.* ii. p. 709 (1773) (Yenissei).

88. **Tarsiger chrysaeus** Hodgs.

Tarsiger chrysaeus Hodgson, *P.Z.S. London*, p. 28 (1845) (Nepal).

The sexing here is erratic, a young ♂ being marked ♀ and several ♀♀ marked ♂.

1 ♂ ad., 1 ♂ juv., 7 ♀♀, Lichiang Range, 12,000—13,000 ft., thickets, July—October 1918. (Iris dark brown; bill black, edges and lower mandible brownish yellow; legs and feet olive-yellow.) 1 ♂ ad., 1 ♀ juv., Tengyueh District, 1919.

These birds agree perfectly with Sikkim specimens, but the large number of a series of 18 ♂♂ ♀♀ from Tai-pai-shan, Tsin-ling Mountains, are considerably smaller.

89. **Tarsiger rufilatus practicus** (Bangs and Phill.).

Ianthia practica Bangs and Phillips, *Bull. Mus. Comp. Zool.* lviii. p. 292 (1914) (Loukouchai).

Bangs and Phillips treat this form as a quite distinct species, but when a large series is compared the differences from *r. rufilatus* are very slight; the back in the ♂ is somewhat deeper blue and the rump is also darker, but the principal colour difference is that the shoulder patch is much darker blue. The ♀♀ are darker above, more deep olive-brown, less rufous; the tail also is much duller blue. A large series of 11 ♂♂, 18 ♀♀ at Tring from the Tsin-Ling Mountains belong to *r. practicus*. This form can therefore only be considered a slightly differentiated subspecies of *T. rufilatus*.

2 ♂♂ ad., 2 ♂♂ juv., 9 ♀♀ ad., Lichiang Range, 9,000—14,000 ft., pine forest and thickets, August—October 1918. (Iris dark brown; bill black-brown; legs and feet dark brown.)

90. **Dendrobiastes hyperythra hyperythra** (Blyth).

Muscicapa hyperythra Blyth, *Journ. As. Soc. Bengal*, xi. p. 885 (1842).

1 ♂ ad., 1 ♀ ? juv., Tengyueh District, 1919.

91. **Copsychus saularis saularis** (Linn.).

Gracula saularis Linnaeus, *Syst. Nat.* ed. x. p. 109. no. 5 (Asia).

In the *Cat. Birds, Brit. Mus.*, vol. vii. pp. 61–64, Dr. Sharpe unites all the forms of *saularis* under one head, but describes the named forms *musicus* and *amoenus* and the so-called hybrids, but the newest revisions of the species treat *saularis, musicus, amoenus, ceylonensis, andamanensis, pagiensis,* and *zoenicus* as subspecies of *saularis*.

4 ♂♂, 2 ♀♀, Tengyueh Valley, March—April 1919, 5,500 ft., bamboo thickets. (Iris black-brown; bill black; legs and feet brown-black.) 1 ♂, Tengyueh District, 1919.)

92. **Oreicola ferrea haringtoni** Hart.

Oreicola ferrea haringtoni Hartert, *Vög. paläark. Faun.* i. p. 711. no. 1,080 (1910) (Moupin, etc.).

1 ♂, 1 ♀, 1 ♂ ? juv., Lichiang Range, 10,000 ft., July—September 1918; 1 ♂, 1 ♂, 2 ♀♀ ad., 1 ♂ very young, Yangtze Valley, 9,000 ft., September 1918; 1 ♂ very young, T'ong Shán, 9,000—10,000 ft., August 1918; 4 ♂♂, Tengyueh Hills, June 1919, 6,000 ft.; 1 ♂, 1 ♀, Tengyueh Valley, March and June 1919,

5,500 ft., open thickets. (Iris black-brown ; bill, legs, and feet ♂ black, ♀ dark brown.) 2 ♂♂ ad., 1 ♂ jun., 1 ♂ juv., 4 ♀♀ ad., 1 ♀ juv., Tengyueh District, 1919.

93. **Saxicola torquata przewalskii** (Pleske).

Pratincola maura var. *przewalskii* Pleske, *Wiss. Res. Przewalsky's Reisen Vögel*, i. p. 46. pl. iv. ff. 1, 2, 3 (1889) (Kansu).

2 ♂♂, 1 ♀ ad., Lichiang Range.

94. **Myiophoneus eugeniae** Hume.

Myiophoneus eugeniae Hume, *Stray Feath.* i. p. 475 (1873) (Thayetmyo).

This bird appears to differ from *M. temmincki* only in lacking the white spots on the wing coverts and the concealed white on the rump and thighs. I should therefore have considered these two forms as subspecies, only they appear to occur together in the Karen Hills and Burmah. Hartert examined the type of *M. tibetanus* Mad. and finding it to be a young bird placed the name as a synonym under *M. temmincki*.

Thayer and Bangs record a series of adults (*Mem. Mus. Comp. Zool.* xl. p. 168, 1912) and young, and maintain its distinctness from *temmincki* owing to the absence of the concealed white of rump, etc. I therefore shrewdly suspect that *tibetanus* Mad. is nothing more than *eugeniae* Hume, but only actual comparison can confirm my suspicion.

1 ♂, 1 ♀, 1 fledgling, Lichiang Range, 10,000 ft., June—August 1918, cliffs ; 1 ♀ (marked ♂), Tengyueh Hills, July 1919. (Iris dark crimson ; bill orange ; culmen dark ; legs and feet black.)

95. **Monticola erythrogaster** (Vig.).

Turdus erythrogaster Vigors, *Proc. Comm. Soc. and Corr. Zool. Soc. Lond.* p. 171 (1831) (Himalaya).

1 ♀ juv. (first plumage), T'ong Shán, 9,000—10,000 ft., August 1918 ; 1 ♀ juv. (first plumage), Shweli Valley, 8,000 ft., August 1919. (Iris black-brown ; bill, legs, and feet grey-brown.)

96. **Monticola philippensis** (P. L. S. Müll.).

Turdus philippensis P. L. S. Müller, *Natursyst. Anhang*, p. 142 (1776).

1 ♂, Lichiang Range, 11,000—12,000 ft., July 1918. (Iris dark brown ; bill legs, and feet black.) 1 ♂, T'ong Shán, 9,000—10,000 ft., August 1918.

Hartert places the red-bellied forms as subspecies of *M. solitarius*, but as they appear in South and South-East China to breed in the same areas I prefer for the present to keep them as species, in which case La Touche's larger race must stand as *M. philippensis magna*, not as *M. solitarius magna*.

97. **Monticola solitarius pandoo** (Sykes).

Petrocincla pandoo Sykes, *P.Z.S. Lond.* p. 87 (1832) (Ghats, India).

2 ♂♂, Lang Bong Valley, 7,000 ft., May 1918 ; 1 ♀ (marked ♂), Tengyueh Valley, 5,300 ft., March 1919 ; 4 juv., Shweli Valley, 9,000 ft., June 1919 ; 1 juv., mountains north-west of Tengyueh, 6,000 ft., October 1919. (Iris dark brown to black ; bill, legs, and feet black.)

98. **Turdus castaneus gouldi** (Verr.).

Merula gouldi Verreaux, *Nouv. Arch. Mus. Hist. Nat. Paris*, vi. *Bull.* p. 34 (1870) (Kansu).

2 ♂♂, 5 ♀♀, 5 pull. half grown to three-quarters, Lichiang Range, 10,000—11,000 ft., thickets and mixed forest, June 1918; 1 ♂, Shweli-Salwin Divide, 9,000 ft., November 1919. (Iris brown; bill golden yellow; legs and feet yellowish brown.)

In the first plumage the ♀ has the ground-colour of undersurface yellower and the spots smaller.

99. **Turdus ruficollis ruficollis** Pall.

Turdus ruficollis Pallas, *Reise Prov. Russ. Reichs.* iii. p. 694 (1776) (Dauria).

1 ♂, Tengyueh Valley, 5,500 ft., March 1919, thickets. (Iris dark brown; bill dark brown, tip and lower mandible orange; legs and feet dark greyish brown.) 2 ♂♂ juv., Tengyueh District.

100. **Turdus fuscatus** Pall.

Turdus fuscatus Pallas, *Zoogr. Rosso. Asiat.* i. p. 451. pl. xii. (1827) (Dauria).

Dr. Sharpe and others identify Bechstein's *Turdus dubius* with this bird, but Hartert says it is too doubtful to accept with certainty. Bechstein antedates Pallas by thirty-two years.

2 ♂♂, 1 ♀, Tengyueh, March 1919; 1 ♂; 1 ♂, Lichiang Range, 1918; 1 ♂, Tengyueh District.

101. **Turdus naumanni** Temm.

Turdus naumanni Temminck, *Mon. d'Orn.* i. p. 170 (1820) (Oriental Europe).

1 ♂, Tengyueh Valley, 5,500 ft., March 1919, thickets. (Iris dark brown; bill black-brown, basal half of lower mandible orange; legs and feet dark reddish brown.)

102. **Turdus obscurus** Gm.

Turdus obscurus Gmelin, *Syst. Nat.* i. p. 816 (1788).

3 ♀♀ (1 marked ♂), Lichiang Range, 9,000 ft., October 1918, thickets. (Iris and bill black-brown; legs and feet dull yellowish brown.) 1 ♀ (marked ♂), thickets round Tengyueh, 5,500 ft., November 1919; 1 ♀, Tengyueh District, 1919.

103. **Turdus dissimilis** Blyth.

Turdus dissimilis Blyth, *Journ. As. Soc. Bengal*, xvi. p. 144. no. 12 (1847) (Lower Bengal, Himalayas).

Seebohm, in the *Cat. B. Brit. Mus.*, vol. v., footnote p. 265, rejects Blyth's name for this bird and adopts Cabanis's one, because Blyth associated with his ♂ the ♂ of *T. unicolor* as ♀. Seeing, however, that Blyth describes the ♂ of this bird first it is quite evident that his name must be retained.

2 ♂♂, 1 ♀, Tengyueh Valley, 5,500 ft., March 1919, thickets. (Iris dark brown; bill orange-yellow; legs and feet dull yellowish brown.) 1 ♂ juv. 1 ♀ ad., Shweli Valley, July 1919; 1 ♀ juv., Lichiang Range, 10,000 ft., September 1918; 1 ♂, Tengyueh District.

104. **Turdus auritus** Verr.

Turdus auritus Verreaux, *Nouv. Arch. Mus. Hist. Nat. Paris*, vi., *Bull.* p. 34 (1870) (Moupin).

Of three specimens sent by Forrest one only, unfortunately, is adult. All three are much more heavily spotted on the flanks and abdomen than the single ♂ at Tring from the Tsin Ling Mountains.

1 ad., 2 juv., Lichiang Range, 12,000 ft., August—September 1918. (Iris dark brown; bill dull greyish brown; legs and feet pale greyish yellow.)

105. **Turdus mollissimus** Blyth.

Turdus mollissimus Blyth, *Journ. As. Soc. Bengal*, xi. p. 188 (1842) (Darjeeling).

1 ♂, 1 ♀, 1 juv., Lichiang Range, 12,000 ft., August 1918, thickets. (Iris dark brown; bill dull greyish brown; legs and feet pale greyish yellow.)

106. **Cochoa purpurea** Hodgs.

Cochoa purpurea Hodgson, *Journ. As. Soc. Bengal*, v. p. 359 (1836) (Nepal).

This appears to be the first record from Yunnan.

1 ♂, Lichiang Range, 9,000—10,000 ft., June 1918, mixed forest. (Iris brownish red; bill, legs, and feet black.)

107. **Pomatorhinus ruficollis stridulus** Swinh.

Pomatorhinus stridulus Swinhoe, *Ibis*, p. 265 (1861) (Peking Hills, Foochow).

The forms of *P. ruficollis* from the mainland are extremely puzzling, the difficulty being much increased by the great individual as well as local variation. I am much inclined to consider all the continental named forms, with the exception of *r. bakeri*, as identical, but the series at Tring of *ruficollis ruficollis* appears to differ from Chinese and Shan States birds by having the rectrices of the same uniform rufous colouring as the back, whereas in *r. styani*, *r. stridulus*, and *r. reconditus*, the largest proportion of the very large series I have examined has the tail more olive than the back, and in birds where the upperside is entirely rufous the rufous colouring both of back and tail is much darker than in Indian birds. The colour of the bill is not constant and therefore is a character by no means so decisive as Messrs. Bangs and Phillips make out when describing their *ruficollis reconditus*. In *r. styani* and *r. stridulus* in many specimens the whole culmen is black, but in others only the basal half of the culmen is dark. In *r. ruficollis* the culmen is more uniform, two-thirds to three-quarters being always dark, but in the Yunnan series before me the bill varies from an entirely yellow culmen with a dark basal spot to a bill with two-thirds of the culmen dark.

At first sight an extreme form of *stridulus* with the back, rump, and tail deep maroon-rufous appears to be very different from typical forms of *styani* with the back and tail olive, or olive tinged with rufous, but every intergradation occurs, so that the two names must be considered as nothing but synonyms. Hartert (*Vög. paläarkt. Faun.*, pt. i. pp. 639, 640) already draws attention to the existence of intermediate specimens, both in Sikkim and China, between *r. ruficollis* and *r. styani*; but, as I mentioned, there appears to be a preponderance in Sikkim of birds distinct from Chinese examples, and therefore I cannot for the present unite them. I have examined about 100 Chinese and Yunnanese

examples, including three nestlings, and I cannot find any difference between Chinese and Yunnan individuals except that I have never seen a Yunnan specimen with the culmen entirely black as in many Chinese examples, and I have never seen any Chinese specimens with the culmen with so little dark colouring as in extreme Yunnan individuals. As, however, the Yunnan examples with the greatest extent of yellow on the culmen are from June and July, and the one with least yellow is from October, it is more than likely that the bill differences are seasonal. I therefore consider that at present we can only accept five races of *P. ruficollis*, viz. :

P. ruficollis ruficollis Hodgs., Himalayas, Assam, etc.
P. ruficollis stridulus Swinh., China.
P. ruficollis bakeri Har., Burmah, Shan States, etc.
P. ruficollis nigrostellatus Swinh., Hainan.
P. ruficollis musicus Swinh., Formosa.

In the nine specimens sent by Forrest the breast varies from olive-grey with whitish edges to the feathers to white with olive-brown streaks in the centre of feathers, and to olive-rufous with broad white margins to the feathers.

2 ♂♂, 2 ♀♀ (1 marked ♂), Lichiang Range, 9,000 ft., June—September 1918, scrub and thickets. (Iris brown ; bill grey-brown ; legs and feet dull grey.) 3 ♂♂, 2 ♀♀ (1 ♂ marked ♀), hills round Tengyueh, 6,000 ft., March—October 1919.

108. **Pomatorhinus macclellandi odicus** Bangs and Phill.

Pomatorhinus macclellandi odicus Bangs and Phillips, *Bull. Mus. Comp. Zool.* lviii. p. 286 (1914) (Mengtsze).

6 ♂♂ (3 marked ♀♀), 4 ♀♀ (3 marked ♂♂) (length of wing, ♂♂ 91–95 mm., ♀♀ 85–88 mm.), Lichiang Range, 9,000—11,000 ft., thickets and pine forests, May—July 1908. (Iris clear pale yellow ; bill brownish grey ; legs and feet greyish brown.) 1 ♀, Tengyueh, May 1919.

109. **Pomatorhinus erythrogenys imberbis** Salvad.

Pomatorhinus imberbis Salvadori, *Ann. Mus. Genov.* (2), vii. p. 410 (1889) (Yado Karen Hills).

Collingwood Ingram quotes a specimen from Momien (Anderson) as *e. ferrugilatus*, but the two fledglings sent by Forrest are in my opinion undoubtedly *e. imberbis*, and Anderson's will also be this form.

1 fledgling, Lichiang Range, 9,000—11,000 ft., July 1918 ; 1 fledgling, Tengyueh, June 1919. (Iris dull white ; bill grey-brown ; legs and feet light grey.)

110. **Ianthocincla subunicolor griseata** subsp. nov.

Differs from *s. subunicolor* by its more slaty-grey head and less rufous more olive upperside and tail, and especially in the partially disintegrated outer webs of the primaries being much brighter and darker yellow. Below, the throat and breast are darker and sharply defined from the rest of the lower surface, while in *s. subunicolor* the paler abdomen gradualllly merges into the breast. Under tail coverts more olive.

3 ♀♀ (2 marked ♂), Shweli-Salwin Divide, 10,000 ft., August (type), November 1919. (Iris brown ; bill, legs, and feet black-brown.) 1 ♂, 1 ♀, Tengyueh District, 1919.

111. Ianthocincla affinis oustaleti Hartert.

Ianthocincla affinis oustaleti Hartert, *Vög. paläarkt. Faun.* vol. i. p. 633. no. 970 (1909) (Tsékou).

The nine birds sent by Forrest agree perfectly with the type at Tring.

5 ♂♂, 1 ♀, Lichiang Range, 10,000—13,000 ft., May—September 1918, pine forests; 3 ♂♂, Shweli-Salwin Divide, 7,000 ft., May—July 1919. (Length of wing, ♂ 100–109 mm.; ♀ 95 mm. Iris dull grey or greyish white (♀ dull brown); bill black-brown; legs and feet brown.)

112. Ianthocincla ellioti ellioti (Verr.).

Trachalopteron ellioti Verreaux, *Nouv. Arch. Mus. Paris*, vi., *Bull.* p. 36 (1870) (Mountains of Chinese Thibet).

I cannot find any difference between the birds sent by Forrest and typical *e. ellioti*, though they ought to be *e. honoripeta* Hart., but they certainly do not agree with his description and do agree with *e. ellioti*.

12 ♂♂, T'ong Shán, 10,000 ft., September 1918; 4 ♂♂, 3 ♀♀, 1 fledgling, Lichiang Range, 10,000—12,000 ft., May—July 1918, thickets and pine forests. (Length of wing, ♂ 97–100 mm.; ♀ 87–92 mm. Iris dull white; bill black; legs and feet light brown.)

Colonel Rippon (*Bull. B.O.C.* xix. p. 32, 1906) describes *Trochalopteron yunnanense* as differing from *ellioti* in being everywhere darker and greyer. This would be the same difference as between *ellioti ellioti* and *ellioti bonvaloti* Oust. = *ellioti honoripeta* Hart. It is possible that *ellioti ellioti* is the breeding race and that the darker greyer *honoripeta* comes to Yunnan on migration.

113. Ianthocincla lanceolata bonvaloti (Oust.).

Babox lanceolatus bonvaloti Oustalet, *Ann. Scie. Nat.* (7), xii. p. 274 (*B. bonvaloti*, p. 273) (1892) (So, Thibet errore! Recte Tara, Thibet).

Oustalet's type is much worn, but is a specimen similar to ♂ No. 2 (W.R.) of Forrest's series, viz. a bird in its second year with the head and cheeks very dark and the breast stripes very broad. Dr. Sharpe's character for his *B. yunnanensis*, that the moustachial line is chestnut instead of black, is not constant, two of Forrest's having black moustachial lines, while five have them chestnut. In fact, the Yunnan race of *lanceolatus* is a very doubtfully distinct form. I, however, must keep it separate because its identity with or difference from *lanceolatus lanceolatus* can only be finally decided by the comparison of freshly moulted S.W. Chinese specimens with equally fresh Yunnan birds; personally I consider them identical, but Forrest's and Colonel Rippon's series consist of very worn examples. In any case Oustalet's name has priority over Sharpe's.

4 ♂♂, 1 ♀, Lichiang Range, 9,000—10,000 ft., May—September 1918, scrub and pine forest; 1 ♂, Tengyueh, May 1919; 1 ♀, Shweli-Salwin Divide, 9,000 ft., December 1919. (Iris pale yellow; bill olive-black; legs and feet dull grey.) 2, Tengyueh District, 1919.

114. Ianthocincla ocellata similis subsp. nov.

♂ nearest to *T. o. artemisiae* in head and throat, but at once distinguished by the feathers of the breast and foreneck having large black markings as in

I. o. ocellata, whereas in *o. artemisiae* they have narrow subterminal bands. Differs from *o. artemisiae* ♂ in the black of the throat being wider and also extending on to the breast, apparently coalescing with the larger upper chest spots. Ear coverts and superciliary line as in ♂ *artemisiae*, buffish grey or brownish grey. Differs from both *o. ocellata* and *o. artemisiae* in the buff of the breast and abdomen being darker and uniform, whereas in the two named forms the breast and centre of abdomen are paler and sharply contrasted with the flanks. It is also smaller than the two known forms.

Length of wing : ♂ *o. artemisiae*, 133 mm.
,, ,, ,, ♂ *o. ocellata*, 129 mm.
,, ,, ,, ♂ *o. similis*, 125 mm.

1 ♂ (marked ♀), Shweli-Salwin Divide, 8,000 ft., September 1919.

115. **Ianthocincla maxima** (Verr.).

Pterorhinus maximus Verreaux, *Nouv. Arch. Mus. Paris*, vi., *Bull.* p. 36. pl. 3. f. 1 (1870) (Mountains of Thibet).

2 ♂♂, 3 ♀♀ (1 ♀ marked ♂), Lichiang Range, 11,000—13,000 ft., July—September 1918, cliffs in ravines. (Iris dull grey ; bill grey-brown ; legs and feet pale yellow.)

116. **Ianthocincla forresti** sp. nov.

This extraordinary species combines the characters of several others. It has the ear coverts and cheeks of *melanostigma*, the breast markings of *erythrocephala erythrolaema*, and the head of *nigrimentum*.

Ad. above head similar to *nigrimentum*, but less grey feathers edged with more vinaceous, supercalium broadly brown-grey, not silver-grey, behind. Interscapulium much less heavily spotted than in *nigrimentum*, but the two paratypes show hardly any at all ; back less rufous, more olive, than in *nigrimentum* ; ear coverts grey tinged with vinaceous as in *melanostigma*, but feathers much less distinctly dark centred ; feathers of ear coverts long and narrow as in *melanostigma* ; chin black as in *nigrimentum* ; breast and abdomen dark vinaceous chestnut, whole centre of feathers black as in *erythrolaema* and *e. woodi*, **not** edged with black as in *nigrimentum*.

Forrest sent three specimens all sexed ♀, length of wing 100, 108, 108, so there appear to be 1 ♀ ? and 2 ♂♂. The ♀ ? has the least black markings on the interscapulium and the primary coverts greenish chestnut, not bright rufous chestnut.

2 ♂♂, ♀ ?, Shweli-Salwin Divide, 9,000 ft., May—September 1919, thickets. (Iris clear yellow (brown !) ; bill, legs, and feet dark brown.) 1 ♂, Tengyueh District. (Type, Shweli-Salvin divide, v. 1919.)

117. **Ianthocincla chinensis** (Scop.).

Lanius chinensis Scopoli, *Del. Flor. and Faun. Insubr.* ii. p. 86 (1786) (China).

1 ♀, Shweli-Salwin Divide, 7,000 ft., August 1919. (Iris dull crimson ; bill, legs, and feet black.)

118. **Ianthocincla sannio** (Swinh.).

Garrulax sannio Swinhoe, *Ibis*, p. 403 (1867) (Amoy).

1 ♂, 2 ♀♀, Lichiang Range, 8,000—10,000 ft., mixed and pine forests, June 1918; 2 ♂♂, 1 ♀, Yangtze Valley, 6,000—8,000 ft., September 1918; 2 ♂♂, 2 ♀♀, Tengyueh Valley, 5,500 ft., March 1919; 1 ♂, Shweli-Salwin Divide, 9,000 ft., July 1919. (Iris pale yellow; bill black; legs and feet dark brown.)

119. **Leiothrix luteus yunnanensis** subsp. nov.

In his *Vögel der paläarktischen Fauna* Hartert acknowledges two races of *Leiothrix luteus*, and gives as the distinction *l. luteus* inner primaries with orange-red bases, *l. calipygus* primaries without orange-red bases. This is not quite consonant with the series now at Tring, but *l. luteus* has the basal one-third of outer web beyond the primary coverts brilliant crimson from the fourth primary inwards, while *l. calipygus* has it orange. The character of the interruption of the red or orange in the outer web of the inner primaries is somewhat variable. In *l. calipygus* of the ten specimens at Tring three have it interrupted on the 8th and 9th, two on the 8th only, and five not interrupted at all. In *l. luteus* of the five specimens at Tring none have it interrupted. The new form differs from *l. calipygus* in its larger size, more sharply defined yellowish head, and in the fact that out of eight specimens six have the red or yellow on the 7th, 8th, and 9th primaries broadly interrupted, while the whole eight have this colour on the first secondary interrupted or entirely absent, while in the other two subspecies it is never broken or it is entirely black.

Length of wing: *l. calipygus*, ♂ 65–71 mm.; ♀ 63 mm.
,, ,, ,, *l. yunnanensis*, ♂ 72–76 mm.; ♀ 66 mm.

The black base to the bill is seasonal, being a winter character.

6 ♂♂, 2 ♀♀, Shweli-Salwin Divide, 7,000—10,000 ft., May and November 1919. (Iris brown; bill orange-red summer, scarlet with black base winter; legs and feet dark brown.) (Type ♂, May 1919.)

A specimen from Bhamo has the wing 65 mm. and the 6th, 7th, 8th, and 9th primaries broadly interrupted. A series to compare is a great desideratum.

120. **Moupinia poecilotis sordidior** subsp. nov.

Differs from *M. p. poecilotis* in the cheeks being much greyer, less rufous; in the top of the head, occiput, back, and rump being dark olive-brown, not rufous brown; and in the sides of breast being greyish, less rufous.

Of the five specimens marked ♀♀, one has a wing measurement of 47 mm., the rest like the seven marked ♂♂, and two without data vary from 52 to 54 mm. Thus only one ♀ was obtained, all the remaining thirteen are ♂♂.

13 ♂♂, 1 ♀, Lichiang Range, 10,000—12,000 ft., July—October 1918, thickets. (Iris, bill, legs, and feet dark brown.) Type No. 225.

121. **Schoeniparus genestieri** (Oust.).

Alcippe genestieri Oustalet, *Bull. Mus. d'Hist. Nat. Paris*, iii. p. 210 (1897) (Tsékou).

1 ♂, 2 ♀♀, T'ong-Shán, 9,000—10,000 ft., August 1918; 1 ♂, Yangtze Valley, 7,000 ft., September 1918; 1 ♂, 1 juv., Lichiang Range, 10,000 ft., June 1918,

pine forests; 2 ♂♂, 1 juv., hills round Tengyueh, 6,000 ft., April and June 1919. (Iris and bill dark brown; legs and feet pale brown.) 1, Tengyueh District, 1919.

Schoeniparus intermedius Ripp. from the Shan States must sink as a synonym of *S. genestieri*. Rippon compares it with *S. mandelii*, there having apparently been no specimens of *genestieri* at that time in the British Museum.

122. **Pseudominla castaneceps** (Hodgs.).

Minla castaneceps Hodgson, *Ind. Rev.* p. 33 (1838) (Nepal).

3 ♂♂, Shweli-Salwin Divide, 8,000 ft., December 1919, mixed forest. (Iris brown; bill brown, lower mandible very pale brown; legs and feet olive.) 2 ♂♂, 2 ♀♀, Tengyueh District, 1919.

This is new to the Chinese fauna.

123. **Proparus ruficapillus sordidior** Ripp.

Proparus sordidior Rippon, *Bull. B.O.C.* xiii. p. 60 (1903) (Gyi-dzin-shán, W. Yunnan).

3 ♂♂, T'ong-Shán, 9,000—10,000 ft., August 1918, thickets; 2 ♂♂, Yangtze Valley, 7,000—8,000 ft., September 1918; 1 ♂, hills round Tengyueh, 7,000 ft., October 1919. (Iris dark brown; bill black-brown, lower mandible yellow-brown; legs and feet dark olive-brown.) 1 ♂, 2 ♀♀, Tengyueh District, 1919.

124. **Proparus vinipectus bieti** Oust.

Alcippe (*Proparus*) *bieti* Oustalet, *Ann. Sci. Nat.* ser. 7. xii. pp. 283. 304. pl. ix. f. 2 (1892) (Ta-tsien-lou).

Of Forrest's series of 15, 11 are marked ♂ and 4 ♀; of the 11 marked ♂ 3 show a wing measurement of 54–55, and are clearly ♀.

8 ♂♂, 7 ♀♀, Lichiang Range, 10,000—12,000 ft., May—October 1918, pine forests. (Iris and bill dark brown; legs and feet dull brown.) 2 ♂♂, Tengyueh District, 1919.

125. **Proparus swinhoei** Verr.

Proparus swinhoei Verreaux, *Nouv. Arch. Mus. Paris*, vi., *Bull.* p. 38 (1870) (Thibet).

2 ♂♂, 3 ♀♀, Shweli-Salwin Divide, 7,000—8,000 ft., December 1919, mixed forests. (Iris brown; bill greenish brown; legs and feet dull orange.) 1 ♂, Tengyueh District.

126. **Brachypteryx cruralis** Blyth.

Brachypteryx cruralis Blyth, *Journ. As. Soc. Bengal*, xvi. p. 136 (1847) (Nepal).

Collingwood Ingram includes—form of the species—this teste Oustalet ex. coll. Prince Henri d'Orléans; while Bangs and Phillips identify a single specimen from Mongtse as *C. sinensis* Ripp. The six adults and one young sent by Forrest are undoubtedly *cruralis cruralis*.

5 ♂♂ ad., 1 ♂ juv., Lichiang Range, 11,000—12,000 ft., June—August 1918; 1 ♂ ad., Shweli-Salwin Divide, 9,000 ft., June 1919, rocky ravines and cliffs. (Iris black-brown; bill, legs, and feet dark brown.) 1 ♀, Tengyueh District, 1919.

127. **Lioptila desgodinsi** (Dav. and Oust.).

Sibia desgodinsi David and Oustalet, *Bull. Soc. Philom. Paris* (7), i. p. 139 (1877) (Yer-ka-lo).

4 ♂♂, 3 ♀♀, Liehiang Range, 8,500—11,000 ft., May—June 1918, pine forests. (Iris dark brown ; bill, legs, and feet black.)

Messrs. Robinson and Kloss, in their article on the "Birds of S. Annam and Cochin China," enumerate the 6 ♂♂, 6 ♀♀, they obtained as *Malacias desgodinsi*. While comparing the above Yunnan series I looked at the ♂♀ I had received from Messrs. Robinson and Kloss, and find the Annam bird to be quite distinct. I herewith describe it as—

[**Lioptila robinsoni** sp. nov.

Differs from *L. desgodinsi* in its smaller size, pure slate-grey back, and in the ear coverts being vinaceous cinnamon-brown with broad white shaft stripes **not** uniform brown-black as in *desgodinsi*.

Length of wing: *desgodinsi*, ♂ 100–102 mm. ; ♀ 93–95 mm.
" " " *robinsoni*, ♂ 89–90 mm. ; ♀ 83–89 mm.

Type ♂ 224, Dalat, S. Annam, 4. iv. 1918. C. Boden Kloss leg., in Tring Museum.]

128. **Lioptila pulchella coeruleotincta** subsp. nov.

Differs from *P. pulchella* in head and back being more blue-grey, in the primaries being almost black edged with brighter blue, and in the central rectrices being olivaceous amber-brown, the black subterminal area being much smaller, and the grey terminal area somewhat broader. Below there is an almost complete absence of any brown tint and the grey is purer, the abdomen showing a faint vinaceous tint in one specimen, while the grey ends to the rectrices have no brown tint whatever.

2 ♂♂, 2 ♀♀ (1 ♀ marked ♂). Length of wing: ♂♂ 100–104 mm.; ♀♀ 93–94 mm. Shweli-Salwin Divide, 6,000—7,000 ft., May 1919 (type), thickets and forests. (Iris dark brown; bill black; legs and feet blackish grey.) 1 ♂, 3 ♀♀, Tengyueh District, 1919.

129. **Actinodura egertoni egertoni** Gould.

Actinodura egertoni Gould, *P.Z.S. Lond.* iv. p. 18 (1836) (Nepal).

2 ♂♂, 1 ♀, Shweli-Salwin Divide, 7,000—9,000 ft., May and November 1919, thickets. (Iris light yellow (black-brown ?); bill lead brown; legs and feet dark brown.) 2 ♂♂, 1 ♀, Tengyueh District, 1919.

These birds are undoubtedly typical *egertoni*, and not *ramsayi*, a form of which is enumerated by Bangs and Phillips.

130. **Ixops poliotis saturatior** subsp. nov.

Differs from *P. poliotis* in the lanceolate feathers of the head having distinct silver-grey margins, the feathers themselves being blackish slate colour, not brown-black ; the back is less olive, more rufous, and the feathers are edged

with rusty yellow; the undersurface has the feathers much deeper chestnut rufous, distinctly edged with rusty yellow; ear coverts more silvery grey.

2 ♂♂ (1 marked ♀), Shweli-Salwin Divide, 7,000 ft., May and July 1919, thickets. (Iris, bill, legs, and feet brown.) 2 ♂♂, 2 ♀♀, Tengyueh District, 1919.

Type ♂, Shweli-Salwin Divide, May 1919.

131. **Stachyridopsis ruficeps bhamoensis** Har.

Stachyridopsis bhamoensis Harington, *Ann. and Mag. Nat. Hist.* (8), ii. p. 245 (1908) (Bhamo).

2 ♂♂, 1 ♀, Shweli-Salwin Divide, 9,000 ft., June and December 1919. (Iris brown; bill dark brown; legs and feet olive-brown.) 2 ♂♂, 2 ♀♀, Tengyueh District, 1919.

132. **Minla ignotinca** Hodgs.

Minla ignotinca Hodgson, *Ind. Rev.* p. 33 (1838) (Nepal).

As the name *ignotinca* was only altered to *ignotinctus* in 1841, *ignotinca* must stand.

2 ♂♂, Shweli-Salwin Divide, 7,000—8,000 ft., May—July 1919, scrub. (Iris and bill dark brown; legs and feet pale brown.) 1, Lichiang Range, 1918; 3 ♂♂, 3 ♀♀, Tengyueh District.

Minla jerdoni Verr., from China, was differentiated on the ill-defined pale-olive flammulation on the sides of neck, breast, and flanks. Now in the Tring Museum there are several from Sikkim showing this flammulation quite as strongly, if not more strongly, than in typical *jerdoni*. I therefore consider that *jerdoni* Verr. sinks as a synonym of *ignotinca* Hodgs. The brighter yellow of the breast mentioned by Bangs and Phillips is also untenable in face of large series of Indian birds.

The ♀ of *ignotinca* has the outer edges of the primaries white or pale lemon yellow, not crimson as in the ♂, and the edges and tips of the rectrices very pale pink.

133. **Siva cyanuroptera wingatei** Grant.

Siva wingatei Ogilvie Grant, *Bull. B.O.C.* x. p. 38 (1900) (Yunnan City).

Siva cyanuroptera Hodgs. falls into six well-separable subspecies, and when we get more material from Eastern Yunnan a seventh form will probably prove separable.

The key to the forms is as follows:

1. Ends of secondaries bordered with white.
   S. cyanuroptera cyanuroptera: Assam and Himalayas.
   Ends of secondaries not bordered with white. 2.
2. Head distinctly striped, breast grey.
   S. c. wingatei: Bhamo District and West Yunnan.
   Head distinctly striped, breast white.
   S. c. sordida: Tenasserim.
   Head not distinctly striped. 3.

3. Head brownish, breast grey.
   S. c. subsp. ? : Mee-chow, E. Yunnan ?.
   Head bluish, breast white.
   S. c. oatesi : S.E. Burmah and Shan States.
   Head uniform brown. 4.

4. Primaries uniform black-brown.
   S. c. sordidior : Perak, Malay Peninsula.
   Primaries edged with white.
   S. c. orientalis : Annam and Cochin China.

The birds from the Bhamo District are indistinguishable from typical West Yunnan *S. c. wingatei.*

S. c. sordida must be excessively rare, as the only specimen in the British Museum in 1914 was Hume's type from Tenasserim, and we have none at Tring.

1 ♂ (marked ♀), 2 ♀♀ (1 marked ♂), hills round Tengyueh, 6,000—7,000 ft., June and November, 1919 ; 3 ♂♂, 2 ♀♀ (marked ♂), Shweli-Salwin Divide, 7,000 ft., May 1919. (Iris dark brown ; bill dark olive ; legs and feet pale olive.) 1 ♂, Tengyueh District, 1919.

(Length of wing : ♂♂ 65–66 mm. ; ♀♀ 62–63 mm.)

134. **Siva strigula yunnanensis** subsp. nov.

All forms of *strigula* differ much between fresh and worn plumage. In fresh plumage the back, rump, and upper tail coverts are very strongly marked with olive-yellow ; while when worn these parts are dark grey only slightly tinged with olive. The various subspecies fall into two sections, *S. s. strigula*, with black tail, only the base of inner web of the two central tail feathers being dull deep chestnut, and *S. s. castaneicauda* and the remaining subspecies with five-sevenths of the inner web and four-sevenths of inner half of outer web chestnut.

S. s. yunnanensis differs from *s. malayana* in the head being much brighter olive orange-yellow, sharply defined from the colour of the back and mantle even in worn birds, in having a broad whitish band behind the eye, also back deeper olive in worn birds, less schistaceous grey. From *s. castaneicauda* it differs in being less golden olivaceous above.

Length of wing : 10 ♂♂ 69–71 mm. ; 6 ♀♀ 65–68 mm. (4 ♀♀ and 4 ♂♂ sexed wrongly on labels.)

8 ♂♂, 4 ♀♀, Lichiang Range, 10,000—11,000 ft., June, July 1918, mixed and pine forest ; 1 ♂ (marked ♀), T'ong Shán, 9,000 ft., September 1918 ; 2 ♀♀ (1 ♀ marked ♂), Tengyueh Hills, June 1919 ; 1 ♂ (marked ♀), Shweli-Salwin Divide, 8,000 ft., May 1919. (Iris brown ; bill, legs, and feet grey.) 2 ♀♀, Tengyueh District.

Type ♂, Lichiang Range, July 1919.

[**Siva strigula omissa** subsp. nov.

The differences between the Perak form and *s. malayana* Hart. have been overlooked. *S. s. omissa* differs in being much brighter yellow below and in having the head more sharply distinguished from the mantle and back, being

much brighter olivaceous orange-yellow ; from *s. yunnanensis* it differs in being smaller and greyer above.

Length of wing : ♂ 67 mm. ; ♀♀ 60–63 mm.

Habitat : Perak. Type ♀, Gunong Kerbau, Perak, 5,000 ft., March 1913 —Tring Museum.]

135. **Pteruthius rufiventer** Blyth.

Pteruthius rufiventer Blyth, *Journ. As. Soc. Bengal*, xi. p. 183. no. 25 (1842) (Darjeeling) ♀.

1 ♀, Shweli-Salwin Divide, 9,000 ft., December 1919, forests. (Iris greyish purple ; bill grey-black ; legs and feet light brown.)

136. **Pteruthius xanthochloris pallidus** (David).

Allotrius xanthochloris var. *pallidus* Armand David, *Nouv. Arch. Mus. Paris*, vii., *Bull.* p. 14 (1871) (Frontiers of Kookonon).

1 ♂, Lichiang Range, October 1918 ; 1 ♀, T'ong Shán, 9,000 ft., pine forests, October 1918. (Iris dark brown ; bill dull black ; legs and feet grey.)

137. **Pteruthius melanotis** subsp. ?

Bangs and Phillips record *M. melanotis* from Yunnan, but the single specimen sent by Forrest differs both from that and from *M. tahanensis* Hart.

It is sexed ♀, and has the bars on wing coverts rufous brown as in the ♀♀ of both subspecies of *Pt. melanotis*. It differs, however, from the ♀♀ of both forms in having the entire throat and chin rufous as in ♂ *M. tahanensis*, whereas the ♀♀ of both races have only the sides of the throat and chin rufous ; the band below the ear coverts is brownish yellow, not olive-yellow or clear yellow as in the two other races respectively. The outermost pair of rectrices are pure white as in *M. melanotis*, whereas in *M. tahanensis* the basal third is smoky grey.

1 ♀ ?, Shweli-Salwin Divide, December 1919 ; 1 ♀ ?, Tengyueh District, 1919.

138. **Pteruthius aeralatus ricketti** O. Grant.

Pteruthius ricketti Ogilvie Grant, *Bull. B.O.C.* xiv. p. 92 (1904) (S. China, etc.).

Both Ingram and Bangs record *Pt. aeralatus aeralatus* from Yunnan. The former only quoted Anderson and had no specimens to compare, but Outram Bangs had a ♂, and therefore cannot have compared it with true *aeralatus*.

3 ♂♂, Yangtze Valley, 9,000 ft., September 1918 ; 1 ♂, Shweli-Salwin Divide, 5,000 ft., December 1919, mixed forest and pine forest. (Iris black ; bill purplish black ; legs and feet light brown.)

139. **Suya crinigera yunnanensis** Har.

Suya crinigera yunnanensis Harington, *Bull. B.O.C.* xxxi. p. 110 (1913) (Yunnan).

The three fully localised specimens sent by Forrest are in such awful condition that nothing can be done with them as regards determining the status of the so-called seasonal forms. In *C. crinigera* it is said that the winter plumage is above fulvous brown with black streaks ; while the summer plumage is black-brown, with only slightly paler edges to the feathers. Now the three birds here

enumerated consist of two birds in striped plumage and one in the almost unstriped dark plumage. One in striped plumage is dated May, second one September, while the unstriped bird is dated June.

1 ♀ (marked ♂), Tali Valley, 6,500 ft., May 1918; 1 ♀ (marked ♂), Lichiang Range, September 1918; 1 ♂, Tengyueh, June 1919. (Iris brown; bill dark brown above; legs and feet pale brown (birds in striped plumage.) 5, Tengyueh District.

The five birds without labels from the Tengyueh District are in much better plumage, and all agree in being unstriped.

140. **Suya superciliaris** Anderson.

Suya superciliaris Anderson, *Zool. Res. Two Exp. Western Yunnan*, p. 642. pl. li. f. 1 (1878) (Momien).

2 ♂♂, Tengyueh, June 1919.

141. **Yuhina gularis griseotincta** subsp. nov.

Differs from *Y. g. yangpiensis* Sharpe in the crown of head being greyer, less brown in the back, and rump being darker, more greyish, less reddish olive, and in the throat and upper breast being paler, less rufous.

1 ♂, 1 ♀, Shweli-Salwin Divide, 10,000—11,000 ft., June 1919, thickets. (Iris and bill dark brown; legs and feet pale brown.) 2 ♂♂, 1 ♀, Tengyueh District, 1919. Type ♂, Shweli-Salwin Divide.

142. **Yuhina flavicollis rouxi** (Oust.).

Ixulus rouxi Oustalet, *Bull. Mus. d'Hist. Nat. Paris*, vol. ii. p. 186 (1896) (Ly-Sien-Kiang, Yunnan).

4 ♂♂, Shweli-Salwin Divide, 9,000 ft., June 1919, dry thickets. (Iris and bill dark brown; legs and feet pale brown.) 2 ♂♂, Tengyueh District, 1919.

One of the last 2 ♂♂ is in very fresh plumage and the breast is tinged somewhat with yellow. When a good series of fresh-plumaged examples from Yunnan, Burmah, and Assam are compared, it will probably turn out that *f. rouxi* and *f. harterti* are the same.

143. **Yuhina diademata ampelina** (Ripp.).

Yuhina ampelina Rippon, *Bull. B.O.C.* xi. p. 12 (1900) (Warar Busu, 6,000 ft., Bhamo).

1 ♀ juv., Tengyueh, August 1919; 5 ♂♂, 9 ♀♀ (3 marked ♂), Lichiang Range, 9,000—12,000 ft., pine forests, May 1918. (Iris black-brown; bill, legs, and feet yellowish brown.) 2 ♂♂, Tengyueh District, 1919.

Ingram records *diademata diademata* as reported by Oustalet from Tsekou and by Wingate from East Yunnan, but these are all, I am certain, *ampelina*.

144. **Yuhina occipitalis obscurior** subsp. nov.

Differs from *o. occipitalis* in being darker, more ashy, above; feathers of crown purer ash grey, not brownish; back and rump darker and more olive; hind neck greyer, less rufous; tail much darker, more blackish; below the breast is more vinous, less cinnamon.

The sexing was also not correct in this species.

10 ♂♂, 6 ♀♀, Lichiang Range, 11,000—12,000 ft., May—July 1918; 3 ♀♀, Tengyueh District, 1919, pine forests. (Iris dark brown; bill reddish brown; legs and feet pale brown.) (Wing, ♂♂ 64–67 mm.; ♀♀ 61–63 mm.) Type ♂, Lichiang.

145. **Cisticola cisticola tintinnabulans** (Swinh.).

Calamanthella tintinnabulans Swinhoe, *Journ. As. Soc. N. China Branch*, ii. (1859) (Amoy, etc.).

1 ♂, Tali Valley, 6,500 ft., May 1918; 1 ♂, no data; 1 ♀, Albino Hills round Tengyueh, 6,000 ft., June 1919, cornfields and scrub. (Iris dark brown; bill black-brown; legs and feet pale brown.) 1 adult, 2 young, Tengyueh District.

146. **Alcippe nipalensis yunnanensis** Har.

Alcippe fratercula yunnanensis Harington, *Bull. B.O.C.* xxxiii. p. 63 (1913) (Gyi-dzin-shán, Yunnan).

These birds are more rufous on the breast than Colonel Rippon's Talifu specimens, but in *n. fratercula* we find light- and dark-breasted birds also. The large size at once separates it from the latter.

3 ♂♂, hills west of Tengyueh, 6,000 ft., April 1919; 1 ♂, Shweli-Salwin Divide, 9,000 ft., June 1919; 1, Lichiang Range, 1918, thickets by streams. (Iris reddish brown; bill blackish grey; legs and feet grey-brown.)

Bangs and Phillips enumerate eleven specimens from Mengtze under the name of *A. nipalensis hueti* (Dav.), but the probability is that they are really *A. n. yunnanensis*.

147. **Franklinia gracilis** (Frankl.).

Prinia gracilis Franklin, *Proc. Comm. Sc. and Corr. Zool. Soc. Lond.* p. 119 (1831) (Valley of Ganges, etc.).

1 ♂, Lichiang Range, 1918; 1 ♂, 1 ♀, Tengyueh Valley, 5,300 ft., August 1919. (Iris pale orange; bill black-brown; legs and feet brown.)

In the *Catalogue of Birds* Dr. Sharpe unites *Franklinia* with *Cisticola*. In the *Handlist*, however, he follows Oates (cf. *Faun. Brit. Ind. Birds*, vol. i. pp. 370, 371), and keeps the two genera separate.

Oates's characters are as follows:

Cisticola.—Bill pointed; first primary less than half the length of second; wing longer, more pointed.

Franklinia.—Bill blunt; first primary more than half the length of the second; wing shorter, more rounded.

I much doubt, if all the numerous African *Cisticolas* were compared, whether these characters would hold good; but this examination would occupy a considerable time, and would delay this article much too long.

Franklinia and *Cisticola* have twelve tail feathers, whereas *Prinia* has only ten.

148. **Prinia inornata exter** Thay. and Bangs.

Prinia inornata exter Thayer and Bangs, *Mem. Mus. Comp. Zool.* xl. p. 182. pl. v. ff. 4–5 (1912) (W. Szechuan).

1 ♂, 2 ♀♀, Lichiang Range, 1918; 3 ♂♂, 3 ♀♀, 3 juv., hills around and Valley of Tengyueh, 5,000—6,000 ft., March—October 1919, thickets. (Iris brown; bill greyish black-brown; legs and feet brown.) 7 ?, Tengyueh District.

Some of these specimens do not appear to be darker than *extensicaudata*, although Bangs and Phillips refer all their Mengtze series to *in. exter.* Thay. and Bangs.

149. **Megalurus palustris** Horsf.

Megalurus palustris Horsfield, *Trans. Linn. Soc. Lond.* xiii. p. 159 (1822).

1 ♀, Tengyueh Plain, 5,400 ft., June 1919, ricefields. (Iris dark brown; bill black-brown, under mandible lead grey; legs and feet pale brown.)

150. **Phyllergates coronatus** (Jerd. and Blyth).

Orthotomus coronatus Jerdon and Blyth, *P.Z.S. Lond.* p. 200 (1861) (Darjeeling).

1 ♂, Tengyueh Valley, 5,500 ft., October 1919, thickets. (Iris dark brown; bill brown, lower mandible pale; legs and feet light brown.)

151. **Phragamaticola aëdon** (Pall.).

Muscicapa aëdon Pallas, *Reise Prov. Russ. Reich.* iii. p. 695 (1776) (Dauria).

2 ♂♂, Tengyueh, 5,500 ft., May 1919, thickets. (Iris black-brown; bill dark brown, pale yellowish on under mandible; legs and feet pale brown.) 1 ♂, Tengyueh District, 1919.

152. **Lusciniola thoracica** (Blyth).

Dumeticola thoracica Blyth, *Journ. As. Soc. Bengal*, xiv. p. 584 (1845) (Nepal).

2 ♂♂, 2 ♀♀, Lichiang Range, 11,000 ft., June—July 1918, pine forest. (Iris dark brown; bill black-brown; legs and feet light brown.)

153. **Horeites flavolivacea intricatus** Hart.

Horeites flavolivacea intricatus Hartert, *Vög. Palaearct. Fauna*, i. p. 533 (1909) (Taipaishan).

1 ♀, Tengyueh District.

154. **Horeites acanthizoides acanthizoides** (Verr.).

Abrornis acanthizoides Verreaux, *Nouv. Arch. Mus. Paris*, vi., *Bull.* p. 37 (1871) (terr. typ. W. Szechuan).

1 ♀, Tengyueh District.

155. **Horeites brunneifrons** (Hodgs.).

Orthotomus (*Prinia*) *brunneifrons* Hodgson, *P.Z.S. London.*

2 ♂♂, 3 ♀♀, 1 ♂ juv., Lichiang Range, 13,000 ft., October 1918, pine forests; 1 ♂, 1 ♀ (marked ♂), Shweli-Salwin Divide, 7,000—8,000 ft., June 1919. (Iris and bill dark brown; legs and feet light olive.)

156. **Horeites major** Moore.

Horeites major Moore, *P.Z.S. Lond.* p. 105 (1854) (Nepal).

1 ♂, Lichiang Range, 13,000 ft., August 1918; 1 ♂, Shweli-Salwin Divide, 7,000—8,000 ft., June 1919, thickets. (Iris brown; bill dark brown; legs and feet pale olive.)

157. **Phylloscopus armandii** (Milne-Edw.).

Abrornis armandii Milne-Edwards, *Nouv. Arch. Mus. Bull.* i. p. 22. pl. 2. f. 1 (1865) (N. China).

Wing, ♂ 67 mm. ; ♀ 56 mm.

1 ♂, Lichiang Range, 11,000 ft., May 1918 ; 1 ♀ (marked ♂ ?), Chien Chuan Valley, 7,000 ft., May 1918, thickets. (Iris brown ; bill, legs, and feet dull brown.)

158. **Phylloscopus subaffinis** (Grant).

Oreopneuste subaffinis Grant, *Bull. B.O.C.* x. p. 37 (1900) (Pu-an-ting, S.W. Kweichu).

5 ♂♂, 6 ♀♀, Lichiang Range, 6,000 ft., July—November 1918, thickets on hills. (Iris, bill, legs, and feet dark brown.)

159. **Phylloscopus fuscatus** (Blyth).

Phyllopneuste fuscata Blyth, *Journ. As. Soc. Bengal*, xi. p. 113 (1842) (Calcutta).

The wings are of very variable size, ♂♂ 53–58, ♀♀ 48–50 fide Hartert. In the five before me the variation is 55, 56, 58, 61, 65 mm., so with a much larger series it may be possible to separate the Yunnan race as a larger subspecies.

2 ♂♂ (1 marked ♀ err. !), Yangtze Valley, 8,000—9,000 ft., September 1918 ; 1 ♂, Tali Valley, 6,500 ft., May 1918 ; 1 ♂, Lichiang Range, October 1918 ; 1 ♂ (♀ err.), hills round Tengyueh, 6,000 ft., November 1919, thickets on hills. (Iris brown ; bill brown, yellow on basal two-thirds of lower mandible ; legs and feet olive-green.)

160. **Phylloscopus maculipennis debilis** (Thay. and Bangs).

Reguloides maculipennis debilis Thayer and Bangs, *Mem. Mus. Comp. Zool. Harvard*, vol. xl. no. 4. p. 180 (1912) (Kiating, W. Szechuan).

The two specimens sent by Forrest agree with *Ph. m. debilis* in the colour of the head, but the rest of the description appears inapplicable as regards *m. maculipennis*, but nothing definite can be said with only two specimens to compare.

1 ♂, Shweli-Salwin Divide, 10,000 ft., November 1919, mixed forest. (Iris brown ; bill dark brown ; legs and feet olive.) 1 ♀, Tengyueh District.

161. **Phylloscopus proregulus forresti** subsp. nov.

Differs from *p. proregulus* and *p. newtoni* in the much darker, less brownish-olive colour above ; more sulphur-yellow rump ; black, **not** pale, basal two-thirds of under mandible, and the darker and much duller superciliary line and bands on the head. The length of the wings appears to be smaller, but this may be due to sex.

Length of wings of eight specimens, 50, 52½, 52, 53, 54, 56, 53, 48 mm. (Type No. 2 ♀ 48 mm.)

The three specimens with data are all sexed ♀, but only the type is correct ; the other 2 are ♂♂. Only 2 out of the 8 are ♀♀.

6 ♂♂, 2 ♀♀, Lichiang Range, 9,000—11,000 ft., pine forests, May 1918. (Iris brown ; bill black-brown ; legs and feet olive-green.)

162. **Phylloscopus occipitalis coronatus** (Temm. and Schleg.).

Ficedula coronata Temminck and Schlegel in *Siebold's Fauna Japonica Aves*, p. 48. pl. 18 (1847) (Japan).

1, Lichiang Range.

163. **Phylloscopus borealis borealis** (Blas.).

Phyllopneuste borealis Blasius, *Naumannia*, p. 313 (1858) (Sea of Okhotsk).

Of the two marked ♂ one has wing 61, the other 69 ! ! ! The latter only is correct.

1 ♂, 4 ♀♀, Lichiang Range, 9,000 ft., May 1918. (Iris dark brown; bill ♂ dark olive, ♀ under mandible pale olive; legs and feet dark olive.)

164. **Phylloscopus davisoni** (Oates).

Acanthopneuste davisoni Oates, *Faun. Brit. Ind., Birds*, vol. i. p. 420. no. 430 (1889) (Mount Muleyit, Tenasserim).

Oates goes minutely into the question of the identity of Blyth's *Reguloides viridipennis*, and proves to his own satisfaction that it was the same as *trochiloides* Sund. As he bases his proof apparently almost entirely on Brook's examination and report on Blyth's type, it would be necessary to re-examine this to be absolutely certain; but meanwhile one must accept Oates's names provisionally for the bird with the whole inner web of the outer pair of tail feathers white.

1 ♀, Shweli-Salwin Divide, 7,000 ft., December 1919, mixed forest. (Iris brown; bill brown; lower mandible orange; legs and feet olive.) 1 ? Tengyueh District.

165. **Cryptolopha burkii tephrocephala** (Anders.)

Culicipeta tephrocephalus Anderson, *P.Z.S. London*, p. 213 (1871) (Bhamo).

The series is all wrongly sexed. I have sexed by measurement. ♂♂ 55–58 mm.; ♀♀ 52–54 mm.

3 ♂♂, 5 ♀♀, Lichiang Range, 9,000—12,000 ft., thickets, May—July 1918; ? moulting, Yangtze Valley, 9,000 ft., September 1918. (Iris brown; bill dark brown, under mandible yellow-orange; legs and feet pale brown.) 1 ♂, 1 ♀, Tengyueh District.

166. **Cryptolopha poliogenys** (Blyth).

Culicipeta poliogenys Blyth, *Journ. As. Soc. Bengal*, xvi. p. 441 (1847) (Darjeeling).

3 ♂♂, Shweli-Salwin Divide, 8,000 ft., December 1919, thickets. (Iris brown; bill black-brown, under mandible brownish yellow; legs and feet olive-brown.

167. **Cryptolopha castaneiceps castaneiceps** (Gray).

Abrornis castaneoceps Gray, *Cat. Mamm., etc., Nepal*, p. 66. et App. p. 152 (1846) (Nepal).

1 ♂, Shweli-Salwin Divide, 8,000 ft., thickets, December 1919. (Iris brown; bill dark brown, lower mandible pale brown; legs and feet olive.)

168. **Culicicapa ceylonensis** (Swains.).

Platyrhynchus ceylonensis Swainson, *Zool. Illustr.* ser. i. pl. 13 and text (1820–1) (Ceylon).

1 marked ♂ is a ♀, but 2 ♀♀, 2 ♂♂, are correctly sexed (according to size).

2 ♀♀, Lichiang Range, September 1918; 1 ♂, 1 ♀, Yangtze Valley, 8,000—10,000 ft., September 1918, thickets. (Iris brown; bill black-brown; legs and feet dark olive.) 1 ♂, 1 ♀, Shweli-Salwin Divide, 10,000 ft., May—June 1919; 1 ♂, 1 ♀, Tengyueh District, 1919.

169. **Chelidorynx hypoxantha** (Blyth).

Rhipidura hypoxantha Blyth, *Journ. As. Soc. Bengal*, xii. p. 935 (1843) (Darjeeling).

9 all marked ♂, but 2 evidently ♀♀, Lichiang Range, 10,000—12,000 ft., June—October 1918; 3 ♂♂, Shweli-Salwin Divide, 8,000 ft., May and December 1919. (Iris dark brown; bill black, lower mandible yellowish brown; legs and feet dark olive.) 1 ♂, Tengyueh District, 1919.

170. **Muscicapa melanops melanops** Vig.

Muscicapa melanops Vigors, *Proc. Comm. Zool. Soc. Lond.* p. 171 (1831) (Himalayas).

2 ♂♂, 1 ♀, Lichiang Range, 8,500—10,000 ft., May—July 1918, open country and pine forests; 1 ♀, Yangtze Valley, September 1918; 2 ♀♀, T'ong Shán, 9,000—10,000 ft., September 1918. (Iris dark brown; bill, legs, and feet black.)

3 ♂♂, 2 ♀♀, Tengyueh Valley, 5,300—5,400 ft., April—May 1919, thickets. (Iris black; bill, legs, and feet black.) 1 ♂, 1 ♀, Shweli-Salwin Divide, June 1919.

The ♂♂ vary in size from 83–89 mm.

171. **Muscicapa leucomelanura cerviniventris** (Sharpe).

Digenea cerviniventris Sharpe, *Cat. Birds Brit. Mus.* iv. p. 460. no. 2 (1879) (Manipur Hills).

The adult ♂♂ appear to have a darker and clearer buff on the breast than our Burmese, Assam, and Szechuan birds.

3 ♂♂ ad., 2 ♀♀ ad. (1 marked ♂), 1 ♂ imm., 1 juv., Lichiang Range, 11,000—14,000 ft., pine forests, July—August 1918; 1 juv., Shweli Valley, 6,000 ft., September 1919. (Iris ruddy brown; bill black; legs and feet dark brown-black.)

172. **Muscicapa hodgsonii** (Verr.).

Siphia hodgsonii Verreaux, *Nouv. Arch. Mus. Paris*, vi., *Bull.* p. 34 (1870) (Moupin).

4 ♂♂, ad. 3 ♀♀ ad. (1 ♂ marked ♀, 1 ♀ marked ♂), Lichiang Range, 12,000—13,000 ft., pine forests, June—October 1918. (Iris, bill, legs, and feet black.) 1 ♂ ad., 2 ♀♀ ad., Tengyueh District, 1919.

173. **Muscicapa parva albicilla** (Pall.).

Muscicapa albicilla Pallas, *Zoogr. Rosso-Asiat.* i. p. 462 (1827) (Dauria).

1 ♂ juv., Lichiang Range, 12,000 ft., October 1918; 1 ♂, 1 ♀, Yangtze Valley, 7,000—8,000 ft., September 1918; 1 ♂, T'ong Shán, 10,000 ft., August 1918; 1 ♂, hills N.W. of Tengyueh, 6,000 ft., October 1919, thickets. (Iris ruddy to dark brown; bill, legs, and feet black.) 3 ♀♀, Tengyueh District, 1919.

174. **Muscicapa strophiata** (Hodgs.).

Siphia strophiata Hodgson, *Indian Review*, i. p. 651 (1837) (Nepal).

The two ♂♂ in unworn plumage have a wing measurement of 76 and 77 mm., while Indian and other Chinese birds average 67–73, but two go fully 75 and 77, so I cannot separate the Yunnan bird for the present.

3 ♂♂ ad., 2 ♀♀ ad., 1 ♂ juv., 1 ♀ very young, Lichiang Range, 9,000—13,000 ft., mixed forest, July—October 1918. (Iris black-brown ; bill black ; legs and feet dark brown.) 2 ♂♂ ad., Tengyueh District, 1919 (1 sexed ♀).

175. **Muscicapa sibirica fuliginosa** (Hodgs.).

Hemichelidon fuliginosa Hodgson, *P.Z.S. London*, p. 32 (1845) (Nepal).

The series sent by Forrest seem to be less brownish, more blackish above, than the series at Tring, but I consider they are in more freshly-moulted plumage.

4 ♂♂, 5 ♀♀ ad., 3 ♂♂ very young, Lichiang Range, 10,000—12,000 ft., pine forests, May—September 1918. (Iris dark brown ; bill dull black ; legs and feet black.) 2 ♀♀ ad., 4 ♂♂ juv., Tengyueh District, 1919.

176. **Muscicapa blythi** nom. nov.

Muscicapula melanoleuca Blyth, *Journ. As. Soc. Bengal*, xii. p. 940 (1842) (Nepal, Darjeeling).

As I consider Dr. Hartert's treatment of the flycatchers to be the best to date, I place this species in the genus *Muscicapa*, and in consequence the name of *melanoleuca* is preoccupied. The names *poonensis* Sykes and *pusilla* Blyth refer to ♀ birds from the Deccan and Central India, and are therefore clearly inapplicable, our bird being unknown there, and moreover the descriptions of these two birds do not agree with either race of *melanoleuca* ; they might in fact refer to the ♀♀ of any half a dozen birds. I therefore rename the species after its first describer.

2 ♂♂ ad., Shweli-Salwin Divide, 9,000 ft., pine forests, May 1919. (Iris black-blue ; bill, legs, and feet black.) 1 ♂ ad., 1 ♂ jun., 1 juv., Tengyueh District, 1919.

177. **Muscicapa rubeculoides dialilaema** (Salvad.).

Cyornis dialilaema Salvadori, *Ann. Mus. Genov.* (2), vii. p. 387 (1889) (Taho, Karen Hills).

The rufous colour running up into the chin is the distinctive character of this race.

3 ♂♂ ad., Yangtze Valley, 8,000 ft., thickets by streams, September 1918. (Iris orange-brown ; bill black ; legs and feet greyish black.)

178. **Muscicapa tickelliae whitei** (Har.).

Cyornis whitei Harington, *Ann. Mag. Nat. Hist.* (8), ii. p. 245 (1908) (Watau, Bhamo District).

1 ♂, 1 ♀, Tengyueh Valley, 5,400 ft., thickets, April 1919. (Iris black-brown ; bill black ; legs and feet grey-brown.) 1 ♂, 1 ♀, Tengyueh District, 1919.

Harington's name of *whitei* dates from 1908, whereas Thayer and Bangs's name of *glaucicomans* dates from 1909.

179. **Niltava sundara** Hodgs.

Niltava sundara Hodgson, *Indian Review*, i. p. 650 (1837) (Nepal).

Outram Bangs has separated the Yunnan form as *sundara denotata*, but the specimens I have before me from Forrest cannot be separated from Sikkim and Assam birds; the two ♂♂, however, are very large, the wing measure being 86 mm.

2 ♂♂, 2 ♀♀, 1 ♂, 4 ♀♀ juv., Lichiang Range, 10,000—11,000 ft., thickets by streams, June—September 1918; 1 ♀, Shweli Valley, 5,000—6,000 ft., June 1919. (Iris black-brown; bill, legs, and feet black.) 1 ♂ ad., 1 ♂ juv., Tengyueh District, 1919.

180. **Niltava grandis** (Blyth).

Chaitaris grandis Blyth, *Journ. As. Soc. Bengal*, xi. p. 189 (1842) (Darjeeling).

1 ♂ juv., Tengyueh District, 1919.

This appears to be the first record for Yunnan.

181. **Rhipidura albicollis albicollis** (Vieill.).

Platyrhynchus albicollis Vieillot, *Nouv. Dict. d'Hist. Nat.* xxvii. p. 13 (1818) (Bengal).

This agrees with the Hainan series at Tring, and does not appear to differ in any way from typical Indian birds.

2 ♂♂, 1 ♀, Yangtze Valley, 7,000—8,000 ft., thickets by streams, September 1918; 4 ♂♂, 1 ♀ (marked ♂), Tengyueh Valley, 5,500 ft., March—September 1919. (Iris black-brown; bill, legs, and feet black.)

182. **Pericrocotus brevirostris ethologus** Bangs and Phill.

Muscipeta brevirostris ethologus Bangs and Phillips, *Bull. Mus. Comp. Zool.* lviii. p. 282 (1914) (Hnenshan, Hupeh).

10 ♂♂ ad., 2 ♂♂ juv. (one marked ♀), 6 ♀♀, 2 nestling plumage, Lichiang Range, 9,000—12,000 ft., May—August 1918. (Iris dark brown; bill, legs, and feet black.)

At Tring we have 2 ♂♂, 1 ♀, of *brevirostris ethologus* from Mengtze, and 1 ♀ agreeing exactly with Hume's characters of ♀ *neglectus*, and also agreeing with specimens of what I take to be *neglectus* from Chin Hills and N. Cochar. Should further series prove *neglectus* to occur alongside the *brevirostris* forms in Assam and Yunnan it will have to be restored to its position as a good species and not treated as a subspecies of *brevirostris*. The shades of red and scarlet and orange in all the species of *Pericrocotus* are very variable, and I am not at all convinced that the colour differences cited by Messrs. Bangs and Phillips as distinguishing the Kulu race, the Himalayan-Burmese race, and the Chinese race are constant, but until fresh and large series can be compared I keep them separate.

183. **Pericrocotus speciosus speciosus** (Lath.).

Turdus speciosus Latham, *Ind. Orn.* i. p. 363 (1790) (Himalayas).

1 ♂ ad., 1 ♂ jun., 1 ♀ ad., Tengyueh, August—September 1919.

184. **Pericrocotus roseus** (Vieill.).

Muscicapa rosea Vieillot, *N. Dict. d'Hist. Nat.* xxi. p. 486 (1818) (Bengal).

1 ♂, 1 ♀ ad., Tengyueh, March—April 1919; 1 ♀, Lichiang Range, 1918; 2 ♀♀, Yangtze Valley, September 1918.

185. **Graucalus macei** Less.

Graucalus macei Lesson, *Traité d'Orn.* p. 349 (1831) (Bengal) (♀).

1 ♂ juv., Tengyueh District, 1919.

186. **Campephaga melanoptera** (Rüpp).

Ceblepyris melanoptera Rüppell, *Mus. Senckenb.* iii. p. 25. pl. ii. f. 1 (1845) (probably New Holland).

1 ♂, Shweli Valley, 7,000 ft., September 1919. (Iris red; bill, legs, and feet black.) 1 ♂, Tengyueh District, 1919.)

187. **Microscelis leucocephalus** (Gm.).

Turdus leucocephalus Gmelin, *Syst. Nat.* i. p. 826 (829 rect.) no. 104 (1789) (China).

1 ♂ fere ad., 1 ♀ juv., T'ong Shán, 10,000 ft., August—September 1918; 1 ♂ fere ad., Shweli-Salwin Divide, 9,000 ft., November 1919, mixed forest in ravines. (Iris brown; bill flame-orange; legs and feet coral-red.)

188. **Microscelis concolor** (Blyth).

Hypsipetes concolor Blyth, *Journ. As. Soc. Bengal*, xviii. p. 816. no. 1,248 (1850) (Tenasserim).

1 ♀ ad., Chien-Chuan Valley, 7,000 ft., May 1918; 1 ♀ juv., Lichiang Range, 10,000 ft., September 1918; 1 ♀ juv., Shweli-Salwin Divide, 7,000 ft., July 1919. (Iris ruddy brown-red; bill dull brown-red; legs and feet brown-black-red.)

189. **Spizixos canifrons** Blyth.

Spizixos canifrons Blyth, *Journ. As. Soc. Bengal*, xiv. p. 571 (1845) (Cherra Punji).

When Ingram wrote his paper on "The Birds of Yunnan" (*Nov. Zool.*, xix. 1912) he records 2 ♂♂, 1 ♀ from Mengtze, and suggested quite rightly that they were immature. Bangs and Phillips in recording six specimens from Mengtze and Loukouchai describe them as a new local race under the name of *Spizixus canifrons ingrami*. They give as the two main differences: throat grey, **not** brown; and underparts dull olive-green, **not** greenish yellow. Forrest has sent seven fully adult specimens, which I have compared at Tring with 8 typical birds, (2 sex ?), Chin Hills, Venning coll.; 3 ♂♂, 1 ♀, Sinlum, Bhamo, Harington coll.; 1 ♂, Upper Burma, Bingham coll.; and 1 ♀, N. Cachar, Stuart Baker coll. The Yunnan series agrees absolutely with the eight at Tring, two having greenish-yellow undersides, as bright as any of the above typical birds, whereas some of the latter have olive-green undersides as dull as any Yunnan bird. The throat is grey or brownish grey in all the fifteen adult specimens, **not** chocolate brown as stated by Sharpe. The undersides of the three immature Mengtze birds are much the brightest yellow of the whole eighteen

specimens before me. In view of these facts I am obliged to sink *S. c. ingrami* as a synonym of *S. canifrons*.

5 ♂♂ (1 marked ♀), 1 ♀, Lichiang Range, 8,000—9,000 ft., May 1918, thickets and scrub ; 1 ♀, Shweli-Salwin Divide, June 1919. (Iris dark brown ; bill dull ivory colour ; legs and feet grey-brown.)

190. **Alcurus striatus** (Blyth.)

Trichophorus striatus Blyth, *Journ. As. Soc. Bengal*, xi. p. 184 (1842) (Nepal).

Bangs and Phillips describe two specimens, ♂ ♀, from Loukouchai (*Bull. Mus. Comp. Zool.* lviii. p. 284) as *A. striatus paulus*, saying that Oates had already drawn attention to the small size of Burmese and Tenasserim birds with which the Yunnan specimens agreed, while the Sikkim were always much larger. I have measured our Tring series of 12 ♂♂ and 4 ♀♀, and find that 6 Sikkim ♂♂ range from 98 to 107 mm. and 6 ♂♂ from Assam and Burma measure from 97 to 106 mm. The 2 ♂♂ sent by Forrest show a wing measurement of 109 mm., thus exceeding by 2 mm. all the Sikkim ♂♂ at Tring. This I think proves conclusively that Yunnan examples are typical *striatus*, and the type of *s. paulus* being from Yunnan the name cannot stand.

2 ♂♂, Shweli-Salwin Divide, 8,000—9,000 ft., July and December 1919, thickets. (Iris pale yellow ; bill black-brown ; legs and feet grey-black.)

191. **Iole maclellandi similis** subsp. nov.

The birds allied to *maclellandi* are a very puzzling group. The latest treatment of them has been to divide them into three species—*maclellandi* Horsf., *tickelli* Blyth, and *holti* Swinh. ; the latter two with several subspecies. I have carefully compared the six specimens sent by Forrest with the six described forms, and, while they prove to belong to a new form nearest to *binghami* Hart, this comparison has led me to the conclusion that all the seven forms are subspecies of one species, *maclellandi*. The amount of green on the back in *maclellandi* and the three forms hitherto treated as subspecies of *tickelli* is not to my mind a specific character, as all the other characters are found in various modified degrees in all the seven races. I therefore consider these birds must be classified as follows :

Iole maclellandi maclellandi (Hodgs.). Assam, Himalayas.
Iole maclellandi holti (Swinh.). Foochow, China.
Iole maclellandi similis Rothsch. Yunnan.
Iole maclellandi binghami Hart. S. Shan States, Upper Burma.
Iole maclellandi tickelli (Blyth). Karen Hills, Moulyit.
Iole maclellandi peracensis Hart and Butt. Malay States.
Iole maclellandi griseiventer (Robins. and Kloss). S. Annam.

I. m. similis differs from *m. binghami* in its much darker breast, the feathers of which consequently show the white centres much plainer ; the back and head are much darker and the coverts from bend of wing more extended brown. From *m. holti* it differs in the abdomen being paler and the undertail coverts yellower.

3 ♂♂ ad. (1 marked ♀), 1 ♂ jun., 2 ♀♀ (1 marked ♂), Shweli-Salwin Divide, 8,000 ft., May and August, 1919. (Iris light red-pale orange ; bill black-brown ; legs and feet brown.) 2 ♂♂, 1 ♀, Tengyueh District, 1919. Type Shweli-Salwin Divide.

192. **Pycnonotus xanthorhous** And.

Pycnonotus xanthorhous Anderson, *Proc. As. Soc. Bengal*, p. 265 (1869) (Manwyne, Yunnan).

6 ♀♀, Lichiang Range, 9,000 ft., May—August 1918, thickets by streams. (Iris dark brown ; bill, legs, and feet black.)

193. **Molpastes burmanicus** (Sharpe).

Pycnonotus burmanicus Sharpe, *Cat. B. Brit. Mus.* vi. p. 125. no. 2 (1881) (Burmese countries).

4 ♂♂, 2 ♀♀ (1 marked ♂), Tengyueh Valley, 5,500 ft., March—August 1919, thickets. (Iris dark brown ; bill, legs, and feet black.)

194. **Chloropsis hardwickii** Jard. and Selby.

Chloropsis hardwickii Jardine and Selby, *Ill. Orn.* ii. *addenda*, p. 1 (1830) (Nepal).

1 ♂, Lichiang Range, 1918 ; 1 ♂, 1 ♀. Shweli-Salwin Divide, December 1919, mixed forests. (Iris brown ; bill, legs, and feet black.)

195. **Hemipus picatus capitalis** (McClell.).

Muscicapa ? capitalis McClelland, *P.Z.S. Lond.* p. 157. no. 24 (1839) (Assam).

1 ♀, Shweli Valley, 7,000 ft., August 1919. (Iris brown ; bill dark brown ; legs and feet black.)

196. **Lanius schach tephronotus** (Vig.).

Collurio tephronotus Vigors, *Proc. Comm. Sci. Corr. Zool. Soc. Lond.* pt. i. p. 43 (1831) (Himalayas).

2 ♂♂ (1 marked ♀), 1 ♂ juv. (marked ♀), 5 ♀♀ (4 marked ♂), Lichiang Range, thickets and pine forests, 9,000—10,000 ft., May—September 1918 ; 1 ♀ juv. (marked ♂), 2 ♂♂ juv. (marked ♀), hills round Tengyueh and Tengyueh Valley, 5,000—7,000 ft., March—October 1919. (Iris dark brown ; bill, legs, and feet black.)

197. **Lanius cristatus cristatus** Linn.

Lanius cristatus Linnaeus, *Syst. Nat.* ed. x. p. 93 (1758) (Bengal).

2 not sexed, Shweli Valley, September 1919.

198. **Lanius collurioides** Less.

Lanius collurioides Lesson in Belanger's *Voy. Ind. Or., Zoologie, Oiseaux*, p. 250 (1834) (Pegu).

Lesson's name has fourteen years' priority over Blyth's *Lanius hypoleucos*, and it can only have been because at the time of writing the eighth volume of the *Cat. Birds Brit. Mus.* there were no white-fronted, grey-headed examples in the British Museum that Gadow only described the normal phase of plumage and not Lesson's typical phase. The fact that the bird described by Blyth is

the normal and most numerous phase was evidently the reason that Sharpe in the *Handlist* accepted Blyth's and not Lesson's name.

Forrest sent two young birds marked ♂ and ♀, but it is impossible to say what the sexes are at such an age without expert anatomical knowledge.

1 juv. ?, hills round Tengyueh, 6,000—7,000 ft., August 1919; 1 juv. ?, Shweli-Salwin Divide, 6,000 ft., August 1919.

199. **Lanius nigriceps nigriceps** (Frankl.).

Collurio nigriceps Franklin, *Proc. Comm. Sc. Corr. Zool. Soc. Lond.* pt. i. p. 117. no. 36 (1831) (Ganges and Nerbudda).

1 ♂, 1 ♀, Tengyueh Valley, 5,500 ft., September—October 1919; 1 ♀, Lichiang Range, 1918; 1 ♂ juv., Shweli Valley, 6,000 ft., August 1919.

[The Genera **Cholornis, Paradoxornis,** and **Suthora.**

In his book *Die Vögel der paläarktischen Fauna,* vol. i. pp. 405, 406, Hartert goes rather fully into the three above genera, which he keeps separate. The most striking characters he quotes as distinguishing *Cholornis* and *Paradoxornis* are the abortive outer toe in *Cholornis* and the strongly flattened and enlarged bill of *Paradoxornis.* He then diagnoses *Suthora* as identical with *Cholornis,* but with fully developed outer toe. He then proceeds to point out that *Suthora unicolor* (Hodgs.) is the only large species of the genus *Suthora,* and that, barring the outer toe, is almost identical with *Cholornis paradoxa* Verr. Hartert quite failed to mention that although *S. unicolor* has a developed outer toe and claw, it forms a step towards the abortive toe of *Cholornis,* in so far that its toe is considerably smaller than the inner toe, and the claw (nail) is one-third the size, whereas the smaller *Suthora* and *Paradoxornis* have both toes and nails of about equal size. Now Hodgson, in 1843, when describing *unicolor,* made for it the genus *Heteromorpha,* which name is, however, preoccupied. For the genus splitter it remains to find a new name for Hodgson's genus *Heteromorpha,* but to my mind the degenerate outer toe of *unicolor* unites the genus *Cholornis* with *Paradoxornis* and *Suthora* into one genus. The large development of the bill in *Paradoxornis* as opposed to *Suthora* and *Cholornis* is bridged over by the smaller development in *P. heudei* than in *flavirostris* and *guttaticollis.* As *Paradoxornis* Gould (1836) has two years' priority over *Suthora* Hodgson (1838) I unite all the species of *Suthora, Paradoxornis, Heteromorpha* Hodgs., *Cholornis,* and *Chlenasicus* under the one generic name of *Paradoxornis,* with exception of "*Suthora davidiana,*" which belongs to the genus *Neosuthora.*]

200. **Paradoxornis fulvifrons cyanophrys** (Dav.).

Suthora cyanophrys Armand David, *Journ. trois. Voy. Chine,* i. p. 345 (1875) (Shensi merid.).

2 ♂♂, 2 ♀♀ (1 marked ♂), Shweli-Salwin Divide, 10,000—11,000 ft., May 1919, bamboo thickets; 1 ♂, Lichiang Range, 13,000—14,000 ft., July 1918. (Iris red (crimson); bill brown-black; under-mandible pink; legs and feet grey-brown.) 1 ♂, 1 ♀, Tengyueh District, 1919.

201. **Paradoxornis webbiana brunnea** (And.).

Suthora brunnea Anderson, *P.Z.S. Lond.* p. 211 (1871) (Momien, Yunnan).

1 ?, Lichiang Range, 1918; 1 ♂, Tali Valley, 6,500 ft., May 1918, scrub and thickets; 4 ♂♂, 1 ♀, Tengyueh Valley, 5,500 ft., March—June 1919. (Iris brown to dull red; bill, culmen blackish, rest of bill dull yellow-greyish pink; legs and feet dull grey.) 1, Tengyueh District, 1919.

Bangs and Phillips evidently did not compare their birds with *brunnea* or they would not have recorded them as typical *webbiana*, or else they may, as they note themselves, have been straggling northern migrants, though this is very unlikely, for the breeding race of the North-West Yunnan Mountains would more likely furnish the winter migrants at Mengtze and the neighbourhood.

202. **Paradoxornis unicolor saturatior** subsp. nov.

Differs from *u. unicolor* above in being considerably darker; head and nape deeper brown saturated with dark grey; back and rump darker and more olive-brown, not yellowish brown; rectrices duller, less rufous; cheeks and ear coverts much darker. Below it has throat and breast darker, more ashy grey; the abdomen, flanks, and crissum darker grey-brown, not yellowish.

3 ♂♂, 2 ♀♀, Shweli-Salwin Divide, 9,000 ft., mixed forests, July—September 1919. (Iris brown; bill horn yellow; legs and feet dark grey-brown.) Type ♂, July,

203. **Paradoxornis guttaticollis** A. Dav.

Paradoxornis guttaticollis Armand David, *Nouv. Arch. Mus. Paris*, vii., *Bull.* p. 14 (1871) (no definite locality, but certainly Western Szechuan).

Forrest sent 7 skins, 3 marked ♂♂ and 4 ♀♀; they are all worn and some in moult, so I cannot say if they are correctly sexed.

1 marked ♂, 3 marked ♀♀, T'ong Shán, 10,000 ft., August 1918, pine forests. (Iris reddish brown; bill lemon yellow; legs and feet dull green.) 1 marked ♂, Shweli-Salwin Divide, 8,000 ft., May 1919; 1 marked ♂, hills south of Tengyueh, August 1919; 1 marked ♀, Shweli Valley, 7,000 ft., August 1919.

204. **Regulus regulus yunnanensis** Ripp.

Regulus yunnanensis Rippon, *Bull. B.O.C.* xix. p. 19 (1906) (Yangtze River, W. Yunnan).

3 ♂♂, 1 ♀, Lichiang Range, 10,000 ft., pine forests, October 1918. (Iris brown; bill black-brown; legs and feet olive-brown.)

205. **Aegithaliscus bonvaloti** (Oust.).

Acredula bonvaloti Oustalet, *Ann. Sc. Nat. Zool.* (7), 12. p. 286. pl. 9. f. 1 (1891) (Ta-tsien-lu and Pendjama).

Forrest sent for him the very large series of 17 specimens, but with the exception of 4 they are in terribly abraded plumage, some almost unrecognisable.

10 ♂♂, 7 ♀♀, Lichiang Range, 7,000—14,000 ft., May—July 1918, pine forests. (Iris clear yellow; bill black; legs and feet deep brown.)

206. **Aegithaliscus erythrocephalus concinnus** (Gould).

Psaltria concinna Gould, *Birds of Asia*, ii. pl. 65 (1855) (China).

Rippon's *Ae. talifuensis* appears to me to be identical with the above, the darker band and flanks and the paler head being due to abrasion. Many of Forrest's birds and a number of others at Tring agree exactly with a paratype of Rippon's in the Tring Museum.

2 ♂♂, 1 ♀, T'ong Shán, 10,000 ft., September 1918; 2 ♂♂, Chien-Chuan Valley, 7,000—8,000 ft., May—June 1918; 2 ♂♂, Yangtze Valley, September 1918; 2 ♂♂, 1 ♀, 1 ?, Lichiang Range, 10,000—11,000 ft., June—September 1918; 1 ♂, Shweli-Salwin Divide, May 1919, pine forests. (Iris clear yellow; bill black; legs and feet brown.) 3 ♂♂, 2 ♀♀, 1 ?, Tengyueh District, 1919.

207. **Parus dichrous wellsi** Baker.

Parus dichrous wellsi Stuart Baker, *Bull. B.O.C.* xxxviii. p. 8 (1917) (Yangtze, W. Yunnan).

4 ♂♂, 2 ♀♀, Lichiang Range, 10,000—13,000 ft., pine forests, May—July 1918. (Iris bright crimson-scarlet; bill black; legs and feet dark grey.)

208. **Parus rufonuchalis beavani** (Jerd.).

Lophophanes beavani Jerdon, *Birds of India*, ii. p. 275 (1863) (Mount Tongloo, Sikkim).

6 ♂♂, 1 ♀, Lichiang Range, 10,000—13,000 ft., pine forests, May—August 1918. (Iris black-brown; bill, legs, and feet black.)

209. **Parus ater** subsp.?

Ingram identifies a much-worn specimen of Colonel Rippon's from Lichiang as *P. ater aemodius*. The two specimens from Lichiang sent by Forrest are so terribly worn that it is impossible to say if they belong to *ater aemodius* or *ater pekinensis*, but where the white and buff spots on the wing coverts are not abraded they are so much smaller that I am almost sure a series of fresh-plumaged birds will prove this to be a third unnamed Chinese race of *ater*.

1 ♂, 1 ♀, Lichiang Range, 11,000—13,000 ft., May—June 1918, pine forests. (Iris dark brown; bill black; legs and feet dark grey.)

210. **Parus major commixtus** Swinh.

Parus commixtus Swinhoe, *Ibis* (2), 4. p. 63 (1868) (Amoy).

2 ♂♂ ad., 1 ?, 2 juv., Lichiang Range, 10,000—12,000 ft., pine forests, June—July 1918. (Iris dark brown; bill, legs, and feet black.)

Uchida and Kuroda enumerate *P. major minor*, but evidently in error, as there are among *m. commixtus* examples which approach *m. minor* very closely.

211. **Parus monticolus insperatus** Swinh.

Parus insperatus Swinhoe, *Ibis* (2) 2. p. 308 (1866) (Formosa).

3 ♂♂, Lichiang Range, 9,000—12,000 ft., June—July 1918, pine and mixed forests. (Iris dark brown; bill, legs, and feet black.)

212. **Parus hypermelaenus dejeani** Oustalet.

Parus dejeani Oustalet, *Bull. Mus. Hist. Nat. Paris*, vol. iii. p. 209 (1897) (Ta-tsien-lu).

1 ♂, Lichiang Range, 10,000 ft., May 1918, pine forests. (Iris brown; bill, legs, and feet black.)

213. **Parus spilonotus** Blyth.

Parus spilonotus Blyth, *Cat. Bs. Mus. As. Soc.* p. 103 (1849) (Himalayas).

2 ♂♂, Shweli-Salwin Divide, 9,000 ft., May and July 1919, thickets. (Iris crimson; bill black; legs and feet blackish grey.)

214. **Sitta himalayensis** Jard. and Selby.

Sitta himalayensis Jardine and Selby, *Illust. Orn.* 3. pl. 144 (1835) (Himalayas).

1 ♂, Shweli-Salwin Divide, 9,000 ft., mixed forests, December 1919. (Iris purple; bill grey-brown; legs and feet dark brown.)

215. **Sitta yunnanensis** O.-Grant.

Sitta yunnanensis Ogilvie-Grant, *Bull. B.O.C.* x. p. xxxvii. (1900) (Wei-yuan, S. Yunnan).

10 ♂♂, 1 ♀, Lichiang Range, 9,000 ft., pine forests, May—August 1918. (Iris dark brown; bill greyish black; legs and feet greyish black.)

216. **Sitta europaea montium** La Touche.

Sitta montium La Touche, *Ibis*, p. 404 (1899) (Kuatun, N.W. Fokien).

4 ♂♂, Lichiang Range, 9,000—13,000 ft., pine forests, May—October 1918. (Iris dark brown; bill black, sides and under-mandible greyish; legs and feet black.) 1 ♂, 1 ♀, Tengyueh District, 1919.

217. **Tichodroma muraria** (Linn.).

Certhia muraria Linnaeus, *Syst. Nat.* edit. xii. i. p. 184 (1766) (South Europe).

1 ?, Lichiang Range, 1918.

218. **Certhia himalayana yunnanensis** Sharpe.

Certhia yunnanensis Sharpe, *Bull. B.O.C.* xiii. p. 11 (1902) (Shayang, W. Yunnan).

1 ?, Lichiang Range, 1918.

219. **Certhia familiaris khamensis** Bianchi.

Certhia khamensis Bianchi in Sharpe, *Handlist Birds*, vol. iv. 355–360 (1903) (Kham, Upper Mekong.)

1 ♂, 2 ♀♀ (marked ♂), Lichiang Range, 10,000 ft., October 1918, pine forests. (Iris dark brown; bill black, lower mandible grey; legs and feet olive-brown.)

220. **Certhia discolor discolor** Blyth.

Certhia discolor Blyth, *Journ. As. Soc. Bengal*, xiv. ii. p. 580 (1845) (Darjeeling).

1 ♀, Shweli-Salwin Divide, 10,000 ft., May 1919.

221. **Zosterops erythropleurus** Swinh.

Zosterops erythropleurus Swinhoe, *Ibis*, p. 294 (1863) (N. China).

9 ♂♂ (1 sexed ♀), 3 ♀♀, Lichiang Range, 10,000 ft., thickets by streams, October 1918. (Iris dark brown; bill dull pinkish (fleshy) brown; legs and feet dark olive-grey.)

222. **Zosterops palpebrosa simplex** Swinh.

Zosterops simplex Swinhoe, *Ibis*, p. 331 (1861) (Amoy).

Oustalet, besides some quite negligible characters, gives as the two most striking differences between his *Z. mussoti* and *Z. p. simplex* that the former is much smaller and has the green of the upper surface more golden. As regards size *simplex* varies from 51 to 62 mm., while Oustalet gives 52 mm., and the bird Forrest sent has a wing of 59 mm. This latter bird is dull green with only a slight golden tinge on the lower rump, but some *simplex* are quite as golden as *p. palpebrosa*. I therefore consider *mussoti* a synonym of *simplex*.

1 ?, Lichiang Range, 1918; 2, Tengyueh District, 1919.

223. **Dicaeum ignipectus ignipectus** (Blyth).

Myzanthe ignipectus Blyth, *Journ. As. Soc. Bengal*, xii. p. 983 (1843) (Nepal and Bhutan).

2 ♂♂, 1 ♀, Lichiang Range, 13,000 ft., June 1918; 1 ♂, Shweli-Salwin Divide, 10,000 ft., May 1919, pine forests. (Iris black-brown; bill, legs, and feet black.) 1 ♂, Tengyueh District.

224. **Dicaeum minullum olivaceum** Wald.

Dicaeum olivaceum Walden, *Ann. Mag. Nat. Hist.* (4), xv. p. 401 (1875) (Tonghoo and Karem Hills).

2 ♂♂, 1 ♀, Tengyueh Hills, 6,000—7,000 ft., pine and mixed forests, June—August 1919. (Iris and bill black-brown; legs and feet grey-black.) 2 ♂♂, 2 ?, Tengyueh District.

The bird sexed ♀ has a much larger bill than the 2 sexed ♂♂ and any of the 13 at Tring.

225. **Pachyglossa melanozantha** Blyth.

Pachyglossa melanozantha Blyth, *Journ. As. Soc. Bengal*, xii. p. 1010 (1843) (Nepal).

As in the case of *Dicaeum ignipectus* and so many others the real author is Blyth, who published them, taking the names from Hodgson's manuscript and citing Hodgson as author, though at that time, and for the most part even now, this manuscript was not published. This is the first record for China.

10 (all sexed ♂), Lichiang Range, 9,000—12,000 ft., May—August 1918, pine forests. (Iris ruddy brown; bill grey-black; legs and feet dull black.) 5 ♂♂, Tengyueh District.

226. **Aethopyga ignicauda** (Hodgs.).

Cinnyris ignicauda Hodgson, *Ind. Rev.* ii. p. 273 (1837) (Nepal).

1 ♂, Lichiang Range, 1918; 3 ♂♂, Shweli-Salwin Divide, 7,000—8,000 ft., thickets by streams, July 1919. (Iris, bill, legs, and feet black.)

Mr. E. C. Stuart Baker has described the birds from the Chin Hills as *Aethopyga ignicauda flavescens* (*Bull. B.O.C.* xi. p. 71. No. 2. (1921)). the chief difference being the much smaller amount of scarlet suffusion on the breast. Usually Yunnan birds agree with the forms from the Chin Hills rather than with Himalayan races, but the four ♂♂ of *Ae. ignicauda* here enumerated must be considered for the present to be typical *ignicauda ignicauda*, for they have even more scarlet suffusion than the majority of Himalayan examples. A large series from N.W. Yunnan and Eastern Thibet may subsequently prove this to be a third subspecies with increased scarlet suffusion.

227. **Aethopyga seheriae viridicauda** subsp. nov.

Similar to *s. andersoni* Oates, and with similar greyer less olive underside than *s. seheriae*, but tail green as in the latter.

5 ♂♂, hills round Tengyueh, 5,000—6,000 ft., open scrub, June 1919. (Iris black ; legs and feet black-brown ; bill brown.)

A specimen at Tring from Maymyo, Shan States, Colonel Harington leg., is identical with these.

228. **Aethopyga dabryii** (Verr.).

Nectarinia dabryii Verreaux, *Rev. and Mag. Zool.* p. 173. pl. 15 (1867) ("Nord de la Chine").

12 ♂♂ ad., 1 ♂ jun. 2 ♂♂ juv., 3 ♀♀, Lichiang Range, 9,000—12,000 ft., pine forests, May—August 1918. (Iris black-brown ; bill black ; legs and feet dark olive-green.) 1 ♂, Shweli-Salwin Divide, 10,000 ft., May 1919 ; 2 ♂♂ ad., 2 ♀♀, Tengyueh District.

229. **Aethopyga saturata** (Hodgs.).

Cinnyris saturatus Hodgson, *Ind. Rev.* ii. p. 273 (1837) (Nepal).

1 ♂. 2 ♀♀, Tengyueh District.

230. **Aethopyga nipalensis** (Hodgs.).

Cinnyris nipalensis Hodgson, *Ind. Rev.* ii. p. 273 (1837) (Nepal).

2 ♂♂, 2 ♀♀, Shweli-Salwin Divide, 7,000—8,000 ft., May—December 1919, mixed forest. (Iris black-brown ; bill, legs, and feet black.) 2 ♂♂ ad., 2 ♂♂ juv., 1 ♀, Tengyueh District.

Ingram quotes *sanguinipectus*, but I expect it will turn out that an error has been made in the determination owing to the bad quality of the skins.

231. **Motacilla alba hodgsoni** Blyth.

Motacilla hodgsoni Blyth, *Ibis*, p. 49 (1865) (Nepal).

1 ♂, Lichiang Range, 8,500 ft., May 1918 ; 1 ♂, Shweli-Salwin Divide, 6,000 ft., May 1919, water courses. (Iris dark brown ; bill, legs, and feet black.)

232. **Motacilla alba leucopsis** Gould.

Motacilla leucopsis Gould, *P.Z.S. Lond.* p. 78 (1837) (India).

1 ?, Lichiang Range, 1918.

233. **Motacilla boarula melanope** Pall.

Motacilla melanope Pallas, *Reise Prov. Russ. Reich.* iii. p. 696 (1776) (Dauria).

1 ♂, Lichiang Range, 9,000—10,000 ft., October 1918, streams and meadows; 1 ♀, Tengyueh Valley, 5,000—6,000 ft., October 1919. (Iris dark brown; bill dark brown; legs and feet dull brown.)

234. **Motacilla flava simillima** Hart.

Motacilla flava simillima Hartert, *Vög. paläarkt. Fauna*, i. p. 289. no. 454 (1910) (Kamtschatka).

2 ♂♂, Tengyueh District, 1919.

235. **Motacilla citreola citreola** Pall.

Motacilla citreola Pallas, *Reise Prov. Russ. Reich.* iii. p. 696 (1776) (East Siberia).

2 ♀♀, Lichiang Range, 9,000 ft., May 1918, streams; 2 ♂♂, Tengyueh Valley and Plain, 5,300 ft., April 1918. (Iris, ♂ black, ♀ dark brown; bill black-brown; legs and feet black.)

236. **Anthus berezowskii yunnanensis** Uch. and Kur.

Anthus maculatus yunnanensis Uchida and Kuroda, *Annot. Zool. Jap.* vol. ii. p. 134. no. 2 (1916) (Mengtze).

4 ♂♂, 4 ♀♀, Lichiang Range, 10,000—13,000 ft., Alpine meadows, May—August 1918. (Iris dark brown; bill yellow-brown; legs and feet pale brown.)

Hartert places *maculatus* = *berezowskii* as a subspecies of *trivialis* Linn., but recent investigations go somewhat to prove that it is a separate species. The sole distinction quoted by Messrs. Uchida and Kuroda for their *yunnanensis* is the shorter bill. They give for *b. berezowskii* culmen 15·5–17 mm., and for *b. yunnanensis* culmen 14·5–15·5 mm.; and the bill from gape 16–17 mm. and 14·5–15·5 mm. respectively. They include Formosan birds in *yunnanensis*. I have accepted their name, but consider the differences rather slight.

237. **Anthus richardi richardi** Vieill.

Anthus richardi Vieillot, *Nouv. Dict. d'Hist. Nat.* xxvi. p. 491 (1818) (France).

1 ♂ (sexed ♀), 2 ♀♀, Tengyueh Valley, 5,500 ft., open meadows, March 1919. (Iris dark brown; bill black; sides of upper- and entire under-mandible grey-brown; legs and feet dull light brown.)

238. **Anthus roseatus** Blyth.

Anthus roseatus Blyth, *Journ. As. Soc. Bengal*, xvi. p. 437 (1847) (Nepal).

1 ♂, 1 ?, Lichiang Range, October 1918; 1 ♂, Tengyueh District, 1919.

239. **Anthus rufulus rufulus** Vieill.

Anthus rufulus Vieillot, *Nouv. Dict. d'Hist. Nat.* xxvi. p. 494 (1818) (Bengal).

1 ♂, 1 ♀, hills west of Tengyueh, 6,000 ft., open pastures, April 1919. (Iris dark brown; bill pinkish brown; legs and feet light brown.)

240. **Alauda gulgula coelivox** Swinh.

Alauda coelivox Swinhoe, *Zoologist*, p. 6724 (1859) (Amoy).

2 ♂♂ (sexed ♀), 2 ♀♀, Lichiang Range, 8,500—10,000 ft., June—October 1918, stony pasture. (Iris brown ; bill grey-brown ; legs and feet light brown.)

241. **Alauda arvensis intermedia** Swinh.

Alauda intermedia Swinhoe, *P.Z.S. Lond.* p. 89 (1863) (Shanghai).

1 ?, Lichiang Range, 1918.

242. **Melophus melanicterus** (Gm.).

Fringilla melanictera Gmelin, *Syst. Nat.* i. pt. ii. p. 910 (1789) (Macao).

6 ♂♂ ad., Shweli-Salwin Divide, 6,000—7,000 ft., scrub and thickets, June 1919 ; 2 ♀♀, 1 ♂ juv., Tengyueh, August—September 1919. (Iris dark brown ; bill horn brown ; legs and feet light brown.)

243. **Emberiza pusilla** Pall.

Emberiza pusilla Pallas, *Reise Prov. Russ. Reich.* iii. p. 697 (1776) (Daurian Alps).

2 ♀♀ (not sexed), Lichiang Range, 1918 ; 1 ♂, 1 ♀ (sexed ♂), Tengyueh Valley, 5,500 ft., March 1919, open dry meadows. (Iris dark brown ; bill dark grey-brown ; legs and feet dull brown.) 1 ♂, Tengyueh District, 1919.

244. **Emberiza fucata fucata** Pall.

Emberiza fucata Pallas, *Reise Prov. Russ. Reichs.* iii. p. 698 (1776) (Banks of the Onon and Ingoda).

1 ♂, Tengyueh, May 1919 ; 1 ♂, Shweli Valley, 6,000 ft., August 1919 ; 1 ♂, Tengyueh District, 1919.

245. **Emberiza cia yunnanensis** Sharpe.

Emberiza yunnanensis Sharpe, *Bull. B.O.C.* xiii. p. 12 (1902) (Gyi-dzin-shân, W. Yunnan).

Hartert had identified as *yunnanensis* a series from the Tsin-ling Mountains and Ta-tsien-lu, but the true *yunnanensis* is much deeper coloured.

11 ♂♂ (4 sexed ♀), Lichiang Range, 10,000—12,000 ft., pine forests, May—September 1918. (Iris dark brown ; bill black, sides and lower mandible grey ; legs and feet light brown.)

[**Emberiza cia omissa** subsp. nov.

Differs from *C. godlewskii* in having the rufous brown of the head darker and much more extended, and in the margins of the feathers of the back, tail, and wing coverts, and also the rump pure rufous, **not** cinnamon or cinnamon-rufous. The grey of the head, neck, and chest is darker than in *godlewskii*. From *c. yunnanensis* it differs in all the rufous and brown portions of the plumage being much paler, and in the supra ocular stripe being grey, **not** whitish grey.

Below the abdomen, flanks, and undertail coverts are paler than in *yunnanensis*, but considerably darker than in *godlewskii*.

Habitat : Si Taipaishan, Tsin-ling Mountains.

Type No. 1791, Tring Museum.]

246. **Emberiza spodocephala melanops** Blyth.

Emberiza melanops Blyth, *Journ. As. Soc. Bengal*, xiv. p. 554 (1845) (Tipperah).

2 ♂♂, Lichiang Range, 1918.

Oustalet quotes *sp. spodocephala* for Yunnan, but this is evidently an error.

247. **Emberiza elegans** Temm.

Emberiza elegans Temminck, *Pl. Col.* 583 (1835) (Japan).

6 ♂♂, 2 ♀♀, Lichiang Range, 9,000 ft., May 1918, thickets and pine forests. (Iris dark brown ; bill black ; legs and feet very light brown.)

248. **Passer rutilans assimilis** Wald.

Passer assimilis Walden, *Ann. Mag. Nat. Hist.* (4) v. p. 218 (1870) (Tonghoo).

5 ♂♂, 2 ♀♀, Lichiang Range, 10,000—12,000 ft., May—June 1918, pine forests ; 2 ♂♂, Tengyueh Hills, June 1919. (Iris dark brown ; bill black ; legs and feet dull brown.) 1 ♂, 1 ♀, Tengyueh District, 1919.

249. **Propyrrhula subhimachala** (Hodgs.).

Corythus ? subhimachalus Hodgson, *As. Res.* xix. p. 152 (1836) (Nepal).

The single ♂ sent by Forrest is in heavy moult, so the wings are not measurable ; the head, back, and rump are much more strongly suffused with red than Himalayan ♂♂ generally are, and the red of the breast is deeper ; but one moulting specimen is insufficient to describe a new local race from, and many Himalayan birds are almost as red.

1 ♂, Lichiang Range, 1918.

250. **Procarduelis nipalensis** (Hodgs.).

Carduelis nipalensis Hodgson, *As. Res.* xix. p. 157 (1836) (Central and North Nepal).

1 ♂, 4 ♀♀ (1 sexed ♂), Lichiang Range, 12,000—13,000 ft., June—October 1918, pine forests. (Iris dark brown ; bill grey-brown ; legs and feet grey-brown.)

251. **Procarduelis rubescens** Blanf.

Procarduelis rubescens Blanford, *P.Z.S. Lond.* p. 694. pl. 74 (1871) (Sikkim).

1 ♂, Lichiang Range, 13,000 ft., pine forests, October 1918 ; 1 ♂, Shweli-Salwin Divide, 9,000 ft., May 1919. (Iris dark brown ; bill dull brown ; legs and feet brown.)

252. **Haematospiza indica** (Gm.).

Loxia indica Gmelin, *Syst. Nat.* i. p. 847 (1780) (Island of Boeton, India, errore !).

3 ♂♂ (1 sexed ♀), Shweli-Salwin Divide, 10,000 ft., pine and mixed forests, July 1919. (Iris dark brown ; bill horn yellow ; legs and feet dark brown.)

This appears to be the first record for China.

253. **Carpodacus erythrinus roseatus** (Hodgs.).

Pyrrhulinota roseata Hodgson, *P.Z.S. London*, p. 36 (1845) (Nepal).

2 ♂♂ ad., 1 ♀ ad., 1 ♂, 1 ♀ juv., Lichiang Range, 8,500—12,000 ft., pine forests, May—June 1918 ; 1 ♂ ad., Shweli-Salwin Divide, 10,000 ft., September 1919. (Iris black-brown ; bill, legs, and feet horn brown.)

254. **Carpodacus vinaceus** Verr.

Carpodacus vinaceus Verreaux, *Nouv. Arch. Mus. Paris*, vi., *Bull.* p. 39 (1870) (Mountains of Chinese Thibet).

1 ♂, 1 ♀, Shweli-Salwin Divide, 8,000—9,000 ft., thickets and pine forests, August—September 1919 ; 1 ♀, Lichiang Range, 11,000 ft., July 1918. (Iris dark brown ; bill horn brown ; legs and feet dull brown.)

255. **Carpodacus ripponi** (Sharpe).

Propasser ripponi Sharpe, *Bull. B.O.C.* xiii. p. 11 (1902) (Gyi-dzin-shán, W. Yunnan).

8 ♂♂, 3 ♀♀, Lichiang Range, 8,500—14,000 ft., pine forests and open scrub. (Iris, ♂ dark brown, ♀ ruddy brown ; bill, ♂ brownish grey, ♀ dull grey-brown ; legs and feet, ♂ light brown, ♀ dark brown.)

256. **Carpodacus thura femininus** Ripp.

Carpodacus femininus Rippon, *Bull. B.O.C.* xix. p. 31 (1906) (Yangtze River, W. Yunnan).

The ♂♂ of this subspecies are undescribed. ♂ differs from *th. dubius* in the sides of the head being much darker, the upper half being of a deep vinous red, almost the same colour as the lores ; the undersurface is also duller, more vinaceous pink ; the back and rump are also apparently darker. ♀ differs from ♀ *dubius* in the central dark streaks on the underside being much wider and sharper, and in the absence of the rufous front half of the superciliary stripe.

4 ♂♂, 5 ♀♀, Lichiang Range, 11,000—14,000 ft., pine forests, July—October 1918. (Iris dark brown ; bill, ♂ brown-grey, ♀ grey-brown ; legs and feet, ♂ dull brown, ♀ dull dark brown.)

257. **Pyrrhoplectes epauletta** (Hodgs.).

Pyrrhula ? epauletta Hodgson, *As. Res.* xix. p. 156 (1836) (Northern and Central Nepal).

2 ♂♂ (1 sexed ♀), Shweli-Salwin Divide, 11,000 ft., cliffs and rocky gullies, May and July 1919. (Iris black ; bill black-brown ; legs and feet olive-brown.)

258. **Pyrrhula erythaca altera** Ripp.

Pyrrhula altera Rippon, *Bull. B.O.C.* xix. p. 19 (1906) (Shayang, W. Yunnan).

The red of the breast is decidedly cinnabar-red, not orange-red, as in *e. erythaca*, and even the one ♂ of the five sent by Forrest, which is paler, representing the yellow phase of the typical and Tsin-ling races, has the colour duller, being brick-red. 5 ♂♂ have wing 79–87 mm., 4 ♀♀ 76–81 mm.

5 ♂♂, 4 ♀♀, Lichiang Range, 12,000 ft., pine forests, June—August 1918. (Iris dark brown ; bill black ; legs and feet light brown.)

[Hitherto only one other race of *Pyrrhula erythaca* has been described, viz. *P. e. wilderi* Riley, from Chili, N. China, but in going over the series at Tring and in the British Museum in connection with Forrest's birds, I find another form must receive a name.

Pyrrhula erythaca taipaishanensis subsp. nov.

♂ Differs from *e. erythaca* in the white throat often strongly washed with orange, in the red of the breast coming farther on to the foreneck, and in the white band surrounding the black mask and frons being much wider. The red of the breast varies much as in *e. erythaca*, but has always a greater admixture of yellow, ranging from greenish orange-yellow through flame orange to brilliant vermilion.

♀ Differs from ♀ *e. erythaca* only in the black mask and frons being less extensive.

Wing measurement: 33 ♂♂ 78–84 mm. ; 8 ♀♀ 76–81 mm. ; 1 ♂ juv. 79 mm.

Hab.: Tsin-ling Mts. (Mt. Tai-pai-shan). Type ♂, 17.vi.1905, in Tring Museum.

While I, as a rule, deprecate the describing of subspecies from single examples, especially females, I think that, as the above form differs from *e. erythaca*, when the ♂ of *e. wilderi* Riley (*Proc. Biol. Soc. Wash.*, vol. xxxi. p. 33 (1918) (Chili Province) is known, it may also prove to be distinct.]

259. **Carduelis thibetanus** (Hume).

Chrysomitris thibetana Hume, *Ibis*, p. 107 (1872) (borders of Sikkim and Thibet).

1 ♂, Lichiang Range, 1918.

It is rather surprising to get this very rare little bird in Yunnan, as it was to be expected that the Chinese form *C. bieti* (Oust.) from Ta-tsien-lu would have been the race indigenous to this province. Oustalet in his description of *bieti* ostensibly compares it with *thibetana*, laying stress on the absence of the white band formed by the apices of the larger wing coverts, thus proving that he only compared his five specimens with the plate in the *Catalogue of Birds*. The truth is that this figure of the ♂ was done from an immature ♂, and in the adult ♂ of Mandelli's at Tring, and most of Mandelli's other adult ♂♂ in the British Museum, as well as Forrest's specimen, there is no trace of this band, only an indication of a paler hair-line edging to the feathers. The only appreciable difference between the Ta-tsien-lu *bieti* and the Himalayan and Yunnanese *thibetanus* is the bright golden yellow instead of yellowish green of the outer webs to the inner secondaries of the former.

260. **Carduelis ambiguus** (Oust.).

Chrysomitris ambiguus Oustalet, *Bull. Mus. Paris*, p. 186 (1896) (Yunnan).

7 ♂♂, 3 ♀♀, Lichiang Range, 9,000—12,000 ft., pine forests, May—June 1918; 3 ♂♂, Shweli-Salwin Divide, 9,000 ft., May 1919. (Iris dark brown; bill horn grey; legs and feet grey-brown.)

If it were not for the very sharp-pointed bill this species would bridge over the differences between the genera *Carduelis* and *Chloris*.

261. **Eophona melanura migratoria** Hart.

Eophona melanura migratoria Hartert, *Vög. paläar. Faun.* i. p. 59. no. 96 (Sidimi).

1 ♂, 1 ♀, Tengyueh Valley, 5,500 ft., pine forests and thickets, March 1919. (Iris black-brown; bill light orange; legs and feet pale ruddy brown.)

When the collection of Captain Wingate was worked out Hartert had not yet separated the two races of this bird, and so Ingram records *mel. melanura* in error.

262. **Perissospiza icteroides affinis** (Blyth).

Hesperiphona affinis Blyth, *Journ. As. Soc. Bengal*, xxiv. p. 179 (1855) (Sikkim).

The single ♂ sent by Forrest is not quite adult and has the olive tibiae of the ♀, but it appears to be *affinis*.

1 ♂, Lichiang Range, 14,000 ft., pine forests, August 1918. (Iris dark brown; bill dull blue-green flecked with brown; legs and feet pinkish (fleshy) grey-brown).

263. **Munia atricapilla atricapilla** (Vieill.).

Loxia atricapilla Vieillot, *Ois. Chant.* p. 84. pl. 53 (1805) ("Grandes Indes").

6 ♂♂ (4 sexed ♀), Shweli Valley, 6,000—7,000 ft., thickets, June 1919. (Iris black; bill lead-grey; legs and feet dark grey.) 1 ♂, Shweli-Salwin Divide, August 1919.

264. **Munia punctulata topela** Swinh.

Munia topela Swinhoe, *Ibis*, p. 380 (1863) (Formosa).

8 ♂♂ ad. (3 sexed ♀), 1 ♂ juv., Shweli-Salwin Divide, 9,000 ft., pine and mixed forests, May—June 1919; 2 ♂♂ juv., Nantien Valley, 4,500 ft., April 1919; 4 ♀♀ (3 sexed ♂), hills N.W. of Tengyueh, 6,000 ft., October 1919. (Iris ruddy brown ♂, dark brown ♀; bill, ♀ dull black, ♂ black; legs and feet, ♂ dark grey, ♀ purplish grey.) 1 ♂ ad., 1 ♂ jun., Tengyueh District, 1919.

265. **Sporaeginthus flavidiventris** (Wall.).

Estrelda flavidiventris Wallace, *P.Z.S.* p. 495 (1863) (Timor and Flores).

When the distribution and breeding areas of *Sp. amandava* and *Sp. flavidiventris* have been ascertained, *flavidiventris* will most likely prove to be a subspecies of the latter, but at present the records are too conflicting to warrant this.

1 ♂, hills S. of Tengyueh, 6,000 ft., October 1919, thickets. (Iris orange-red; bill scarlet; legs and feet pale brown.)

266. **Oriolus indicus tenuirostris** Blyth.

Oriolus tenuirostris Blyth, *Journ. As. Soc. Bengal*, xv. p. 48 (1846) (Central India ?).

2 ♂♂ ad., 1 ♂ jun., 1 ♀ ad. (sexed ♂), 1 pull., Lichiang Range, 10,000 ft., pine forests, June 1918; 1 ♀ juv. (sexed ♂), T'ong Shán, 10,000 ft., August 1918. (Iris crimson; bill dull ruddy brown; legs and feet black.)

Ingram records *indicus indicus*, and the two Mengtze birds he records are undoubtedly this bird. The explanation is probably that the form breeding in the plains is *indicus* and in mountains *tenuirostris*.

267. **Chibia hottentota** (Linn.).

Corvus hottentotus Linnaeus, *Syst. Nat.* i. edit. xii. p. 155 (1766) (Cape of Good Hope. Errore !).

1 ♂, Yangtze Valley, 6,000—7,000 ft., mixed forest, September 1918. (Iris clear yellow; bill, legs, and feet black.)

268. **Dicrurus ater cathoecus** Swinh.

Dicrurus cathoecus Swinhoe, *P.Z.S. Lond.* p. 377 (1871) (China).

1 ♂, 1 ♀ juv., Tengyueh Valley, August 1919; 1 ♀, Shweli-Valley, 6,000—7,000 ft., August 1919. (Iris crimson; bill, legs, and feet black.)

269. **Dicrurus leucophaeus nigrescens** Oates.

Dicrurus nigrescens Oates, in Hume's *Nests and Eggs*, edit. 2. i. p. 208 (1889) (Rangoon).

Ingram includes both *nigrescens* and *longicaudata* in his list; it is quite certain, however, that neither the Mengtze birds nor Forrest's five specimens are *longicaudatus*. Bangs and Phillips quote the Mengtze birds as *pyrrhops* Hodgs., but this is not available, being a nomen nudum, and they must be called *nigrescens* Oates.

1 ♂, 2 ♀♀, 1 ?, Lichiang Range, 8,500—10,000 ft., pine and mixed forests, May—June 1918; 1 ♂, Tengyueh Valley, 5,500 ft., March 1919. (Iris crimson; bill, legs, and feet black.)

270. **Sturnia nemoricola** Jerd.

Sturnia nemoricola Jerdon, *Ibis*, p. 22 (1862) (Thayetmyo).

1 ♀, Shweli-Salwin Divide, 8,000 ft., thickets and forests, June 1991. (Iris crimson; bill, basal half black, anterior half yellow; legs and feet pale olive.)

271. **Acridotheres tristis** (Linn.).

Paradisea tristis Linnaeus, *Syst. Nat.* edit. xii. i. p. 167 (1766) (Philippine Islands).

1 ?, Lichiang Range, 1918.

272. **Acridotheres cristatellus** (Gm.).

Gracula cristatella Gmelin, *Syst. Nat.* i. p. 397. no. 5 (1788) (China).

1 ?, Lichiang Range, 1918.

273. **Acridotheres albocinctus** Godw.-Aust. and Wald.

Acridotheres albocinctus Godwin-Austen and Walden, *Ibis*, p. 251 (1875) (Manipur Valley).

1 ?, Lichiang Range, 1918.

274. **Gracupica nigricollis** (Payk.).

Gracula nigricollis Paykull, *Nova Acta Stockh.* xxviii. p. 291. pl. 9 (1766).

2 ♂♂, Tengyueh Valley, 5,300 ft., open meadows, March 1919. (Iris creamy-grey ; bill black-brown ; naked skin round eye chrome orange ; legs and feet dull ivory white.)

275. **Pyrrhocorax pyrrhocorax** (Linn.).

Upupa pyrrhocorax Linnaeus, *Syst. Nat.* edit. x. p. 118 (1758) (England).

2 ♂♂, 1 ♀, 1 juv., Lichiang Range, 9,000—13,000 ft., cliffs and pine forests, June 1918. (Iris dark brown ; bill crimson, pale orange-red in young ; legs and feet crimson ; nails black.)

Ingram quotes *P. graculus* as obtained by Rippon, but it is only a wrong application of the name, as Rippon's bird is *P. pyrrhocorax.*

276. **Garrulus bispecularis sinensis** Swinh.

Garrulus sinensis Swinhoe, *P.Z.S. Lond.* p. 304 (1863) (Canton to Ningpo).

In his review of *Garrulus bispecularis* Vig. and its allies (*Novit. Zool.*, xxv. pp. 430–433 (1918)) Hartert acknowledges Reichenow's *b. rufescens*, and identifies as such five birds collected by Colonel Rippon in N.W. Yunnan. The chief alleged differences from *b. sinensis* are the white throat and darker, greyer back. The white throat is only present in two out of the five birds of Colonel Rippon's. Forrest's two birds are very different *inter se* ; one has the back rufous-cinnamon, as in typical *b. sinensis*, and chin and throat uniform cinnamon with the rest of the underside ; the other has the back vinaceous grey, almost as in *G. glandarius*, and the throat, breast, and abdomen more vinaceous, and the chin decidedly whitish. I am therefore convinced that when we get a larger series of jays from Yunnan that *b. rufescens* of Reichenow will prove to be a synonym of *b. sinensis*, and I therefore enumerate these birds here as *sinensis.*

2 ♂♂, Lichiang Range, 9,000—10,000 ft., pine forests, May 1918. (Iris grey-white ; bill black ; legs and feet pale brownish grey.)

277. **Nucifraga caryocatactes yunnanensis** Ingr.

Nucifraga yunnanensis Ingram, *Bull. B.O.C.* xxv. p. 86 (1910) (Mountains of Yunnan).

This nutcracker is intermediate between *N. c. owstoni* Ingr. and *N. c. hemispila* (Vig.), and is constantly distinct from the latter by the black crown of the head.

2 ♂♂, 4 ♀♀, 2 juv., Lichiang Range, 8,500—13,000 ft., pine forests and ravines, May—August 1918 ; 1 ♂, Shweli-Salwin Divide, July 1919. (Iris dull dark brown ; bill, legs, and feet black.)

278. **Urocissa erythrorhyncha erythrorhyncha** (Gm.).

Corvus erythrorhynchus Gmelin, *Syst. Nat.* i. p. 372 (1788) (China).

4 ♂♂, 5 juv., Liehiang Range, 8,500—11,000 ft., June—October 1918, pine forests; 1 ♂, 1 ♀, Shweli-Salwin Divide, 7,000 ft., May 1919; 1 ♂, 1 ♀, Yangtze Valley, 8,000 ft., September 1919. (Iris orange-reddish-yellow; bill orange-scarlet; legs and feet dull red.

279. **Dendrocitta himalayensis** Blyth.

Dendrocitta himalayensis Blyth, *Ibis*, p. 45 (1865) (Himalayas).

1 ♂ (sexed ♀), 3 ♀♀ (1 sexed ♂), Shweli-Salwin Divide, 8,000 ft., May—June 1919. (Iris red; bill, legs, and feet black.)

ON THE REPLACEMENT OF A LOST VEIN IN CONNECTION WITH A STRIDULATING ORGAN IN A NEW AGARISTID MOTH FROM MADAGASCAR, WITH DESCRIPTIONS OF TWO NEW GENERA.

By DR. KARL JORDAN.

(With text-figs. 1–9.)

IN the most generalised Lepidoptera the wing-neuration agrees closely with the tracheae of the pupal wing. This tracheal system remains of an ancestral type in all Lepidoptera, but in the specialised families no tubular vein is formed along some of the main tracheae, which become atrophied before emergence of the imago, and are indicated in the fully developed wing by folds. With the exception of some generalised groups—such as *Cossidae* and *Castniidae*, for instance—the stem of the radial vein is a fold in the cell, distally divided, and the upper submedian SM^1 (= 1c of Herrich-Schäffer) is absent as a tubular vein from the majority of families of Lepidoptera.

It holds generally good that the direction of development, which is constant in one group of families, reappears sporadically also in other groups, be it the loss of an ancestral organ or the acquirement of a specialisation. We find, for instance, a clavate antenna, a specialisation, not only in all butterflies, but here and there also among moths; the foretibial epiphysis, an ancestral organ, is absent from nearly all families of butterflies and has also been lost by some moths, for example, by all Chalcosiids and some Saturniids and Sphingids. The loss of the same organ in widely different groups, however, is much more frequent than the acquirement of one and the same specialisation, and is of quite common occurrence, as exemplified by the mouth-parts of Lepidoptera, the ocelli, legs, genitalia, etc. It is, therefore, not surprising that the ancestral vein SM^1 (= 1c) is found absent in some genera of families which in the aggregate are characterised by the retention of that vein, f.i. in some *Zygaenidae* (s.l.) and *Castniidae* (s.l.). On the other hand, it is most remarkable that this vein is constantly absent from so many families of Lepidoptera. Considering the two facts: (1) that the generalised tracheal system persists in the chrysalides of these families, the framework on which to build up any of the generalised veins therefore being still given; and (2) that the wing pattern is influenced by the submedian fold SM^1 as if it were a vein, one might be inclined to regard the pupal trachea SM^1 as a potential vein, and to expect that the discarded vein SM^1 would make its reappearance here and there. But that is not the case; the potentiality is gone, being, in this instance, an *a priori* conception without reality. The absence of vein SM^1 has, in the majority of the families, the regularity of a natural law, and if it is a law, and not a mere rule, it admits of no exceptions.

If considered from this point of view, the species of Agaristid which forms the main subject of this paper acquires a general interest. It is a new species from Madagascar, representing a new genus. We have only a single ♂, the chief

structural features of which are the large club of the thin antenna and a stridulating organ. It is the latter which claims our attention first.

The males of a number of Agaristids and Noctuids make a fairly loud noise during flight. The sound, which carries a good distance, is produced by the

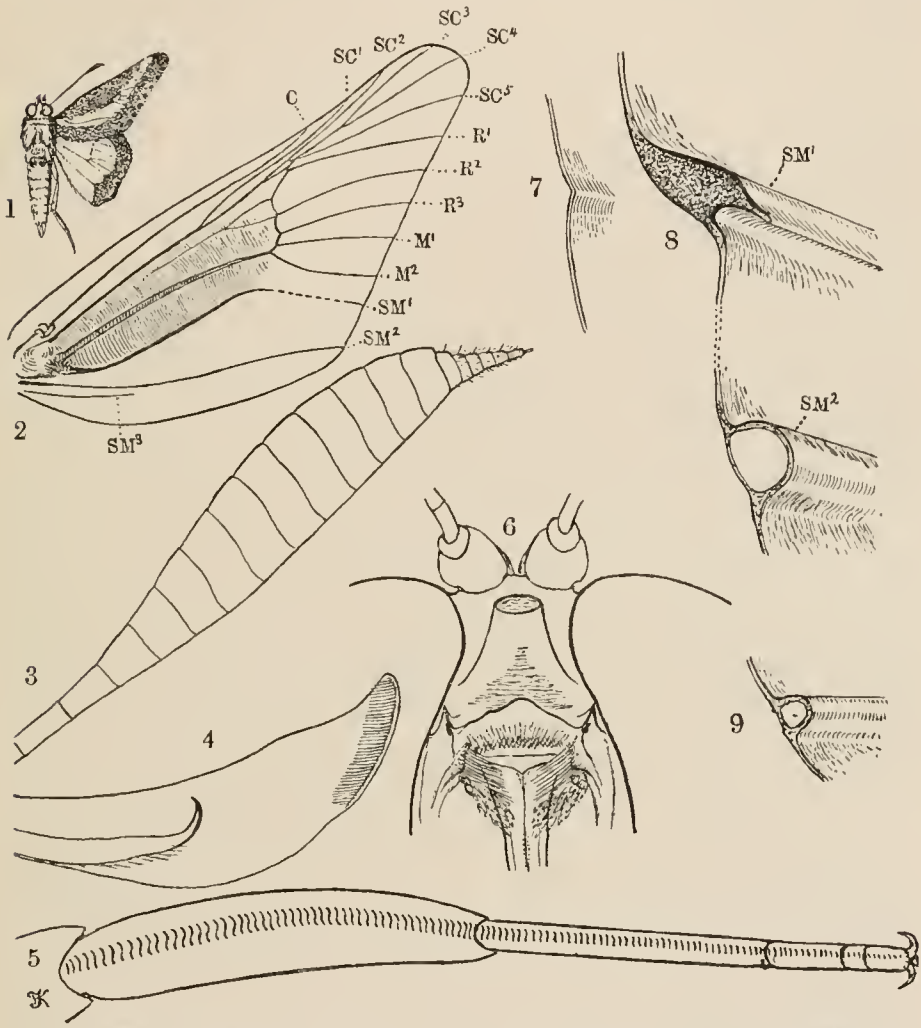

FIG. 1.—*Musurgina laeta* ♂.
„ 2.—Ditto; underside of forewing.
„ 3.— „ ; club of antenna.
„ 4.— „ ; clasper.
„ 5.— „ ; hindtarsus.
„ 6.— „ ; oral area and frons.

FIG. 7.—Submedian fold of a normal Agaristid.
„ 8.— „ „ (SM¹) and submedian vein SM² of *Musurgina*.
„ 9.— „ vein of a *Zygaena*

friction of a tarsus against a modified portion of a wing. In the Malagassic species, which we will describe below as *Musurgina laeta* (text-fig. 1), the musical apparatus is composed of the forewing an the hindtarsus.

On the underside of the forewing *Musurgina* bears a naked area occupying

the cell except its upper angle, and extending backwards to the submedian fold. This area is transversely ribbed (text-fig. 2); the ribs are rounded-convex, and correspond to the interspaces of the rows of scales on the rest of the wing. Along the costal side of the median vein a stripe of scaling is left, protected by the vein. The space behind the cell is concave beneath and correspondingly convex on the upperside of the wing, and is sharply bounded by the submedian fold. Now, in other *Agaristidae* the wing does not show any appreciable incrassation at the fold in a transverse section (text-fig. 7), while in *Musurgina* the place of the fold is occupied by a conspicuous ridge, which extends as far distad as the stridulating area and then fades away into an ordinary non-incrassate fold (text-figs. 2 and 8). Under a weak lens the ridge has the appearance of a vein, but on closer examination is found to differ very considerably from the tubular veins. The ridge is not cylindrical and not hollow, and much more chitin has been employed to construct it than in the case of a tubular vein (text-fig. 8). The stridulation area is thus strongly supported, but this end could have been achieved much more economically by the construction of a tubular vein similar to SM^2 (= 1b; text-fig. 8). The factors of growth which govern the development of the stridulation organ in *Musurgina* are unable to reproduce the lost vein and can only direct matter to the line where support is needed, and build up a substitute. The vein is a memory, and its actuality cannot be regained. For comparison we add a figure of the transverse section of SM^1 of a *Zygaena* (text-fig. 9), in which genus this vein is thinner than the other veins, and evidently is on the road towards obliteration.

The naked membrane expanding between the subcostal nervure and the submedian ridge acts as a sound-board, the sound itself being produced by the friction of the hindtarsus on the median nervure. This vein, which is curved, with the convexity towards the costa (text-fig. 2), as is the submedian ridge distally, is enlarged within the naked area, and bears 60-odd obliquely transverse, sharp ridges which are directed costad-distad. The ridges are strongest in the proximal half of the vein and gradually become fainter towards the apex of the cell, the most distal ones being shifted to the costal side of the vein.

The corresponding structure of the hindtarsus is found on the upperside slightly towards the inside, a file of transverse ridges extending from the base of the tarsus to the apex (text-fig. 5). The first segment is inflated and bears about 55 ridges. The hindtarsus as well as the tibia is smooth-scaled, which is an evident advantage for the good working of the instrument. It will be noticed in text-fig. 8 that the false submedian vein is narrow along its highest point, a longitudinal ridge being formed which, I think, is likewise employed in the production of the sound when the tarsus strikes across it. This ridge recalls the stridulation organ of the Australian Agaristid, *Platagarista tetrapleura* Meyr. (1891), in which the instrument is composed of the hindwing and hindtarsus, the subcostal vein being provided with a ridge (but not with a file) and the hindtarsus with a file. Compare also what we say of *Pemphigostola* Strand (1909) on p. 72.

We do not know what sound *Musurgina* produces, but assume that it is similar to the sound of *Platagarista*, a hybrid noise between whistling and hissing.

Further characteristics of *Musurgina* may be gathered from the following description of the genus and species and the figures illustrating it.

Musurgina gen. nov.

♂. Frons in middle a little more than one-third as broad as the eye is high ; frontal process (text-fig. 6) long, conical, flattened above and below, truncate, apical area marginate, transverse, more rounded ventrally than dorsally. Oral edge of frons sharp, triangular, with the apex rounded off ; at each side a pointed pyramidal genal process. Scape of antenna very broad, its diameter about one-fifth shorter than that of the centre of the frons. Shaft of 30-odd segments, very slender, lengths of segments VI to XII more than twice their widths in centre ; club (text-fig. 3) composed of 12 or 13 segments, very large, slightly flattened, five times as broad as the shaft, rather abruptly narrowing distally to form a short, thin, slightly upcurved, apical hook of 5 or 6 segments, the last of which bears a thin, conical, truncate, apical stylet ; upperside of antenna scaled, the club proximally also beneath ; underside of shaft covered with short hair and bearing bristles like typical Agaristids. Eye naked. Palpus beneath rough-hairy inclusive of third segment, which is less than three times as long as apically broad, and but slightly porrect. Pronotum at base with very large scales contiguous to head ; rest of thorax with hair mixed with long narrow scales. At base of abdomen a divided tuft of scales, the longest of which are dark, metallic, oar-shaped, or lanceolate (the other segments of abdomen almost entirely denuded in our specimen). Tibiae without spines ; tibia and first tarsal rough-hairy in foreleg, with some long hair on upperside in midleg, smooth and inflated in hindleg ; inner spur of midtibia reaching a little beyond one-third of first tarsal segment ; proximal spurs of hindtibia quite short, much shorter than the tibia is broad, and the apex of the longer (inner) spur about twice the length of the spur distant from the apical spurs, inner apical spur twice the length of the outer one and about one-fourth as long as the first tarsal segment. Hindtarsus from base to apex with naked dorsal stripe of transverse, slightly obliquely curved ridges (text-fig. 5), segment I with spines at apex only, II without spines at base ; V with a few spines in hindtarsus and only bristles in fore- and midtarsus ; proportional lengths of hindtarsal segments 90, 70, 17, 5, 9, segment IV being shorter than broad. Claw with tooth in middle.

Neuration.—Forewing (text-fig. 2) : SC^1 off cell at two-thirds, areole small, SC^3 from areole, SC^3 and SC^4 on long stalk, SC^5 from this stalk near areole ; R^1 from upper cell-angle close to areole ; R^2, R^3, M^1, and M^2 almost at equal distances from each other around lower cell-angle, which is rounded, M^2 being much more distal than in allied genera ; M curved with the convexity towards costa ; SM^1 a false vein as far as the stridulating organ extends (to near lower cell-angle) and nearly curved like M, distally a mere fold as in other Agaristidae ; SM^3 thin, distally approaching SM^2, but not joining it, i.e. SM^2 not " forked " at base.—— Hindwing : SC^2 and R^1 from upper cell-angle, which is almost 90°, R^2 from middle, R^3 and M^1 from lower cell-angle, which is acute, M^2 from near angle.

Genotype : *M. laeta* spec. nov.

Musurgina laeta spec. nov. (text-fig. 1).

♂. Head and thorax russet mixed with grey. Scaling of antenna white. Frontal process black. Palpus orange, third segment with some black hairs. Tegula black at apex. Abdomen much rubbed, evidently orange, basal tuft with

the long curved scales metallic black. Coxae and femora pale fawn colour, some of the long hair almost white; tibiae and tarsi of fore- and midlegs black densely mixed with white; inner side of foretibia and two spots on outer side orange; hindtibia and greater part of hindtarsus I pale buff, rest of tarsus blackish above, grey beneath.

Upperside of forewing russet; costal margin excurved from base to beyond middle and again near apex, termen very oblique, tornus very obtuse, the angle almost effaced, hindmargin strongly rounded; a silvery white stripe runs from base of costal margin obliquely across cell, continues distad as far as the stridulation area extends and then turns costad across lower angle of cell, reaching costal margin 2 to 3 mm. from apex, the stripe 2 mm. broad below cell, 1 mm. towards costa; costal edge brown from base beyond middle, cell except apex and part of terminal area shaded with brown, termen partly mixed with white and bearing a row of rufous dots placed between the veins; fringe a mixture of white and sepia-coloured scales.——Hindwing orange, with a sepia-black terminal band 2 to 3 mm. wide, ending at anal angle, extending along costal margin to near middle, slightly dentate upon M^2 and SM^2; termen ventricose above centre, excurved at submedian fold, this lobe having a rufous marginal bar, two small rufous dots between R^3 and M^2 and vestiges of two more dots farther apical; fringe white and sepia, some white scaling at margin in black band, especially in front of submedian lobe.

Underside sepia colour, rufous marginal markings vestigial; forewing without white stripe, a stripe on the submedian false vein as far as lower cell-angle, and connected across lower cell-angle with a triangular spot placed a short distance outside the discocellulars pale orange buff, this stripe fading away towards inner margin.——Hindwing as above.

Genitalia: Anal tergite as in the allied genera a long, tapering, curved process ending with a sharp point. Clasper long, narrow, ventral margin evenly excurved, dorsal margin incurved, apex pointed, ventral apical margin with a regular row of nearly 40 stiff bristles lying flat above the inner surface of the clasper and being directed dorsad-frontad; harpe an evenly curved, sharply pointed, spiniform process (text-fig. 4).

Length of forewing: 18·5 mm.; breadth: 7·5 mm.

Hab. Diego Suarez, N.E. Madagascar, 24.xii.1916 (Gaston Melou); 1 ♂.

The unknown ♀ may be expected to differ from the ♂ in the stridulating organ being absent, the submedian fold not incrassate, the antennal club less enlarged, the hindleg normal, and the forewing broader.

When we first saw this insect we believed it to be a species of *Pemphigostola* Strand (1909), a genus placed by its author among the Castniids. *Pemphigostola synemonistis*, of which only one ♂ is known, occurs like *Musurgina laeta* on Madagascar. It has practically the same size as *M. laeta*; the forewing is very narrow, with the costal margin excurved proximally and before apex, and bears a stridulating organ, and the hindwing has a small submedian lobe, as in *Musurgina*. According to Strand's detailed description *Pemphigostola*, however, differs very essentially from *Musurgina* in SM^1 (= 1c) being a tubular vein in both wings, in the frons being broader, the forewing having no areole, both cell-angles of the hindwing being 90°, in the midtarsus (not hindtarsus) bearing a stripe of transverse ridges (the file), and in other details. The colouring is also different from that of *M. laeta*.

This *Pemphigostola* is a strange insect. The statements that in the hindwing the cross-veins are complete, vein 5 arises from their centre, and the costal vein branches off from the middle of the subcostal are very remarkable, placing *Pemphigostola* quite outside the Castniids. The stridulating organ also is something unknown among Castniids; in fact, I was under the impression that a stridulating organ of this kind (wing plus tarsus) does not occur outside the Noctuiform families of Lepidoptera. If *Pemphigostola* really is allied to the Castniids, which I do not believe, the similarity between it and *Musurgina* in the peculiar antennae, the stridulating organs, the size and shape of the wings is astounding, and if *Pemphigostola* should prove to be an Agaristid, the presence of a tubular vein SM^1 (= 1c) in fore- and hindwing would be no less wonderful. However, it seems to me desirable that *Pemphigostola* be re-examined.

The general colouring of *Musurgina laeta* agrees very well with that of some other Agaristids, especially with the Malagassic species described by Saalmüller as *Ovios laminifera* (*Ber. Senck. Ges.* 1878, p. 91), and figured by him in *Lepid. Madag.* 1884 as *Euscirrhopterus laminifer* (p. 140, no. 327, tab. 8, fig. 133). Hampson, who had not seen the species, placed it in *Paratuerta* among the Noctuids (*Lep. Phalaenae*, ix. p. 415 [1910]). We have a ♂ of this *laminifera*, and find that the species is a true Agaristid, representing a new genus allied to *Aegocera*.

Ancarista gen. nov.

♂. Frons very narrow, widening above and below, its diameter at the narrowest point about twice that of the shaft of the antenna; frontal process conical, somewhat flattened above, not quite so long as the frons is broad at this point, truncate, the apical surface marginate, transverse, more rounded above than below. Oral edge of frons sharp, laterally curving upwards to join the short genal process. Palpus similar to that of *Aegocera*, segments I and II long-hairy beneath; III short-scaled, the scales longer at apex, therefore the segment appearing more strongly club-shaped than it really is. Eye large. Antenna simple, long (16 mm.), extending much beyond apex of cell, slightly but distinctly thickened from about three-fifths to four-fifths, then gradually becoming thinner, the distal segments being much thinner than the shaft. Bristles and hair on ventral surface as in true Agaristids. Thorax clothed with a mixture of scales and hairs, scales of patagia especially large, widest at apices, which are rotundate-truncate and multidentate. Abdominal tergite I with bifid tuft of long scales and hairs, the lateral scales curving inward. Tibiae without spines as in *Mitrophrys*, fore- and midtibiae with long hair-scales on upperside, hindtibia almost smooth; inner spurs of mid- and hindtibiae more than twice the lengths of outer ones and fully two-thirds as long as tarsal segment I. Tarsi long, more than half as long again as tibiae, spined beneath only, V slightly shorter than IV.

Neuration.——Forewing nearly as in *Mitrophrys*, SC^1 more proximal than M^3, areole long, SC^2 from before apex of areole, SC^3 and SC^4 on long stalk, SC^5 from this stalk close to apex of areole, R^1 from upper cell-angle, which is very acute and is much more distal than lower cell-angle, R^2 and M^1 at equal distances from cell-angle, D^4 longer than the cell is broad at apex.——Hindwing: SC^2 and R^1 from upper cell-angle, R^2 from middle of cell-apex, R^3 and M^1 close together from lower cell-angle, M^2 a short distance below angle, both cell-angles a little

less than 90°. Abdomen with anal tuft. Clasper long, rounded at apex, on inside densely studded with stiff spines which are curved frontad.

♀. Frons broader, antenna thinner.

Genotype: Species identified as *Ovios laminifera* Saalm. (1878).

Differs from *Aegocera* in the long and slender antennae, long tarsi, non-spined tibiae, etc.; and from *Mitrophrys* in the longer antennae and tarsi, longer tibial spurs, much more acute and more projecting upper cell-angle of the forewing, and the narrow frons of the ♂.

Our ♂ has a silver streak on the forewing like the ♀ figured by Saalmüller, but differs from that figure in bearing a broad creamy-white longitudinal stripe which reaches the costal margin at the base and before the apex, and is posteriorly bounded by the silver streak. Moreover, the terminal band of the hindwing is paler, less definite, and anteriorly narrower, and the thin orange admarginal line within this band extends forward to near apex.

CAPTAIN ANGUS BUCHANAN'S AIR EXPEDITION.

III.

UNGULATE MAMMALS COLLECTED BY CAPTAIN ANGUS BUCHANAN.

BY LORD ROTHSCHILD, F.R.S., PH.D.

FULL particulars of the expedition have been given by Dr. E. Hartert and Messrs. Thomas and Hinton.

1. **Ammotragus lervia angusi** subsp. nov.

Differs from all the four other forms—*l. lervia*, *l. sahariensis*, *l. ornata*, and *l. blainei*—in the horns being much more upright on the head, and curving farther backwards and inwards. General colour very deep rufous, darker than in *l. ornatus*; no dark face stripe; dorsal crest mixed with black, more strongly on front half. Beard on sides of lower jaw cinnamon-rufous; long hair on legs and knee tufts, apparently more sparse and restricted than in the other forms.

1 ♂ ad., No. 184. Tarrouaji Mt., Asben, 3,100 ft., August 4, 1920. (Dead weight, 152 lb.; height at shoulder, 36 in. = 900 mm.; at rump, $36\frac{1}{4}$ in. = 906·5 mm.; length of body, $34\frac{1}{2}$ in. = 863 mm.; girth of neck, $18\frac{1}{4}$ in. = 456·5 mm.; of body, $42\frac{3}{4}$ in. = 1,059 mm.) Right horn, 525 mm. = 21 in. over curve; left horn, 510 mm. = $20\frac{4}{10}$ in.

1 ♀ very old, No. 178. Aouderas, Asben, 2,700 ft., July 25, 1920. (Dead weight, 112 lb.; height at shoulder, $31\frac{3}{4}$ in. = 794 mm.; at rump, $32\frac{3}{4}$ in. = 819 mm.; length of body, $35\frac{1}{2}$ in. = 888 mm.; girth of neck, $13\frac{1}{2}$ in. = 338 mm.; of body, 43 in. = 1,075 mm.) Right horn, 400 mm. = 16 in.; left horn, 365 mm. = $14\frac{6}{10}$ in.

1 ♂, fully adult, skull and horns with scalp, No. 14. S. of Baguezan, May 1, 1920. Right horn, 550 mm. = 21 in.; left horn, 545 mm. = $20\frac{8}{10}$ in.

Type: ♂ ad., No. 184.

Hausa name Ragindoutchi; Tuareg name Afitall.

2. **Damaliscus korrigum** (Ogilb.).

Antilope korrigum Ogilby, *P.Z.S. Lond.* 1836. p. 103 (Korrigum, Bornu).

This antelope was described from skulls and horns brought home by Denham and Clapperton. In the *Book of Antelopes* Messrs. Sclater and Thomas go very fully into the reasons why the names "*koba*" and "*senegalensis*," being mixtures of three or more species, should be rejected in favour of the name *korrigum* of Ogilby. Herr Schwartz has now applied the name "*koba*" to the species and apparently uses it to represent Senegal examples, while he makes "*korrigum*" one of the numerous subspecies which he recognises. Whether the Senegal examples are separable from Lake Chad, Bornu, Damergou, and Gambian examples, which in my opinion are all identical, can only be settled with fresh

Senegambian material; but whether they are separable or not, the names "*koba*" and *senegalensis* are alike not admissible.

Buffon's "Koba" appears to be a mixture of a *Bubalis*, an *Aepycerus*, and an *Adenota*, and Pennant quotes the name and locality, and describes and figures as this animal a head of *Bubalis caama* of the Cape. Erxleben latinised Buffon's "Koba" as "*Antilope koba*," and Cuvier called it "*Antilope senegalensis*," but both these authors simply used these names and appended to them Pennant's description. It will thus be seen that it is quite beyond dispute that both these names apply to a mixture of animals, or in the case of extra-strict and finnicking purists could be treated as appertaining to *Bubalis caama*, in which latter case the latter ought to be called *Bubalis koba* (Erxl.) 1777, as *caama* Cuv. dates from 1816.

Lydekker, in the *Catalogue of Ungulate Mammalia* in the British Museum, gives a key to the subspecies of the Senegal Hartebeest known to him, and uses as principal characters the black line under the eye and the colour of the legs below the knee. He evidently drew up his key at various times and from all sorts of material, for the key characters do not agree with the specimens available for examination by myself. The character of the tan of the legs below the knee, as opposed to the darker rufous body in *k. tiang* when compared with uniformity of body colour and legs in *k. korrigum*, shows that he took this from Waterhouse, Hawkins, and Wolf's plates, for both the Lake Chad and Gambian skins in the British Museum, which he places under *k. korrigum*, have tan legs. Mr. Gilbert Blaine (*Ann. Mag. Nat. Hist.* vol. xiii. 1914, pp. 326–335) explains that, while the black mark below and behind the eye is never present in the two West African forms, it is present or absent in North-Eastern forms, and is only invariably present in the S.E. African form *eurus* Schwarz. Without discussing the status of Senegal specimens at present, it is my firm conviction that the examples of *Damaliscus korrigum* from Lake Chad westwards to the Gambia all belong to the typical race *D. korrigum korrigum* (Ogilby).

1 very old ♂, No. 193. Aderbissinat, N. of Damergou, 1,525 ft., August 22, 1920. (Dead weight, 271 lb.; height at shoulder, 53 in. = 1,325 mm.; at hindquarters, 49 in. = 1,225 mm.; length of body, 46½ in. = 1,163 mm.; girth of neck, 28 in. = 700 mm.; of body, 55 in. = 1,375 mm.) Right horn over curve, 18$\frac{8}{10}$ in. = 480 mm.; left horn, 18$\frac{4}{10}$ in. = 470 mm.

Hausa name Déré or Derri.

3. **Gazella dama damergouensis** subsp. nov.

♂♀. Nearest to and intermediate between *G. d. permista* Neum. and *d. reducta* Heller., but distinguished from both by the rusty suffusion of all the white parts, and the greater extent of the rufous on legs. The horns are quite as thick as in *d. mhorr*, but longer in proportion.

1 ♂ ad., No. 118. Takoukout, Damergou, 1,550 ft., March 20, 1920. (Dead weight, 130 lb.; height at shoulder, 43½ in. = 1,088 mm.; at rump, ditto; length of body, 37½ in. = 938 mm.; girth of neck, 17½ in. = 438 mm.; of body, 39¾ in. = 995 mm.) Right and left horns, 330 mm. = 13$\frac{2}{10}$ in.

1 very old ♂ skull, procured at Damergou. Length of horns, 390 mm. = 15$\frac{6}{10}$ in.

1 ♀ ad., No. 115. Takoukout, Damergou, 1,550 ft., March 7, 1920. (Height

at shoulders, $40\frac{1}{2}$ in. = 1,013 mm.; at rump, $41\frac{3}{4}$ in. = 1,045 mm.; length of body, 34 in. = 750 mm.; girth of neck, $10\frac{1}{2}$ in. = 263 mm.; of body, 35 in. = 775 mm.) Length of right horn, $12\frac{8}{10}$ in. = 320 mm.; left, $12\frac{6}{10}$ in. = 315 mm.

Hausa name Mena.

4. Gazella rufifrons hasleri Poc.

Gazella rufifrons hasleri Pocock, *P.Z.S. Lond.* 1912. p. 5 (Kano).

1 ♂ ad., No. 114. Takoukout, Damergou, 1,550ft., March 6, 1920. (Height at shoulder, 29 in. = 725 mm.; at rump, 32 in. = 800 mm.; length of body, 28 in. = 700 mm.; girth of neck, 13 in. = 325 mm.; of body, 30 in. = 750 in.) Length of horns, 270 mm. = $10\frac{8}{10}$ in.

5. Gazella dorcas dorcas (Linn.).

Capra dorcas Linnaeus, *Syst. Nat.* edit. x. i. p. 69 (1758) (Egypt).

1 ad. ♂, No. 126. Tokede, Ahber, 3,400 ft., May 4, 1920. (Dead weight 38 lb.; height at shoulder, $24\frac{1}{2}$ in. = 613 mm.; at rump, 26 in. = 650 mm., length of body, 24 in. = 600 mm.; girth of neck, 12 in. = 300 mm.; of body, $24\frac{1}{2}$ in. = 613 mm.) Length of horns, 240 mm. = $7\frac{6}{10}$ in.

Hausa name Matakundi.

6. Gazella ?

This is a skull and horns of an old ♂ gazelle, which may possibly be an abnormal *dorcas*, but it does not agree with those I have. The horns are longer, thinner, and closer together, curving in towards the tips more like *g. tilonura*.

1 old ♂, skull and horns, No. 15. Taken near Faodet, N. Asben, June 12, 1920. Length of right horn, 315 mm. = $12\frac{6}{10}$ in.; left, 320 mm. = $12\frac{8}{10}$ in.

7. Oryx algazel algazel (Oken).

Cemas algazel Oken, *Lehrb. Naturg.* vol. iii. pt. ii. p. 741 (1816) (Western Sahara).

Lydekker throws some doubt as to the distinctness of *a. algazel* Oken from the Western Soudan, and *a. dammah* from the Eastern Soudan. This was owing to his never having seen a skin of a western example. The western specimens I have examined in various Italian museums all showed a much greater extent of rufous than in eastern examples.

Captain Buchanan never got within shot of this animal, owing to his great exertions to obtain an ostrich; for the Sabre-horned Antelope is only found in the Damergou scrub belt where the ostriches occur. He brought home a pair of native-killed horns.

1 ♂ ad., horns and frontlet. Damergou. Length of right horn, 1,050 mm. = 42 in.; left, 1,075 mm. = 43 in.

CAPTAIN ANGUS BUCHANAN'S AÏR EXPEDITION.

IV.

THE BIRDS COLLECTED BY CAPT. ANGUS BUCHANAN DURING HIS JOURNEY FROM KANO TO AÏR OR ASBEN.

BY DR. ERNST HARTERT.

(Plates I.–IX.)

THE best zoogeographical boundary, apart from vast oceans, has hitherto been the Sahara, a wide belt of poorly inhabited and unexplored country. As long as we knew very little about it, this was a very simple question—north of the Sahara palaearctic, south of it aethiopian. This contention, however, was bound to be shaken to some extent when the Sahara (as it is marked on maps) became zoologically explored. Until the second decade of this century the Great Desert had only been touched by zoological collectors on some of its borders: in the east near the Nile, in the north from Algeria, Tunisia, and Tripolitania. South of Algeria the Koenigs had collected as far as Ouargla, Erlanger and Spatz from Tunisia about as far or little more to the south; Whitaker's intrepid collector, Dodson, had penetrated as far as Murzuk in Fezzan, south of Tripolitania, and his collections added much to our knowledge, but were evidently not exhaustive. J. Dybowski had collected during his inspecting-tour to El-Golea, but of the 42 species of birds which he brought home very few came actually from El-Golea, but were taken all along the route from Ghardaïa to El-Golea, and mostly not properly labelled. Riggenbach collected a few birds at the Rio de Oro and Comte de Dalmas at the Baie de Lévrier, Cap Blanco south, but neither of these latter travellers had penetrated into the interior, and each had only obtained a few specimens.

In 1912 I collected industriously, accompanied by Hilgert, as far south as Tidikelt (In-Salah), and in the same year Spatz and Fromholz collected as far as Temassinin. In 1914 Geyr von Schweppenburg and Spatz made their fruitful expedition to Ideles, on the slopes of the Hoggar Mountains. Thus some knowledge was obtained of the Saharan avifauna, but its greater part remained still unknown—not a step had been made (by ornithological collectors) into the desert south of Marocco and north of the Senegal, the central belt remained unknown almost from the Nile to the Atlantic.

Looking at any map, a somewhat large mountain-land, Aïr or Asben, catches the eye in the middle of the Sahara, on older maps and in textbooks called an "oasis," which is, however, a most misleading name for a mountainous country with desert tracts and valleys, towns and villages, mountains rising up to about 2,000 m. in height.

Zoologically Aïr remained absolutely unknown until Buchanan's expedition. It was with great satisfaction to myself that Lord Rothschild fell in with my

ideas about it, with his usual zeal and interest in all scientific exploration, and that Capt. Buchanan accepted his offer to make a collecting trip to Aïr for the Tring Museum. The exploration of that country has been in my mind since 1886. In that year the leader of a Tuareg caravan in Hausaland, who had brought salt from Bilma, offered to take my companion Staudinger and me to Asben, but we had not the means, neither the necessary outfit, ammunition, etc., nor the money, to accept it, nor would it have been possible, at that time, to collect freely in Asben, which was only permanently occupied by the French in 1905. It was one of my many unfulfilled dreams of life to visit Asben myself, but I have never given up the hope one day to see natural history specimens from there. In 1901 I wrote (*Nov. Zool.* vol. viii. p. 118), "what may the extensive mountains of Tintellust, what Asben or Aïr have in store for us." In *Nov. Zool.* vol. xx., 1913, p. 20, I again directed attention to Asben. We knew already from Barth's *Travels* that Aïr has tropical vegetation, that some valleys are fertile and contain good water, that ostriches, lions, giraffes, birds were seen by him, that near Agades he observed monkeys and butterflies. Jean, in 1909, in his book, *Les Touaregs du Sud-Est, l'Aïr*, mentions lions in the mountains of Timgué and Baguezan, foxes, hyaenas, cats, antelopes, monkeys, but he adds that giraffes do not now exist in the country, and that the ostrich is not found north of Damergu; of other birds he mentions, besides some which, like turtle-doves, occur in palaearctic regions as well as in the tropics, and some unintelligible names, glossy starlings, which are only found in tropical countries. The French trader Brand in In-Salah, who had passed Aïr on his journey to and from Kano, told me in 1912 that Aïr abounded in brilliantly coloured birds, such as sun-birds ("colibris") and glossy starlings, and that weaver-birds' nests could be seen in the trees. On Plate XVIII. Jean reproduces a large vulture, which may possibly be a young *Gyps rüppellii* or *G. fulvus*. It seems to be too large for *Lophogyps*, and cannot be *Pseudogyps*. Foureau in *D'Alger au Congo* mentions several birds at Iferouane, among them evidently *Columba guinea*, a bird of the size of a thrush, with golden underside and very glossy green back (? *Chrysococcyx cupreus*), *Pterocles senegalus* (probably error!). At Aguellal he observed *Corvus albus*, *Numida*, glossy starlings, and small birds "de toutes nuances."

Meagre as all these statements are, they proved that the fauna of Asben is chiefly, if not entirely, tropical. This is borne out by Buchanan's collections. Of the birds nearly all may—apart from migrants—be called tropical species or subspecies; two, *Streptopelia turtur hoggara* and *Columba livia targia*, are so far only known from the Hoggar Mountains, where Geyr discovered them, and nine are inhabitants also of the Northern Sahara, one is a sub-species, and closely allied to the South Algerian *Crateropus fulvus*. The mammals are on the whole Sudanese forms or close allies of such, and what there is of Algerian forms is really Saharan, and not found in Algeria proper. The lepidoptera are essentially Saharan, many forms being similar to those found by Geyr and myself in the Sahara between the Atlas and Tidikelt, and the Hoggar Mountains.

The boundary between the palaearctic and tropical African fauna may therefore be regarded as fairly fixed to about the 20th degree of latitude, though it is, of course, not a hard-and-fast dividing line, there being many exceptions—even among birds which form the main basis of these notes. I am sorry to say I cannot agree with my friend Geyr v. Schweppenburg's conclusions as put forth

in *Journ. f. Orn.* vol. lxv., 2, pp. 43–56. Nobody will and can deny that Asben, with such birds as *Nectariniidae*, glossy starlings, *Burhinus capensis*, *Necrosyrtes*, *Chrysococcyx*, hornbills, *Colius macrourus*, *Pogoniulus*, *Scoptelus*, *Batis*, *Eremopterix*, *Passer griseus*, weaver-birds, etc., has a tropical bird population. With equal certainty, however, I consider a country where all these types of tropical avifauna are fully absent, and where, instead, *Burhinus oedicnemus*, *Sylvia nana deserti*, *Buteo ferox cirtensis*, *Athene noctua saharae*, and other birds which also inhabit palaearctic regions north of the Sahara, or along its northern portion, form the bird population, as palaearctic. The correctness and erudition shown in Geyr's remarks is great, but the *origin* of certain forms does not, in my opinion, prove that they can nowadays be called upon as witnesses for the relationship of a fauna. There are in Morocco, Algeria, etc., and even in Europe, forms of undoubted tropical origin, such as *Alcedo atthis ispida* and *Coracias garrulus* in Europe, the often-quoted *Pycnonotus barbatus barbatus*, *Telephonus* (*Harpolestes*), *Asio capensis tingitanus*, *Melierax musicus*, *Streptopelia senegalensis phoenicophila*, *Apus affinis galilejensis*, in Africa Minor, yet these forms are *now* palaearctic birds, and can therefore not prove the character of a country to be tropical.

Of the tropical birds from the expedition, 14 (possibly 15) are peculiar, modified forms, but only 6 of them are found in Asben proper, 6 are equally found in Damergu, Zinder, or Northern Hausaland, which are naturally richer in animal life than the dry, desolate mountains of Aïr.

The birds show once more that the Sudan from east to west, like the Saharan province, forms a uniform faunal zone. In olden times, when Jean Cabanis was alive and head of the bird department in the Berlin Museum, a saying of his used to be proverbial among his disciples, "*dat jeht so durch*" ("that ranges through"), which he frequently used to emphasise that certain forms extended from the west (Senegal) to the Eastern Sudan. The name *Sudan* is the ancient name for the negro-country south of the Sahara, from west to east. Therefore we correctly called the expedition to Hausaland in 1885 and 1886, of which my journey to Sokoto and Kano formed a part, the expedition to the Western Sudan, and Sclater and Praed published a list of the birds from what they call the "Anglo-Egyptian Sudan." Unfortunately it has become customary to restrict the name Sudan to that latter region, in which, moreover, is included the whole of Nubia, which should be separated historically, geographically, and to a certain extent faunistically.

While most of the birds from Kano, Zinder, and Damergu agree best with the Senegal forms, this is also the case with the majority of Asben birds, but the occurrence of such specialised forms as *Ortyxelus meiffreni* from the Senegal to Darfur and Kordofan, the discovery of *Caprimulgus eximius* and *Calendula dunni* as far west as Zinder are, among others, proofs of this continual Sudanese fauna. On the other hand, many forms are different east and west, sometimes widely, sometimes very little, though distinguishable. A stepping-stone between our knowledge of the birds of Asben to Kano and those from the "Anglo-Egyptian Sudan" are the discoveries of Capt. Lynes, the results of which are, however, except descriptions of a few novelties, not yet published, and who is now making a second collection in Darfur. The temporary French occupation of Tibesti, under Col. Tilho, has not yielded any zoological fruits.

Capt. Buchanan sailed from England early in November, and landed at Lagos, whence he proceeded by railway to Kano. Near Kano, mostly in the

village of Farniso north of Kano, he stayed and collected from December 3 to January 8. Kano is about 1,700 feet high, and the dry season had commenced before he arrived there. From 9.i.1920 to January 22 he travelled northwards over the 140 miles to Zinder, where he camped until February 20 (Pl. I.). The journey was mostly through open bush country, interspersed with barren, sandy tracks. Zinder was the richest place for birds where he collected during the expedition, many birds appearing, for example, on the wells of Baban Tubki (Pl. I.). The Zinder country is generally called Damagarim, and is from 1,500 to 1,640 feet high. North of Zinder is a barren belt, 25 to 30 miles wide, undulating in places with low-rounded rises, sandy or covered (in the dry season) with withered grass, and often outcrops of gravel, boulders and rocks, in places some scraggy bush and an odd tree. Near Kaleloua a 20-miles-wide belt of fairly thick bush, chiefly acacias, is passed, to be followed by a 50-miles-wide barren belt. Takukut (Takoukout) in Damergu was reached on March 6, and collections were made until March 27. From south of Takukut to north of Aderbissinat extends a bush belt of fairly scattered dwarf acacias, of elevations from 1,500 to 1,800 feet. This bush belt is about 75 miles wide, and *the only place where ostriches are found nowadays in these countries.* The 93½ miles to Agades are waterless desert, there being water only in the well at Abellama.

Agades, the French garrison and administrative capital of Aïr (Asben), 1,710 feet above the sea, was reached on April 11, and the traveller stayed there 11 days. Agades, however, lies not yet in the mountains of Asben, though in the far distant in the north smoke-blue hills are visible on the horizon. The foothills can be reached in half a day from Agades, but the great mountain ranges commence only near Aouderas and Baguezan, when range upon range are in view in a long ragged line across the northern front (Pls. II., III., IV.). The typical brown-grey rock-country of Asben is entered south of Aouderas and Baguezan at Azzal, 1,825 feet above the sea. At Arra, in the southern foothills of Mount Baguezan, Buchanan stayed from May 1 to May 5, and on Mount Baguezan, the highest point of which is 6,050 feet high, he stayed at an elevation of 5,200 feet from May 8 to June 6. It had been a rainless dry season, but a few light rains began to fall early in June. This seems to be a land of pebbles and rocks, like lava or the sea-shore, a waterless waste, a desert of rocks, bare of plants and life. Only along the beds of rivulets, which appear like a meandering line of sand through the grey land of pebbles, some tufts of coarse grass and a few stunted acacias are seen, and along the greater river-beds is more vegetation, with doum-palms (*Hyphaene*) and date-palms, acacia bush and "skunk," a bush growing about 6 to 10 feet high, from a distance looking like a strong-leaved willow. Goats eat it, and camels when in need of food; it is evergreen, and has a strong, unpleasant smell. Hausa name "Abisgee."

The summit of Mount Baguezan appears as a great plateau with mount upon mount of gigantic boulders with narrow levels of sand or bare rock. Nearly all the shelf-rock in Asben is in an advanced stage of decay, but the boulders (Pls. VII. and VIII.) are strong and hard. There is besides much rock like lava. Mounts Baguezan, Timia, Agalak, Faodet, and Tamgak may be said to form almost one continuous range. The heights are often of grotesque shape and appear like towers and castles from the distance. At the base of the greater mountain ranges are fertile belts, where acacias and shrubs (particularly the skunk-like smelling bush) grow in fair abundance, and on which the goats and camels used to feed in

the past—for now many large stone-built towns and villages are deserted and dead, except in the southern parts, near Agades. There are small settlements at Timia, Aouderas, and on Mount Baguezan, a few hundred natives in all, otherwise the land north of Agades is in ruins and unpopulated. This is due to the continued attacks by raiders, who come from the north, stealing camels and whatever they can get, and attacking and killing the people who resist. A band of 14 men attacked Timia on June 21, stealing 32 camels and wounding 8 natives, several of whom died. Buchanan reached Timia only a few hours after the fight, just too late to help the inhabitants. These raiders come from far north, from Janet, about south-west of Ghat, in the territory of the Asger (Asdjer, Azkar), and were led by a famous robber named Chebickee.

At Iferouan (2,300 feet) the traveller collected on June 13 and 14; he then returned via Aguellal, at the foot of the Aguellal mountains (Pls. V. and VI.) and stayed at Timia (3,800 feet) June 21–26; from there he returned to Mount Baguezan from July 1 to 3, when the dreary aspect was relieved by some green foliage appearing, resulting from light rains. Collections were made to about 5,200 feet, the highest point being 6,050 feet. At Azzal (1,825 feet), not far from Agades, Buchanan camped from July 12 to 17. In the Aouderas Mountains (2,700 to 4,000 feet) (Pl. IX.) a stay was made from July 22 to August 1, on Mount Tarrouaji August 3 and 4. Here most of the time was occupied with the hunting of the Barbary sheep, at elevations of about 3,000 feet, which is roughly the summit of the range. Here the rainy season had set in fully.

The return journey was now commenced, and a stay made at Tegguidi, where the collector camped at 1,375 feet below the cliff, which towers up to 1,710 feet at its top. From Tegguidi to Agades is the only place where *Passer simplex* was noticed. A stay was again made at Aderbissinat, 1,525 feet, 93½ miles south of Agades, where large, lake-like temporary ponds of water had collected from the heavy rains, frequented by a good many waterfowl and waders. From September 3 to 5 Buchanan stayed at Tanout, 1,800 feet, south of Damergu, and from there travelled rapidly southwards to Kano.

While the traveller had always been in splendid health, he was attacked by malarial fever during the rains, on his return journey, from which he was still suffering for some months in England.

While the winter was absolutely dry, some slight showers fell in June, soon followed by green foliage, but the rainy season began in the middle of July and lasted throughout August, ending in September. Water in Asben is gained from deep wells; permanent surface water exists only in three places, so far as could be ascertained, one being a deep pool near Aouderas. The year 1920 was exceptionally good for rain, while the foregoing years were terrible, in 1919 rain falling on two days only.

Buchanan was most kindly received, and assisted in every possible way, by the French officers in Zinder, Damergu, and Agades. Unfortunately the insecurity in Asben obliged the authorities to insist on a guard of Tuareg soldiers accompanying him on his journey to the northern parts of Asben, and he was only allowed to stay a very short time in some of the places.

Capt. Buchanan obtained skins of 168 species. In a country which, to a great extent, is desert and therefore poor in animal life, and considering that he also collected as many lepidoptera and mammalia as possible, this is a very fine collection. He believes that he got almost every resident bird in Asben, except

two, a large falcon (probably *Falco biarmicus abyssinicus*) and a large eagle with white on rump or base of tail. But of the 168 species, apart from migrants from Europe, only 65 were from Asben proper, of which we are sure or must assume that they are breeding resident birds. They are the following: *Numida galeata galeata, Pterocles lichtensteinii targius, Burhinus capensis affinis, Streptopelia senegalensis senegalensis, S. roseogr. roseogrisca, S. turtur hoggara, Oena capensis, Columba livia targia, Necrosyrtes mon. monachus, Neophron percn. percnopterus, Gyps rüpp. rüppellii, Clamator jacobinus pica, Chrysococcyx caprius chrysochlorus, Lophoceros erythr. erthrorhynchus* (only in the south), *Mesopicos goertae goertae, Dendropicos minutus, Coracias abyssinus minor, Upupa epops somalensis, Merops orientalis viridissimus, Colius macrourus syntactus, Lybius vieilloti frater, Trachyphonus margar. margaritatus, Pogoniulus chrysoconus schubotzi, Scoptelus aterrimus cryptostictus, Caprimulgus inornatus, Apus murinus brehmorum* (?), *Apus affinis galilejensis, Riparia obsoleta buchanani, Oenanthe leucopyga aegra, Crateropus fulvus buchanani, Cercotrichas podobe, Agrobates galactotes minor, Cercomela melanura airensis, Hippolais pallida reiseri, Spiloptila clamans, Eremomela flaviventer alexanderi, Hedydipna platura platura, Nectarinia pulchella aegra, Remiz punctifrons, Batis senegalensis, Lanius excubitor leucopygos, Nilaus afer afer, Pycnonotus barbatus arsinoe, Anthus sordidus asbenaicus, Alaemon alaudipes alaudipes, Galerida cristata alexanderi, Ammomanes deserti mya, Ammomanes phoenicurus arenicolor, Eremopterix leucotis melanocephala, Erem. frontalis frontalis, Emberiza striolata sahari, Passer simplex saharae, P. luteus, P. griseus griseus, Serinus leucopygius riggenbachi, Erythrospiza githaginea zedlitzi, Ploceus luteolus luteolus, P. vitell. vitellinus, Aidemosyne cant. cantans, Estrilda senegala brunneiceps, Spreo pulcher pulcher, Lamprocolius chalybeus hartlaubi, Corvus albus, C. corax ruficollis, C. rhipidurus.*

As will be seen at a glance by anyone acquainted with the distribution of birds in Africa, by far the majority of these forms are inhabitants of tropical Africa. The greater part have evidently found their way to Asben from Nigeria, and agree fully with the Senegalese forms, or those from Hausaland, when they differ, as for example *Pogoniulus chrysoconus schubotzi, Scoptelus aterrimus cryptostictus, Galerida cristata alexanderi.* Others, however, have hitherto only been known from North-East Africa, as, for example, *Spiloptila clamans, Remiz punctifrons, Corvus rhipidurus,* and others found in Zinder and Damergu. Of still greater interest are those birds which must have reached Asben from the north, viz. *Oenanthe leucopyga aegra, Hippolais pallida reiseri, Alaemon alaudipes alaudipes, Ammomanes deserti mya* (?), *Emberiza striolata sahari, Passer simplex saharae, Erythrospiza githaginea zedlitzi, Corvus corax ruficollis,* which Asben has in common with the Algerian Sahara, a palaearctic country, and *Pterocles lichtensteinii targius, Streptopelia turtur hoggara, Columba livia targia,* hitherto only known from the Hoggar Mountains.

As not a single specimen had ever been collected in Asben, Damergu, and Zinder, every skin from there was of the greatest interest. Also the collection from Kano is valuable to us, as practically nothing has been known from there except my own meagre notes and specimens, very meagre indeed owing to my severe illness (malaria) and other hindering circumstances; Boyd Alexander did not collect near Kano, but passed through Katshena on his journey to Lake Chad.

The migrants obtained are also of interest, but we know still of certain species

passing through the Western Sahara and not yet found in the Sudan south of the latter, such as *Streptopelia turtur arenicola* for example. Only 4 forms appear to be peculiar to Asben: *Riparia obsoleta buchanani*, *Crateropus fulvus buchanani*, *Cercomela melanura airensis*, *Anthus sordidus asbenaicus*. From such a remote place, far away from all explored portions of Africa, I should have expected more peculiar forms. The reason that there are so few is probably the connecting highway through Zinder and Damergu to Hausaland, which has mostly more or less vegetation, there being only a comparatively narrow bare belt.

Probably also this part, and indeed the whole of the Sahara, has been waterless desert before the arrival of many of the species inhabiting it at present, while the former bird population may have died out when the desiccation became serious. Though I do not deny that the desiccation of the Sahara continues even now, I am convinced that it has in the main been a desert long before historical times.

During my study of Buchanan's bird collection the following recent works have more especially been of value to me: Oscar Neumann's list of the birds of the western Senegal Colony, and Sclater and Praed's list of the birds of the Anglo-Egyptian Sudan. Among others I have had occasion specially to use Claude Grant's articles, Zedlitz's reviews of many African groups, Neumann's critical and detailed articles, Lynes's description of new birds from Darfur, and Wettstein's notes on Kordofan birds. Doubtless the results of Lynes's second expedition to Darfur, when worked out together with his first collection, will greatly increase our knowledge of Sudanese birds.

A great desideratum is still the exploration of the country north of the Senegal, and, though of less importance, that south of the Moroccan Atlas.

1. Struthio camelus camelus L.

Struthio Camelus Linnaeus, *Syst. Nat.* ed. x. i. p. 155 (1758—"habitat in Syria, Arabia, Lybia, Africa." Restricted terra typica North Africa, from quotations and designation of Rothschild, *Bull. B.O. Club*, xxxix. p. 83).

♂ ad., Damergu, 3.ix.1920. "Iris light stone-grey. Bill dull pale whitish yellow, nostrils and corners of mouth full dull pink. Feet whitish cream-yellow with pinkish tint. Length of neck and body 88 in., tarsus 24 (?), weight 274 lb."

This is a very fine adult male; the tarsus measures in the skin 455 mm., bill 140 mm. It is only in Damergu, i.e. in a bush belt, about 80 miles wide, of scattered dwarf acacias between Tanout and Tessalatin, that ostriches are found. The food in the dry season is chiefly a leguminose shrub, about 18 in. high, with yellow flowers and flat transversely ribbed pods, which grows, though not abundantly, on bare sand. It is a species of *Cassia* near *obovata*. Hausa name Filusko. Next to it the juicy leaves of *Oxystelma bornouense* (*Asclepiadeae*), a slender creeper that climbs to the topmost branches of the acacias. Hausa name Hanwin Rago. Other food plants of the ostrich are a species of *Cucumis* (Hausa name Gurji or Gurji kwantal, "a common ground-creeping gourd"), and *Maerua rigida* (*Capparidaceae*), a small tree with white flowers, called by the Hausas Chichiwa. Hausa name Simmina.

2. **Numida galeata galeata** Pall.

Numida galeata Pallas, *Spicil. Zool.* i. fasc. iv. pp. 13, 15 (1767—name given to the domesticated guinea-fowl of Europe and America).

(*Numida meleagris* auctorum, nec Linnaeus ! Linné named the bird described in detail by Hasselquist, *Iter Palaestinum*, pp. 274–278, 1757. The name *meleagris* cannot possibly be accepted for the West African common guinea-fowl now domesticated in Europe and other countries, because it is clear that it is that of the species hitherto called *ptilorhyncha*. Hasselquist clearly described the round white spots changing to narrow bars at the base of the neck, and the bristles at the base of the bill, and not the obvious bluish grey-brown collar across the crop region; moreover he described it from a specimen brought to Cairo by Nubian traders, together with monkeys and parrots. Advocates of "nomina conservanda" will probably say the "well-known" name of *meleagris* must be preserved for our domesticated guinea-fowl; but as it obviously was not meant for it, nomenclature would become a mockery if we continue its erroneous use, and the domesticated species must be called *Numida galeata*.)

Nos. 342, 343, 344 ♂♀♀, Zinder, 9.ii.1920.

Nos. 577, 598 ♂♀, Mt. Baguezan, 5,200 feet, 11, 17.v.1920.

"Length, 18¼ to 20½ in. Top of head medium brown, sides of head pale whitish cobalt blue, wattles red. Iris dark brown. Bill brown of various shades, tip pale. Feet black, joints of scales generally pale brown."—(A. B.) Also observed near Aderbissinat in August, south of Aguellal in June, and near Aouderas in July. Hausa name Labo.

There is no constant difference between these birds, nor between them and our series from Senegambia. *N. galeata* is common in Hausaland in wooded districts, while on the Lower Niger the Angola-Gabun form *N. galeata marchei* occurs, which is larger and has a darker and more bluish crop region with more or less developed whitish cross-bars.

3. **Francolinus clappertoni clappertoni** Children.

Francolinus Clappertoni Children, Denham & Clapperton's *Narr. Trav. & Discov. North & Central Afr.*, append. p. 198 (1826—no locality stated. The specimens were evidently never labelled. The Francolin doubtless came from northern Bornu or northern Hausaland. To say that Bornu must be the exact locality is impossible. Grant did this because on p. 320 it is said that "very large partridges" are found in Bornu, but there is no indication that the type of *F. clappertoni* was shot there).

♀ jun., nearly full grown, juv. about half grown, Zinder, 5, 9.ii.1920.

♂♀ ad., Takukut, Damergu, 21, 26.iii.1920.

"Iris dark brown, bare space round eyes fairly deep pink. Bill and 'cere' (space round nostrils) dull black, edge of nostrils and corner of mouth slightly pink. Feet ♂ dull black, legs behind and soles tinted with pinkish; ♀ deep bright black, underlain with reddish, particularly on back of tarsus."

These specimens are interesting as coming not far from the original locality of the species. So far no specimens except the type were available from there, until Boyd Alexander collected a few from various places near Lake Chad.

There appears to be no difference between birds from Hausa and Bornu and those of Kordofan. The former have more often buff spots, in addition to

the submarginal lines to the feathers of the interscapulium, but this difference is not constant. *F. clappertoni heuglini* and *gedgei* are well distinguishable from *F.c. clappertoni*, but very close to each other, *F.c. sharpei* from Abyssinia is still more distinct and considered as a species by some authors. (Cf. Sclater and Praed, *Ibis*, 1920, pp. 844–846).

4. Pterocles senegalensis senegalensis Licht.

Pterocles senegalensis Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 64 (1823 —" Senegamb., Aegypt., Nubia ").
Pterocles exustus Temminck, 1825.

♂ ad., Abellama, south of Asben, 14.viii.1920. " Iris dark, eyelid pale whitish yellow. Bill medium whitish grey, paler yellowish at corner of mouth. Feet dead whitish grey." Length 13½ in.

This specimen agrees perfectly with those from Nubia.

5. Pterocles lichtensteinii targius Geyr.

Pterocles lichtensteinii targius Geyr von Schweppenburg, *Orn. Monatsber.* 1916. p. 56 (source of Tahart, northern Tuareg country).

3 ♂ 1 ♀, Mt. Baguezan, Asben, 5,200 feet, May 13, 18, 20, and June 4, 1920. ♂. " Iris very dark umber-brown, eyelid lemon-yellow. Bill dull sienna-brown. Feet dull medium orange-yellow." ♀. Same, but " eyelid whitish yellow."

These birds agree entirely with the specimens collected by Geyr in the north of the Hoggar Mountains, 4 of which were kindly lent me by Prof. Koenig for comparison. These birds differ certainly at a glance from *P. lichtensteinii lichtensteinii* of Nubia (specimens from Suakim in British Museum) by having narrower bars on the upperside and thus appear much less black; the bars on the wings are less white; also the barring of the females is very much narrower, and the ground colour is less whitish, more brownish isabelline, so that it appears altogether more isabelline brownish. With regard to the other forms, I cannot help, for the present, doubting the difference of *abyssinicus* from *P.l. lichtensteinii*. It seems to me that the latter ranges from the Red Sea shores (Nubia) to Abyssinia, and North Somaliland. This was also accepted by Neumann in 1909.

Buchanan found these sandgrouse only on Mt. Baguezan, where they were often flushed from between the boulders on the hill-sides, and were seen flying to water at sun-down.

6. Ortyxelos meiffreni (Vieill.).

Turnix Meiffreni Vieillot, *Nouv. Dict. d'Hist. Nat.* xxxv. p. 49 (Senegal).

2 ♂ ad., 3 ♀, 1 ♂ pull., Zinder, January 24 and February, 1920. " Length 4½–4½ in. Iris medium umber-brown. Bill various shades of dark brown, in one dull pale yellowish with extreme of upper mandible blackish grey. Feet creamy white."

There is considerable variation among these specimens, 1 male (No. 228) is redder, has more conspicuous buff spots, bordered above by a black line on the scapulars and inner secondaries, and lacks on these parts almost completely the buff edges. Altogether they do not seem to differ from a skin from the Senegal

Colony (Riggenbach) and the skins brought home by Lynes from Darfur. The young bird is in its first feather-garb, and agrees almost exactly with adult birds, except for its much smaller size. Wings, ♂ 73, 75, ♀ 77, 78, 80 mm. The larger size of the ♀ is, judging from Lynes's specimens from Darfur, not constant, as he has females with wings measuring 77 and 79, a male with wings 80 mm. That is assuming that Buchanan's and Lynes's specimens are correctly sexed.

I am inclined to think that the position of *Ortyxelos* with the "Cursors," as adopted by Sharpe and Reichenow, is wrong, and that it is a genus of the *Hemipodii* (*Turnicidae*).

Buchanan says they frequent quiet bush, rise from the grass at one's feet and fly "like a bat in daylight, as if short-sighted," for a short distance before dropping into cover again. Seen singly or in pairs only. An adult bird had small seeds, the young insects in stomach." A ♀ shot 13.ii.1920 had a "half-formed egg."

7. Otis senegalensis senegalensis Vieill.

Otis Senegalensis Vieillot, *Tabl. Enc. Méth. Orn.* i. p. 333 (1820—Senegal, in Riocour collection).

♂ ad., Zinder, 1,500 feet, 5.ii.1920. "Iris dark. Upper mandible blackish, cutting edge and lower mandible whitish with pink tinge. Feet cream-white. Length 20¾ in. Hausa name, Kadupkurra. Found in open half-desert country, interspersed with dwarf bush and irregular patches of dry grass."

Also found in Hausaland, near Zaria (cf. *Nov. Zool.*, 1915, p. 247).

8. Eupodotis arabs (L.).

Otis arabs Linnaeus, *Syst. Nat.* ed. x. i. p. 154 (1758—ex Edwards, who figures, on pl. 12, a specimen from Mocca in Arabia).

♀ ad., Zinder, 1,500 feet, 28.i.1920. "Iris clear cream-white. Bill greyish brown between nostrils and to tip, three-quarters of an inch from extreme lower mandible darkish, remainder of bill dirty white. Feet white, slightly tinged with yellow. Hausa name Toogee or Towgee."

It is at present impossible to define sub-species of this species.

9. Hydrochelidon leucoptera (Temm.).

Sterna leucoptera Temminck, *Man. d'Orn.* p. 483 (1815—coasts of Mediterranean).

♂ juv., ♀ juv., Aderbissinat, 1,525 feet, south of Asben, 18, 24.viii.1920. "Iris dark. Bill deep bluish black with faint dull orange at corner of mouth. Feet ♂ medium full darkish sienna-brown, ♀ sienna-brown."

10. Himantopus himantopus himantopus (L.).

Charadrius Himantopus Linnaeus, *Syst. Nat.* ed. x. i. p. 151 (1758—"habitat in Europa australiore").

♀, Aderbissinat, south of Asben, 17.viii.1920. "Iris full clear crimson. Bill fairly bright black. Feet medium pale pink."

11. Tringa glareola L.

Tringa glareola Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758—"habitat in Europa").

♂♀, Aderbissinat, south of Asben, 19.viii.1920,

12. Tringa ochropus L.

Tringa Ocrophus (evidently the "h" misplaced, though in the quotations as well!) Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758—"habitat in Europa").

♂♂, Farniso, near Kano, 1,700 feet, 26, 29.xii.1920.

13. Tringa hypoleucos L.

Tringa Hypoleucos Linnaeus, *Syst. Nat.* ed. x. i. p. 149 (1758—"Europa").

♂, Aderbissinat, south of Asben, 15.viii.1920.

14. Philomachus pugnax (L.).

Tringa Pugnax Linnaeus, *Syst. Nat.* ed. x. i. p. 148 (1758—"Europa." Restricted terra typica Sweden).

♂♀♀, Aderbissinat, south of Asben, August, 1920.

15. Sarciophorus tectus tectus (Bodd.)

Charadrius tectus Boddaert, *Tabl. Pl. Enl.* p. 57 (1783—ex Daubenton, pl. 834, "Pluvier du Sénégal").

2 ♂, 3 ♀, Zinder, 5, 9.ii.1920. "Iris clear lemon-yellow. Bill crimson except $\frac{3}{8}$ in. extreme which is black. Wattles dull deep pink. Feet medium full purple. Length, $10\frac{1}{4}$ to $10\frac{5}{8}$ in."

There is no differences between males and females. Wings, ♂ 193, 196, ♀ 187, 193, 202 mm.! Stupendous variation. The length of 202 must be exceptional, the other (right) wing measuring only 201, while in about 15 specimens from Senegal and East Africa the biggest measure was 199, and that only occurred once, the usual length being 186–196 mm.

"♀, February 9, in breeding condition. ♀, February 5, with fully formed eggs in ovary."

16. Hoplopterus spinosus (L.).

Charadrius spinosus Linnaeus, *Syst. Nat.* ed. x. i. p. 151 (1758—"habitat in Aegypto." Ex Hasselquist's "Iter").

♀♀, Aderbissinat, south of Asben, 1,525 feet, 15, 26.viii.1920. "Iris rich red. Bill deep black. Feet dull deep black." Wings, 194, 199 mm. Length, 11 in.

17. Burhinus (Oedicnemus) capensis maculosus (Temm.).

Oedicnemus maculosus Temminck, *Pl. Col.* 292 (1824—wide distribution given, but specimen from *Senegal* figured and described).

? *Oedicnemus affinis* Rüppell, *Mus. Senckenb.* ii. p. 210 (1837—"Kordofan, Nubien, Abyssinien," but terra typica Red Sea coast of Abyssinia, ex *Syst. Nebers. Vög. N.O. Afr.* pp. 112, 117!).

♂, Aouderas, central Asben, 2,700 feet, 21.vii.1920. "Iris clear medium pale lemon-yellow, eyelid lemon-yellow. Bill beyond nostril dull black, remaining portion of a slightly greenish lemon-yellow. Feet pale greenish lemon-yellow."

This bird is very brightly coloured, the black spots on the upperside smaller than in *B. capensis capensis*, abdomen unspotted except along flanks, feet very pale.

Though Reichenow united *affinis* and *maculosus* with *capensis*, he evidently no longer adheres to this opinion, and modern authors distinguish *at least* a northern brighter, lighter, and a southern darker, duller-coloured subspecies. It is, however, difficult to know what the proper name of the pale birds should be. Sclater and Praed (*Ibis*, 1920, p. 802) adopt "Kordofan" as the typical locality of *affinis*, but this is not correct. Though Rüppell said that its distribution was Kordofan, Nubia, and Abyssinia, he had only collected it on the Red Sea coast of Abyssinia (l.c.), and the types in Frankfurt are labelled Abyssinia. Now the figure in *Syst. Nebers. Vög. N.O. Afr.*, pl. 42, seems to me to represent a bird different from the brightly coloured ones from the Senegal, Gambaga, Asben, Upper Nile and White Nile, with which also one from Eritrea agrees.

Zedlitz (*Journ. f. Orn.*, 1910, p. 314) gave a review of the forms of *Oe. capensis*. He examined the "types" of Rüppell, of which one only agrees with Rüppell's plate, the other is, he says, a juvenile bird and looks quite different. He truly says that only the adult bird *which agrees with the plate* can be the type, and he wonders how Rüppell could have designated two different birds as types; it must, however, be pointed out that Rüppell designated no types at all, he not having the modern conception of the importance of type specimens! We can now only accept the Frankfurt birds as his types, but no individual example can with absolute certainty be labelled "type," unless he had only one! The birds in Frankfurt do not have "original" collector's labels; the labels which I found on the specimens when I catalogued the collection thirty years ago were written by the curator Erckel, and only sometimes were still older labels glued under the stands, and those were hardly the original field-labels. In former days the proper identification of the species appeared to be of more importance than the all-important, sacred original label put on the bird by the collector in the field. Collectors who *nowadays* do not attach such labels, but numbers or marks only, are fortunately rare and deserve nothing but the severest criticism.

A specimen in the Tring Museum from Ehanda in South-West Africa is hardly distinguishable from Senegal ones, and is evidently *B. capensis damarensis* (Rchw.), while some from Benguella, on the other hand, seem to agree absolutely with others from South and East Africa, being much darker!

B. c. psammochrous (Rchw.) is synonymous of *maculosus* (and thus perhaps of *affinis*), *csongor* the same as *capensis*. *B. c. dodsoni* (Grant) is lighter than *capensis*, greyer than *maculosus* (*affinis* auct.). *B. c. ehrenbergi* (Zedl.) (*Orn. Monatsber.*, 1910, p. 9, *Journ. f. Orn.*, 1910, p. 314) is unknown to me.

18. Streptopelia senegalensis senegalensis (L.)

Columba senegalensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 283 (1766—Senegal, ex Brisson).

3 ♂, 3 ♀ ad., 1 ♂ immat., Kano and Farniso near Kano, December 1919.

2 juv. in first plumage, Timia, northern Asben, 26.vi.1920.

2 ♂ ad., Mt. Baguezan, 5,200 feet, 12, 28.v.1920.

♂ ad., south of Baguezan, 3.v.1920.

Adults: "Iris very dark umber-brown. Bill and nostrils dull black. Feet medium reddish purple."

In the young in first plumage the upper wing-coverts have brownish-buff margins, the jugular collar is wanting; at first the jugular feathers are sandy grey

with buffy edges, later rufous buff with bluish-grey bases. A ♂ shot 5.xii.1919 is in full moult.

Common near Kano ; near Baguezan among the rocks, not rare, common at Baban Tubki near Zinder. On December 19 a nest with 2 eggs was taken near Farniso (Kano) about 3 feet 6 in. above the ground in a low acacia bush, in a clump of trees near village. The eggs are slightly glossy and measure 25·8 × 14·8 and 26·8 × 15 mm. An egg taken from the oviduct 23.xii.1919 measures 25·5 × 20 mm. Hausa name Kutchea, Tuareg Tedabear.

19. **Streptopelia decipiens shelleyi** (Salvad.)

Turtur shelleyi Salvadori, *Cat. B. Brit. Mus.* xxi. p. 419 (1893—Lower Niger !).

3 ♂, 2 ♀, Farniso near Kano, 1,700 feet, December 1919, January 1920. "Iris pale creamy white. Bill with cere black. Feet medium reddish purple." Hausa name Zunqui.

I compared these specimens with the type and sole specimens of *Turtur shelleyi*, in the British Museum, and find them to agree with the latter. This form differs from all the other subspecies of *decipiens* known to me in the colour of the primary coverts, which are bluish grey and not blackish or dark brown ! The cheeks are grey, back brownish, narrow outer edges of quills whitish grey, under tail-coverts bluish grey with whitish fringes. Wings, ♂ 181–185, ♀ 171,177 mm. I measure the left wing of the type specimen 172, the right one 169 mm. This form inhabits also Togo, as Reichenow informs me that Togo specimens have bluish-grey primary coverts and extends to the Senegal Colony.

20. **Streptopelia roseogrisea roseogrisea** (Sund.).

Columba roseogrisea Sundevall, *Krit. om Levaill.* p. 54 (1857—Nubia).

4 ♂, 2 ♀, Zinder, 24–30.i.1920. "Iris rich scarlet. Bill black. Feet medium reddish purple." Hausa name Memmacallie.

These birds do not seem to differ from Nubian examples. The coloration of the under wing-coverts varies, being sometimes quite white, more often tinged with grey.

Also observed numerous at Aderbissinat in August, and at Azzal in July. Very common at Zinder. In stomachs millet and small beans.

21. **Streptopelia vinacea vinacea** (Gm.).

(? an subspecies.)

Columba vinacea Gmelin, *Syst. Nat.* i. 2. p. 782 (1789—Senegal. Ex Brisson).

3 ♂, 1 ♀, Farniso near Kano, 31.xii.1919, 1.i.1920. "Iris dark. Bill grey-black. Feet medium full reddish purple." Hausa name Memmacallie, which means having a black crescent on the hind-neck.

These birds are rather long-winged, compared with Senegal specimens. Left wing, ♂ 146, 148, 150, ♀ 140 mm. Possibly with a larger series a larger subspecies might be established, but they seem to be widely spread. At Loko on the Benue they were common.

22. Streptopelia turtur hoggara (Geyr).

Turtur turtur hoggara Geyr von Schweppenburg, *Orn. Monatsber.* 1916. p. 59 (Idelès, northern edge of Hoggar Mountains).

2 ♂, 1 ♀, Iferouan, northern Asben, 2,300 feet, 14.vi.1920. "Iris clear light buffish sienna, bare skin round eye deep purple. Bill brownish black. Feet crimson to pale purple."

Buchanan only found this dove at Iferouan and observed it chiefly in the tops of the date palms. The chief of Iferouan informed him that it never occurred south of Tamgak (close to Iferouan), but was found among the rocks north of Iferouan. This information is probably quite correct, as the specimens agree with the type of *S. turtur hoggara*. They are really intermediate between *S. t. isabellina* and *arenicola*, but nearer to the former, from which they merely differ in the more or less bluish-grey forehead and crown, and the darker, more greyish-brown, less isabelline, back and rump. Wings, ♂ 175, 168, ♀ 173 mm. The wing of the type of *hoggara* measures 170. Stomach berries.

S. t. hoggara is one of the few birds the stronghold of which seems to be in more northern regions, the majority of the bird population of Asben being that of the Western Sudan.

23. Oena capensis (L.)

Columba capensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 286 (1766—Cape of Good Hope. Ex Brisson).

Eight specimens from Farniso near Kano, Zinder, and Mt. Baguezan. A young in first plumage, Zinder, 17.ii.1920. Hausa name Burdu.

In the males the bill is orange-red, in females and young black or blackish. Also observed in the Timia valley in June. Very plentiful at Aderbissinat in August, so many that Buchanan believed them to be in course of migration.

24. Columba livia targia Geyr.

Columba livia targia Geyr von Schweppenburg, *Orn. Monatsber.* 1916. p. 58 (Aïn Tahart—northern Tuareg Mountains).

6 ♂♀ ad., Timia, 3,800 feet, June, Mt. Baguezan, 5,200 feet, May 1920. "Iris rich madder brown with fine inner circle of cream-colour; eyelids blue-grey, like feathers. Bill black, round nostrils chalk-white. Feet bright red with slight purplish tinge." Tuareg name Eleelookum.

Only seen among the rocks of Timia and Mt. Baguezan, in the Arra hills south of Baguezan and at Aguellal. Rock-inhabitant. Feeds on berries of bushes, grain, and a hard-spiked burr.

These birds agree absolutely with *C. l. targia* from the Tuareg Mountains. The rump is blue-grey, not white; the glossy jugular zone is much less in extent than in most *C. l. livia*, though some of the latter are in this respect like *C. l. targia*. Generally *C. l. livia* has a darker breast and abdomen, but not constantly. Resembles more *C. l. intermedia* (India), but the latter is underneath darker, and has much darker upper tail-coverts. Wings, ♂ 208, 213, 220, 221, ♀ 203, 211 mm.

25. Columba guinea guinea L.

Columba guinea Linnaeus, *Syst. Nat.* ed. xii. i. p. 282 (1766—"habitat in Africa!" Ex Edwards and Brisson. Descr. ex Edwards. Terra typica "inland parts of Guinea," according to Edwards).

6 ♂♀ ad., 2 juv., near Kano, December 1919, and first days of January 1920.

The young have the interscapulium more greyish, the spots on the wings more greyish and less defined, the throat is brownish grey or without hackles. The old birds have the iris "glossy clear, brownish tinted; the bare space around the eyes deep pink; bill dark brownish black, white over nostrils; feet pale dull whitish pink." Hausa name Hasbia.

Very common in Hausaland. Buchanan saw the species as far north as Baban Tubki, near Zinder, but never in Asben proper. Cf. *Nov. Zool.* vol. xxv. pp. 356-359, *Ibis*, 1920, pp. 827, 828.

26. Treron waalia (Gm.).

Columba waalia Gmelin, Bruce's *Reisen Innere Afrika*, II., Tus. p. 31 (1791—near Lake Tsana in Abyssinia).

♂ ad., Farniso, near Kano, 1,700 feet, 2.i.1920. "Iris deep rich crimson. Bill pale whitish green. Feet pale straw-yellow."

Buchanan observed these green pigeons plentifully near Kano on his return journey.

27. Sarkidiornis melanotus (Penn.).

Anser melanotus Pennant, *Ind. Zool.* p. 12. pl. xi. (1769—Ceylon).

♂♀ ad., Aderbissinat, south of Asben, 17, 27.viii.1920. Tuareg name Teukimbub.

Claude Grant (*Ibis*, 1915, p. 72) says that he can appreciate the difference of the African race (*Sarkidiornis africanus* Eyton, 1838), which is "always smaller." Sclater and Praed (*Ibis*, 1920, p. 784) also call their African specimens *S. melanotus africanus*, thus indicating that they distinguish them from Indian ones. It seems, however, not to be a fact that African examples are smaller. The wing of the ♂ from Aderbissinat measures 397 mm., that of the ♀, which is always stupendously smaller, 299 mm.

Common on the lakes of northern Hausaland.

28. Alopochen aegyptiacus (L.).

Anas aegyptiaca Linnaeus, *Syst. Nat.* ed. xii. i. p. 197 (1766—"habitat in Aegypto").

♀ ad., Aderbissinat, south of Asben, 16.viii.1920. Tuareg name Tehghenem.

29. Dendrocygna viduata (L.).

Anas viduata Linnaeus, *Syst. Nat.* ed. xii. i. p. 205 (Columbia, South America).

♂♀ ad., Aderbissinat, south of Asben, 19, 20.viii.1920. "Iris dark umber. Bill deep blue-black. Feet clear bluish lead-colour." Both *D. viduata* and *fulva* inhabit South America and Africa, and American and African specimens are indistinguishable! Tuareg name Enud.

30. **Anas querquedula** L.

Anas Querquedula Linnaeus, *Syst. Nat.* ed. x. i. p. 126 (1758—" Europa." Restricted typical locality Sweden).

♂, Aderbissinat, 1,525 feet, south of Asben, 24. viii. 1920. If a male, in full eclipse, but perhaps a ♀ with unusual bright, grey wing. Wing only 188 mm.

The date is remarkable. Can it have migrated south already in August ? I suppose it had stayed in Africa throughout the summer.

Common in winter in northern Hausaland.

31. **Bubulcus ibis ibis** (L.).

Ardea Ibis Linnaeus, *Syst. Nat.* ed. x. i. p. 144 (1758—Egypt).

Four specimens from Kano and Zinder, December and January, in non-breeding plumage. Also observed at Aderbissinat. Very common in northern Hausaland, often following cattle and donkeys, catching insects between their feet. Grasshoppers found in stomachs.

32. **Butorides striatus atricapillus** (Afzel.).

Ardea atricapilla Afzelius, *Kongl. Vet.-Akad. nya Handl. Stockholm*, xxv. p. 264 (1804—Sierra Leone).

2 ♂ ad., Aderbissinat, south of Asben, 1,525 feet, 13, 26. viii. 1920. " Iris clear yellow. Bill black with utmost base from nostrils and lores yellow. Feet orange-yellow, brownish on front of tarsus and top of toes."

33. **Ardea melanocephala** Vig. & Children.

Ardea melanocephala Vigors & Children, Denham & Clapperton's *Narr. Trav. & Discov. N. & C. Afr.* App. p. 201 (1826—no locality, but doubtless northern Bornu or northern Hausaland).

♂ ad., Zinder, 10. ii. 1920, 3 juv., near Kano, December 1919. " ♂ ad., iris clear yellow, bare skin round eye pale yellow. Bill dark blackish grey, inner two-thirds of lower mandible white tinted with grey." The iris of the young is described as whitish yellow or straw-yellow. Hausa name Zelibie.

The bird shot near Zinder was in virtually waterless dry country. It had two large rats in stomach. The Hausas tell a fable about this heron : it catches snakes by placing its foot in a hole occupied by a snake, then waits until the foot is gripped and well swallowed by the snake. It then extends its toes, thus making a bulge or grapple by which it is able to pull the snake from its lair.

34. **Abdimia abdimii** (Licht.).

Ciconia Abdimii Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 76 (1823—Dongola).

♂, Aderbissinat, 28. viii. 1920. " Iris stone greyish brown."

Was very numerous at the water at Aderbissinat.

35. **Threskiornis aethiopicus aethiopicus** (Lath.).

Tantalus aethiopicus Latham, *Ind. Orn.* ii. p. 706 (1790—" Aethiopia." Ex Bruce, *Trav. Abyssinia*).

♀ juv., Farniso, near Kano, 26. xii. 1919.

Common in northern Hausaland.

36. **Plegadis falcinellus falcinellus** (L.).

Tantalus Falcinellus Linnaeus, *Syst. Nat.* ed. xii. i. p. 241 (1766—" habitat in Austria, Italia ").

♂ ♀ juv., Aderbissinat, south of Asben, 24. viii. 1920.

Both these birds have 4 or 5 irregular white patches across the foreneck, evidently albinistic.

37. **Necrosyrtes monachus monachus** (Temm.).

Cathartes monachus Temminck, *Pl. Col.* 222 (1823—Senegal).

NECROSYRTES MONACHUS NEAR KANO.

♀ ad., Tarrouaji Mountains, southern Asben. 5. viii. 1920. " Iris very dark umber-brown. Bill and neck and head-skin pale whitish cobalt blue, bill darkening to blackish towards tip. Feet pale whitish cobalt blue grey."

(Needless to say in Temminck's figures the colours of the bare parts are drawn from imagination and all wrong !)

This is the common vulture at Kano, as shown on a photograph. The Hausa name is Angulu. Probably this is also the common vulture of Aderbissinat —though Buchanan is not quite sure that they were the same. The smaller dark vulture seen on Mt. Baguezan was probably a young *Neophron*. An egg taken at Kano 11. xii. 1919 has a pale greenish shell if held against the light, and is white with pale rufous-brown blotches covering the thicker end and a few deeper rufous-brown spots. It measures 74 × 54 mm. Pieces of another egg from the

same locality (8.xii.1919) have bolder, darker patches. Both nests were on tall trees, about middle height.

38. **Neophron percnopterus percnopterus** (L.).

Vultur Perenopterus (doubtless error for *percnopterus*) Linnaeus, *Syst. Nat.* ed. x. i. p. 87 (1758—"habitat in Aegypto").

1 ♂ 2 ♀ ad., Zinder, 2.ii.1920. "Cere and head-skin orange-yellow."

The ♂ is in perfect adult dress, the females still show a few grey-brown feathers in tail and back.

A few were seen at Agades, in April, and it was plentiful on Mt. Baguezan, but never seen south of Zinder proper. A dark vulture seen on Baguezan was doubtless the young of this species, and not *Necrosyrtes*. Hausa name Angulu Fulani.

39. **Gyps rüppellii rüppellii** (Brehm).

Vultur Rüppellii A. Brehm, *Naumannia*, 1852, *Heft* 3, p. 44 (Khartum !).

♀ juv. Mt. Baguezan, Asben, 5,200 feet, 4.vii.1920. "Iris brown. Bill pale whitish green, cere brown-black. Feet medium greenish grey, joints of scales whitish."

Hausa name Miké; Tuareg name Ajehuder. Once observed south of Zinder (Dogo) on the return journey.

Rüppell's vulture has been collected in the western Senegal Colony by Riggenbach. I saw it close by on a dead horse near Sokoto in 1885. The specimen sent is juvenile, looking underneath like a *Gyps fulvus*.

(In Lieutenant C. Jean's book, *Les Touareg du Sud-Est l'Aïr*, pl. xviii. is a photograph of a large vulture from Aïr (Asben). It may possibly be a young *G. rüppellii* or *fulvus* (if that occurs there), as it seems too large for *Lophogyps*, and I don't think it can be a *Pseudogyps*.)

40. **Milvus migrans parasitus** (Daud.).

Falco parasitus Daudin, *Traité d'Orn.* ii. p. 150 (1800—South Africa. Ex Levaillant).

♀ ad., Farniso, near Kano, 22.xii.1919. "Iris deep umber-brown. Bill and cere light dull purplish yellow. Feet dull light whitish yellow."

Kites, probably of this subspecies, were observed in numbers south of Abellama and Aderbissinat, catching locusts on the wing; they appeared to be on migration to Buchanan. The first bird seen in Asben was also a dark kite, and many were noticed at Agades 7.viii.1920, though not before.

41. **Melierax musicus neumanni** Hart.

[*Falco musicus* Daudin, *Traité d'Orn.* ii. p. 116 (1800—name for Levaillant's Faucon Chanteur, *Ois. d'Afr.* i. pl. 27); *Falco canorus* Rislach, Thunberg's *Diss. Ac.* iii. p. 264 (published 1801, though read in 1799, cf. *Ibis*, 1919, p. 702 !).]

Melierax canorus neumanni Hartert, *Vög. pal. Fauna*, ii. p. 1165 (1914—Nubia, etc.).

2 ♀ ad., Farniso, near Kano, 27, 31.xii.1919.

3 ♂, 1 ♀ ad., Zinder, January and February 1920.

1 ♂ in moult, still showing some brown juvenile feathers and 1 ♀ juv., just showing some adult feathers, below and above, Aouderas, Asben, 22, 27.vii.1920.

Adults: "Iris rich deep madder-brown. Bill blue-black, base and cere rich orange-chrome, sometimes almost coral-red. Feet rich orange-chrome, in some from Zinder full coral-red." "Inhabits open bush-country, hunts flying low and often alights on ground from a perch on a tree, to take up some prey. In the stomachs of three specimens grasshoppers were found."

The above specimens are typical *neumanni*, except ♀ No. 109, from Farniso, which may be called intermediate between *neumanni* and *metabates*, while the ♂ in moult from Aouderas (No. 762) is still darker and might be called *metabates*! Also the few feathers of the adult plumage in the ♀ from Aouderas (No. 752) are quite dark. Such specimens that do not agree with the usual appearance of *neumanni* are also found in other countries, while, on the other hand, light-winged examples like *neumanni* are now and then found in the areas of the dark-winged *metabates*. One might therefore be tempted not to separate *neumanni*, but it is a fact that in the more desert-like countries from northern Nigeria and Asben to the Blue Nile and Red Sea province light-winged birds predominate by far, while in the range of *metabates*, i.e. from southern Arabia and Eritrea, Abyssinia, Bahr-el-Ghazal, southern Nigeria, Senegambia to Morocco darker birds are the usual form. Cf. Hartert, *Vög. pal. Fauna*, vol. ii. pp. 1164–5, Sclater and Praed, *Ibis*, 1919, pp. 701–2.

42. **Gymnogenys typica** (Smith).

Polyboroides typicus Smith, *S. Afric. Quart. Journ.* i. p. 107 (1803—eastern Cape Colony).

♂, Farniso, near Kano, 1,700 feet, 27.xii.1919. "Iris very dark. Bill black, mouth whitish, cere and bare skin round eyes pale whitish coral-pink. Feet pale dull lemon-yellow. Length 23·5 in."

Observed on the water at Aderbissinat in August 1920.

43. **Circus macrourus** (Gm.).

Accipiter macrourus Gmelin, *Nov. Comm. Acad. Petropol.* xv. pro. 1770. p. 439 (1771—"a Woronez abhinc ad omnem Tanain occurrit").

♀ ad., Farniso, near Kano, 31.xii.1919.

44. **Micronisus gabar** (Daud.).

Falco gabar Dauden, *Traité d'Orn.* ii. p. 87 (1800—interior of South Africa).

♂♀ ad., 2 ♂ juv., 1 ♀ juv., near Kano, December 1919.

♂ ad., Takukut, Damergu, 19.iii.1920.

♀ ad., melanistic variety ("*Micronisus niger*" auct.) near Kano, 5.i.1920. "Iris of all adults rich deep madder-brown or deepest red, of the young ones clear lemon-yellow."

The melanistic female is not quite so deep black as our specimens from Gabun and elsewhere. There can be no doubt that the so-called *M. niger* is a melanistic variety of *M. gabar*. Cf. *Ibis*, 1919, p. 701. Gray, Schlegel, Kaup, and Pelzeln, and recently Butler, considered the black Gabar a black variety of *M. gabar*, but it was left to Mr. G. F. Archer to prove this to be a fact.

Our material shows a good deal of variation in size and width of barring, and

does not lead to the separation of subspecies. The wings of the adult males measure 194, 196; those of the adult grey female 214; of the black one 211 mm.[1]

I do not think that the generic separation of *Micronisus* from *Melierax* is justified: the former has a more graduated tail, and that is all! Doubtless it is a near ally of *Melierax*!

The Hausa name is said to be Chambatu, but the natives do not, of course, properly distinguish the various birds of prey, so that their names necessarily include several species.

45. **Falco chicquera ruficollis** Swains.

Falco ruficollis Swainson, *B. W. Africa* (vol. xxii. of *Natur. Library*) i. pl. ii. p. 107 (1837 —"Senegal" mentioned in text, but perhaps not exactly from there. The collections which Swainson studied were apparently partly trade skins, and partly from Sierra Leone. Cf. p. 261 of vol. i.).

2 ♂, 2 ♀, Farniso, near Kano, 5, 9.i. 1920, Zinder, 24.i.1920. "Iris dark, bare space round eye lemon-yellow. Bill blue-black, paling to pale yellow at base. Cere lemon-yellow. Feet lemon-yellow." One of the females at Farniso was killed with a chicken in its claws.

Extends southwards to at least Zaria in Hausaland.

46. **Accipiter badius sphenurus** (Rüpp.).

Falco (*Nisus*) *sphenurus* Rüppell, *Neue Wirbelt. Abyss.* p. 42 (1835—Dahlak Is. in Red Sea).

♂ juv., Farniso, near Kano, 23.xii.1919. Occurs also in Zaria.

47. **Falco biarmicus abyssinicus** Neum.

Falco biarmicus abyssinicus Neumann, *Journ. f. Orn.* 1904, p. 369 (Abyssinia, Shoa, Galla country).

♂, Farniso, near Kano, 2.i.1920.

A young male, apparently hatched the year before, moulting above and below from the juvenile into the adult garb. *F. b. abyssinicus* occurs in Hausaland.

48. **Falco peregrinus pelegrinoides** Temm.

Falco pelegrinoides Temminck, *Pl. Col.* 479 (1829 or 1830—Nubia).

♀ juv., Aderbissinat, south of Asben, 28.viii.1920.

In its full juvenile plumage, evidently first year. Geyr v. Schweppenburg obtained specimens as far south as the southern escarpment of the Tassili of the Azger, Timassinin, etc.

[1] Another black hawk has been described from the Galla country, *Accipiter hilgerti* Erl., *Journ. f. Orn.*, 1904, p. 171, pl. 6. One is tempted to consider this bird a melanistic variety, but this cannot be done from our present knowledge. In proportions and the light markings on tail and wings it agrees only with *Accipiter ovampoensis*, but this species is not known to occur in Gallaland. Moreover Hilgert saw a pair, both alike in colour, but only succeeded in getting the female. This remained the only known specimen at the time, but July 12, 1902, Zapphiro shot a male at Bissidimo in Gallaland, which, except in size, agrees perfectly with the type collected by Hilgert in 1901. Its wing measures 225, tail 165 mm. Apparently *A. hilgerti* is, from this evidence, *not* a melanistic variety, but a blackish species. Description and figure in the *Journ. f. Orn.* are very good.

49. Falco tinnunculus tinnunculus L.

Falco tinnunculus Linnaeus, *Syst. Nat.* ed. x. i. p. 90 (1758—Europe, restricted typical locality Sweden).

4 ♀, 1 ♂, Farniso, near Kano, December and January.

3 ♂, Zinder, January and February.

♂ No. 335, Zinder, 7.ii.1920, is moulting its body plumage on the upperside and jugulum, the feathers of the adult male appearing all over the back, neck, and rump in the juvenile plumage. The ♂♂ Nos. 82, 264, from 25.xii.1919 and 28.i.1920, though fully adult, also moult their body plumage above and below; the new feathers resemble the old, only they are darker, richer, the old ones being paler. The same is the fact with the females Nos. 85 and 175 from Farniso, 26.xii.1919 and 5.i.1920.

The Common Kestrel winters in Hausaland; *F. tinnunculus carlo*, its tropical African subspecies, occurs near Zaria, where *F. t. tinnunculus* also winters.

50. Bubo africanus cinerascens Guérin.

[*Strix africana* Temminck, *Pl. Col.* 50 (1821—Cape of Good Hope. Cf. Neumann, *Journ. f. Orn.*, 1914, p. 38).]

Bubo cinerascens Guérin, *Rev. et Mag. Zool.*, 1843, p. 321 (Abyssinia).

1 ♂, 2 ♀ ad., Zinder, 26, 28.i.1920. "Iris very dark brown. Bill blue-black. Toes soiled whitish, claws black." Wings, ♂ 316, ♀ 316, 319 mm.

Hausa name Mogia; Tuareg Goomack. Found in trees near village.

These 3 specimens agree well with each other, being paler on the upperside than South African ones, with a very distinct ferruginous colour, especially on the sides of the feathers of the head and interscapulium. They agree with other North-East African examples. All these are *smaller* and lighter than South African true *B. africanus africanus* (*maculosus* of older authors).

The subspecies of *B. africanus* are by no means clear. All recent authors (Erlanger, Neumann, Zedlitz, Sclater and Praed) agree that—apart from the very distinct *milesi* of S. Arabia—two forms are separable, i.e. *B. a. africanus* from South Africa and *B. a. cinerascens* from North-East and North-West Africa. But some doubt exists about the East African birds. Oberholser (*Proc. S.U. Nat. Mus.*, vol. xxviii. p. 856) described as *Asio maculosus amerimnus*, a subspecies ranging from "Natal to German East Africa," which he says is "much paler throughout, as well as generally more ochraceous, and legs, feet, face, and crissum less heavily barred with dusky." This subdivision appears to me quite unnatural. I find South African ones, including birds from Natal, rather large, more brownish, but skins from the Lake district (Lake Kivu, west of Lake Tanganyika, Baraka, collected by Grauer), equally larger, but darker, less ochraceous, and with these agree some few from Benguella and Angola. I could hardly say that a Naivasha specimen (van Someren) differs, while one from Lindi (A. Buchanan leg.) has also the same coloration, but is smaller (wing 313 mm.). On the other hand, skins from the Blue Nile (Capt. S. S. Flower), Sennaar (Loat), Gambaga (Col. Giffard) are the typical *cinerascens*. I would gladly recognise an East African race, if Oberholser's type was not chosen from Natal (Durban), as our Natal skins agree with Cape Colony ones. Two extremely reddish specimens were collected by G. Schrader in Abyssinia (Eritrea), and one from Masindi (Unyoro),

collected by L. M. Seth-Smith, is of the same colour on the upperside, or very little less red, but much less ochraceous on the underside. I suppose Schrader's Eritrean birds are extremes of the "rufous phase" (cf. among others, Sclater and Praed, *Ibis*, 1919, p. 679).

I must add that a specimen from the province of Zaria, Hausaland, collected by Poggiolini, does not well agree with the Zinder ones, being darker and having a wing of about 324 mm. It is, however, quite possible that it came from a forest district, where a darker form lives, but the Gambaga bird (Gold Coast Hinterland) is typical *cinerascens* !

51. **Otus leucotis leucotis** (Temm.).

Strix leucotis Temminck, *Pl. Col.*, livr. 3. pl. 16 (1824—Senegal).

♀ ad., Kano, 8.xii.1919. "Iris clear orange-yellow. Bill pale greenish grey." Wing 189 mm.

I am not certain if this owl is correctly placed in the genus *Otus* (*Scops* of older authors).

52. **Glaucidium perlatum** (Vieill.) (? subsp.).

Strix perlata Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. ed.) vii. p. 26 (1817—Senegal).

2 ♂, 1 ♀, Farniso, near Kano, 29.xii.1919, 5, 9.i.1920. "Iris clear lemon-yellow. Bill pale greenish yellow. Feet dull straw-yellow."

These three specimens hardly differ from each other; their heads and entire uppersides are rather pale, the white spots on the head rather small. In view of the stupendous individual variation of this little owl I do not feel justified, without a large series, to separate this form, but they are certainly paler than other specimens, though very closely approached by some from Abyssinia and Senegambia.

53. **Centropus senegalensis senegalensis** (L.).

Cuculus senegalensis Linnaeus, *Syst. Nat.* ed. xii. p. 169 (1766—Senegal).

1 ♂, 3 ♀, Farniso and Kano, December and January. Occurs also in the province of Zaria and on Lake Chad.

54. **Clamator jacobinus pica** (Hempr. & Ehr.).

Cuculus Pica Hemprich & Ehrenberg, *Symb. Phys.* fol. r (1828—Ambukol in Dongola).

3 ♂, 1 ♀, Mt. Baguezan, Asben, 5,200 feet, first week in June 1920. "Iris dark brown. Bill deep black. Feet deep leaden grey with whitish scale-joints."

Seen in numbers at Tebernit, 27.vi.1920. The ♀ 674, shot 4.vi.1920, had an almost fully developed egg in ovary. Stomach of another full of caterpillars. Has a double call: one a sharp "key, key-key," the other a full slow sound, like "chau-chau," twice repeated. Wings, ♂ 156, 156, 161, ♀ 156 mm. See remark in *Nov. Zool.*, 1915, pp. 253, 254. It is a vexed question whether forms should be named which differ only on an average in size. In such cases many specimens cannot be placed without knowledge of the locality. Thus the recognition of such subspecies is of no practical value to the curator of a collection for naming his birds. On the other hand, the placing of the "correct name" on the labels is not the final aim of research, and if it is a fact in nature that in one country

a form reaches larger dimensions (or even longer wings only) than in another, it may be important to emphasise such a fact, and that is certainly very strongly achieved by giving it a name. New names are always noticed and discussed, but one may write long treatises without their being read or considered.

55. Clamator glandarius (L.).

Cuculus glandarius Linnaeus, *Syst. Nat.* ed. x. i. p. 111 (1758—"habitat in Africa septentrionali et Europa australi," based on Edwards, who figured and described a specimen from Gibraltar !).

♀, Timbulaga, between Asben and Damergu, 15. viii. 1920. This specimen is in full moult, the old feathers being brown and much worn, new greyish feathers growing on upperside, wings, and tail, white ones on the undersurface.

56. Chrysococcyx caprius chrysochlorus Heine.

[*Cuculus caprius* Boddaert, *Tabl. Pl. Enlum.* p. 40 (1783—Cape of Good Hope. Ex Daubenton, *Pl. Enl.* and Montbeillard's text). *Chrysococcyx cupreus* auctorum !]

Chrysococcyx chrysochlorus Heine, *Mus. Hein.* iv. p. 11 (1862—Sennaar ! Errore ! Probably Senegal).

2 ♂ ad., Aouderas, Asben, 2,700 feet, 31. vii. 1920. "Iris deep brick red ; eyelid red. Bill dull brownish black, base of lower mandible paler. Feet dull grey-black." The only two specimens seen by the traveller, in a deep valley in the Amathasa Mountains.

C. H. B. Grant, *Ibis*, 1915, p. 417, has shown correctly that the name for the "Golden Cuckoo" is *C. caprius*, and that there is no such thing as "*C. cupreus* Bodd.," though all authors have copied "*cupreus*" from former writers, either without looking into Boddaert's book at all, or not doing so properly. A new name was given by Shaw, *Mus. Lever.*, p. 157 (1792—locality unknown, but "probably" Africa), for the Emerald Cuckoo, which therefore must be called *Chrysococcyx cypreus*. Messrs. Sclater and Praed, *Ibis*, 1919, pp. 644, 645, confused the names, calling the Emerald Cuckoo (*C. smaragdineus* auct.) *C. caprius*, but corrected their mistakes, *Ibis*, 1920, p. 853.

There is a striking difference in size between the Golden Cuckoos of South Africa and those from North-West Africa. It is strange that recent students of African birds have not noticed this. While the wings of South African (Cape Colony, Transvaal) *C. caprius caprius* measure ♂ (10 measured) 118–121, ♀ (only 2 measured) 124–125 mm., those of males from Senegal measure 108–112, very rarely to 115 (25 measured), females 110–117 (5 measured), males from Sierra Leone 108–115 (the latter measurement twice, 10 measured), females 115–117 (5 measured). We have thus ♂ 118–121 against ♂ 108–115, ♀ 124–125 against 110–117 mm., surely sufficient difference for recognition of two races.

Heine's statement of the localities "Sennaar" and "Egypt" is doubtless erroneous, as already stated long ago by Heuglin, for *C. caprius* has never been found north of Fazoglo, and there only by Heuglin, and it does not occur in Sennaar and Nubia ! Heine sen., who bought many specimens from dealers, probably got his type of *chrysochlorus* from Verreaux, and it came from the Senegal, not Sennaar !

While the difference between North-West African and South African Golden Cuckoos is so striking, I cannot at present fully go into the question of the East

African and West African (Niger, Angola) forms. All I should like to say is, that a good series from Harrar and neighbourhood (from Zaphiro) are generally intermediate, males wings about 113–118 mm., that most Benguella and Angola examples agree with South African ones, but some from there are smaller. I believe, therefore, that the large form *C. c. caprius* ranges to Angola, where it meets a smaller form, while an intermediate one may occur in middle Africa, east and west. This has already been stated by Heine (*Journ. f. Orn.*, 1863, p. 350), who named the intermediate race *Lamprococcyx chrysites* (type locality Gabun !), but Heine was uncertain about the distribution, and had some wrongly located specimens—evidently from Verreaux.

Another point I have not seen mentioned (without searching the whole literature !) is, that the females are larger, having longer wings and tail, and generally larger bills.

57. **Lophoceros erythrorhynchus erythrorhynchus** (Temm.).

Buceros erythrorhynchus Temminck, *Pl. Col.*, livr. 36, genus *Buceros*, spec. 19 (1823—Senegal).

♂ ♀, Kano, 5, 6. xii. 1919.

♀ in moult, Agades, 22. iv. 1920.

Bills of females entirely sienna-red, except for whitish base, that of male with long black patch on basal half of lower mandible.

Common at Zinder, a few at Agades in April, more numerous at Azzal, just north of Agades, in July, but *no hornbills seen farther north.*

58. **Lophoceros nasutus nasutus** (L.).

Buceros nasutus Linnaeus, *Syst. Nat.* ed. xii. i. p. 154 (1766—Senegal. Ex Brisson).

♂ ♀ ad., Kano, December 1919, ♂ ad., Zinder, 24. i. 1920. Hausa name Chilachoa. Common at Zinder.

The males have the distal end of the bill all black, the females mahogany red. In stomach of one many locusts.

These birds are typical *nasutus*, but birds from the Eastern Sudan appear indeed to be larger and thus intermediate between *L. n. nasutus* and *forskalii* of Arabia.

59. **Chizaerhis africana** (Lath.).

Phasianus africanus Latham, *Ind. Orn.* ii. p. 631 (1790—"Africa." I substitute as typical locality Western Senegal Colony).

3 ♂, 1 ♀, Farniso, near Kano, December 1919. "Iris very dark brown. Bill lemon-yellow, in a younger bird black with base of upper and whole lower mandible light dull green. Feet blue-black, in the younger bird brownish black."

Not noticed in Asben. "Crest erected in life." This is a common bird in Hausaland : Kadsena, Rara, Zaria.

60. **Poicephalus senegalus versteri** (Finsch).

Psittacus Versteri Finsch, *Ned. Tijdschr. Dierk.* i. p. xvi. (1863—"Kust van Guinea," rectius Gold Coast, teste Finsch, Papageien. Name ex Goffin MS.).

3 ♂, 1 ♀, near Kano, December and January. "Iris clear yellow. Bill dark bluish or greyish black. Feet blackish."

These birds must undoubtedly be called *versteri*, rather than *P. s. senegalus*, as all have a great amount of orange on the breast, and all over the middle of abdomen. On the other hand, they are not so extensively bright orange as some males from Sierra Leone, in which the orange extends all over the sides of the breast and abdomen, but the extent of the orange varies, in one bird extending even over the under wing-coverts.

Besides the orange colour on the underside, *P. s. versteri* differs also by having a darker green jugular region, but fine adult Senegal examples also show an orange *tinge* on the breast. The ♀ from Kano has much less orange, and the under tail-coverts are green, not yellow, but the specimen is not fully adult, and therefore it is not certain whether the green under tail-coverts are only a sign of immature age, or also peculiar to fully adult females. A larger series may possibly show that all Hausaland specimens are slightly intermediate, but this is not probable, because the variation is so great.

The true *P. senegalus senegalus* is evidently only found in the western Senegal Colony and southwards to Portuguese Guinea. The birds from Sierra Leone, Togo, etc., are all *versteri*. We have a series from the western Senegal from Riggenbach.

61. **Palaeornis krameri krameri** (Scop.).

Psittacus Krameri Scopoli, *Annus I. Hist.-Nat.* p. 31 (1769—no locality! Neumann accepted Senegal as original locality, because he considers that the description only agrees with females of the Senegal form. It is, therefore, not admissible to quote "Senegal" as terra typica without explanation, as has been done by Sclater & Praed, *Ibis*, 1919, p. 675 (more Americanorum et Mathewsi-Iredalei). I should have hesitated to introduce Scopoli's name, which has hitherto always been considered doubtful, but as it has been done by Neumann and Sclater & Praed, it may be best to follow their lead and thus to come to a general understanding).

♂ ad., Farniso, near Kano, 16.xii.1919.

2 ♂ juv., Zinder, 16.ii.1920.

♀, Aderbissinat, south of Asben, 26.viii.1920.

♂ ad. "Iris very pale tinged whitish, fine inner ring of greenish grey; eyelid orange-chrome. Bill deep mahogany, lower mandible black."

I cannot separate these birds from Senegal specimens. They have *not* the brighter red bills of *P. k. parvirostris* and Neumann's *centralis*, to which they should belong if that form is separable and extends from Sokoto to the White Nile. I agree with Sclater & Praed that it requires confirmation, but I cannot say that our White Nile skins (very worn though they are), collected by Col. Yardley, agree with the Senegal form, but—unless *centralis* is different—would rather unite them with *parvirostris*. More material is required to settle their status.

These parrots were rare at Aderbissinat. At Zinder they frequented date-palm groves, eating dates approaching ripeness.

62. **Mesopicos goertae goertae** (P. L. S. Müll.).

Picus goertae P. L. S. Müller, *Natursyst. Suppl.* p. 91 (1776—Senegal. Ex *Pl. Enl.* 320 and Buffon).

4 ♂, 2 ♀, Kano, December 1919, in beautiful fresh plumage.

4 ♂, 2 ♀, Mt. Baguezan, 5,200 feet, 12 to 29.v.1920. "Iris very dark brown. Bill dull grey-black, paler at base. Feet leaden grey."

Though these specimens have a little more grey on the jugulum than most Senegal examples, I do not think they can be separated from the latter, while, on the other hand, specimens from the more southern parts of Hausaland, the province of Zaria and Loko on the Benue, cannot be separated from the darker race, *M. g. poicephalus* auct., which I prefer to call *centralis* Rchw., extending from the Gambia to the Congo and eastwards to the Victoria Nyanza and Upper White Nile.

There are, since 1900, no less than four reviews of the forms of *M. goertae*! In 1900 Reichenow (*Orn. Monatsber.*, 1900, p. 58) separates what he calls *M. goertae* (*typicus*), *M. g. poicephalus*, *M. g. abyssinicus*, and *M. g. centralis*. In 1903 (*Orn. Monatsber.* 1903, p. 181), Neumann added *M. g. königi* from the Nile between Atbara and Khartum. In 1904 Neumann (*Journ. f. Orn.*, 1904, p. 396) states that *centralis* cannot be separated from *poicephalus* (as already pointed out by Grant and Sharpe in *Ibis*, 1902). Herein I agree, the reason probably being that Reichenow looked upon *poicephalus* as a paler form than *goertae* (perhaps from insufficient and faded material), while in fact it is a *darker* bird. Moreover, as it is doubtful whether Swainson's *poicephalus* came from the Senegal, the home of the paler form, or the Gambia, the home of a darker bird, I prefer to adopt Reichenow's name *centralis* for this bird.

In the *Ibis*, 1915, pp. 468, 469, C. B. Grant reviewed these woodpeckers. While I agree that the name *centralis* must be adopted for the form generally called *poicephalus* (for reasons stated above), I separate *königi* and *abyssinicus*, and consider *spodocephalus* a subspecies of *goertae*, not another species.

Finally Sclater & Praed, *Ibis*, 1919, p. 632, have written about these birds. With their views I agree on the whole, but it is in my opinion an error to recognise *poicephalus* and *centralis* as two different forms, all the birds from the Gambia to the Congo and Uganda being the same, and I call them *centralis* because of the uncertainty of the name *poicephalus*; on the other hand, I consider separable, by the characters pointed out by Neumann, *M. g. königi* from Nubia (Berber, Meroë, Nakheila, Atbara, Shendi), the palest race of all.

63. **Dendropicos minutus** (Temm.).

Picus minutus Temminck, *Pl. Col.* 197 (1823—Senegal and coast of Guinea. Restricted terra typica Senegal!)

1 ♂ immat., 3 ♀, Mt. Baguezan, 5,200 feet, 9, 11, 20.v.1920.

2 ♂, 2 ♀ ad., Takukut, Damergu, 24, 26, 27.iii.1920. "Iris dark. Bill dark, shading to dull greenish grey on sides of mandibles. Feet greenish grey."

This is one of the rarest woodpeckers, hitherto only known from the Senegal, as the locality White Nile (Des Murs, in Lefebvre's *Voy. en Abyss.*, p. 176) cannot be credited. The occurrence, therefore, in Damergu and Asben is very interesting, but Boyd Alexander had already collected two specimens at Yo, western shore of Lake Chad.

(I do not think that the supposed genera *Dendropicos* and *Mesopicos* can be separated at all! In that case they would have to be called *Dendropicos*, which appears to be the older name!)

64. **Coracias abyssinus minor** Neum.

Coracias abyssinus minor Neumann, *Journ. f. Orn.* lxv. ii. p. 201 (1917—Lower Senegal Colony).

♀, Farniso, near Kano, 8.i.1920. Wing 167 mm.!

2 ♀, Zinder, 26.i., 7.ii.1920. Wings 163, 166 mm.

♀, Aouderas, Asben, 2,700 feet, 27.vii.1920. Wing about 153 mm. (worn).

The above measurements show already how variable these birds are in the length of their wings. It is, therefore, not quite correct if Neumann says that the Senegal form is "ständig" smaller, but Senegal birds, and those from Gambaga, Gambia, Portuguese Guinea, and Nigeria, are generally smaller, the wings of Abyssinian birds ranging from 167 to 177 mm., while most West African ones have wings under or not above 160, but some few range to 164, 165, and 167 mm. The bills are *not* usually smaller. Neumann's nomenclature is, of course, perfectly correct (cf. also *Orn. Monatsber.*, 1915, p. 156). It seems to me doubtful if birds from Nubia are not also small and belong to *C. a. minor*!? The Tuareg (Targi) name is Tchgurgat. In the stomachs were found mostly grasshoppers, and some beetles.

65. **Upupa epops somalensis** Salvin.

Upupa somalensis Salvin, *Cat. B. Brit. Mus.* xvi. p. 13. pl. 1 (1892—Somaliland).

♂, Zinder, 13.ii.1920.

♀, Takukut, Damergu, 1,550 feet, 11.iii.1920.

2 ♂, 1 ♀, Mt. Baguezan, Asben, 5,200 feet, 17, 21, 26.v.1920. "Iris dark, bill dull black, paling slightly to reddish at base. Feet whitish grey."

Hausa name "Kahoohoo," meaning "crest."

Hoopoes, undoubtedly of this race, which alone occurs in summer, were observed also at Aouderas and near Timia in June and July. They were very common on Mt. Baguezan. In May caterpillars were found in stomachs, which at that time, after light rain, were very plentiful. In February small crickets filled stomachs.

Neither Claude Grant (*Ibis*, 1915, p. 278) nor Sclater & Praed (*Ibis*, 1919, p. 665) have read my explanations in *Vög. d. pal. Fauna*, part vii. p. 870 (1912). I have again examined the type of *U. senegalensis* Swainson, and I repeat that it is a small *U. epops epops*. Therefore the tropical African Hoopoe must be called *U. e. somalensis*, and not *senegalensis*. The latter name refers to a small ♀ of *U. e. epops*, which is common in Senegambia in winter; *U. intermedia* is a synonym of *somalensis*; *U. butleri* Mad. is *U. e. epops*, like the type of *senegalensis*. Riggenbach sent some *U. e. epops* from the Senegal, but *not somalensis*, of which no specimen seems yet to be known from Senegambia. The white subterminal spots to the crest-feathers vary; they are sometimes obscure in *U. e. epops*, sometimes present in *somalensis*, though rarely. The markings on the quills are variable.

66. **Upupa epops epops** L.

Upupa Epops Linnaeus, *Syst. Nat.* ed. x. i. p. 117 (1758—"habitat in Europae sylvis." Restricted terra typica Sweden).

♂, Kano, 11.xii.1919.

♂, Zinder, 5.ii.1920.

Winter visitors from Europe or Africa Minor.

67. **Merops (Aerops) albicollis albicollis** Vieill.

Merops albicollis Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xiv. p. 15 (1817—Senegal).

5 ♂, 1 ♀, Azzal, just north of Agades, 13. vii. 1920, 1,825 feet. "Iris clear crimson, bill dull black, feet slightly yellowish brown." These birds at first glance look very pale and very blue on the scapulars, secondaries, and rump. They are, however, in worn and faded plumage, and can be perfectly matched by specimens from other countries.

If the large first primary in connection with the long middle rectrices is considered a sufficient generic character, the genus *Aerops* must be used; it is certainly a recognisable genus and much better than many genera now generally used, for example, among the *Fringillidae*, *Muscicapidae* (sensu latiore), *Anatidae*, etc.

It is my opinion that the N.E. African form, *M. a. major*, is quite distinguishable. Wings of West African specimens measure about 95–100, those of N.E. African ones 100–108 mm., and as a rule the bills of the latter are much larger.

Buchanan observed also many in Aderbissinat in August.

68. **Merops orientalis viridissimus** Swains.

Merops viridissimus Swainson, *B. W. Africa*, ii. p. 82 (1837—Senegal).

4 ♂, 1 ♀, Takukut, Damergu, 1,550 feet, 8, 12, 19, 22. iii. 1920. "Iris clear rich red. Bill black. Feet whitish with dark greenish grey underlying."

♂ ♀ juv., Timia, Asben, 23. vi. 1920.

♀, Azzal, near Agades, 12. vii. 1920.

Also observed north of Zinder.

At first glance these birds look rather pale, the blue edging to the black jugular bar is rather distinct, and there is a bluish tinge on the abdomen. These peculiarities are, however, due to the somewhat worn and faded plumage in the summer season. (Messrs. Sclater & Praed, *Ibis*, 1919, pp. 660, 661, use the specific name "*lamark*" for this bird, and say that I, in 1910, pointed out that this is its oldest name. If they had looked, however, into my *Vōg. pal. Fauna*, ii. p. 863, 1912, they would have found that the correct name is *M. orientalis* Lath. 1801, which antedates "*lamark*" by just 20 years.)

69. **Colius macrourus syntactus** (Oberh.).

Urocolius macrourus syntactus Oberholser, *Proc. U.S. Nat. Mus.* xxviii. p. 863 (Abyssinia. Ex Neumann, who, however, did not state fully the differences between the Abyssinian and Senegal race, therefore wisely not bestowing a name on the former).

6 ♂, 2 ♀, 1 doubtful, Zinder, February 1920.

1 ♂, south of Baguezan, Asben, 3,300 feet, 2. v. 1920. "Iris dark reddish umber-brown to deep crimson; bare space around eye dull red, deep purplish crimson, deep crimson. Bill dull deep red to crimson, lower mandible and tip of upper black. Feet dull reddish purple."

A bad specimen of this race was taken by Poggiolini at Niamei on the Upper Niger.

Hausa name Kileoandamma, Targi Asharato.

Also observed in the Timia valley and at Igouloulos on June 11; also at Iferouan and Tabernit. It was common at Agades, and in the ravines south of Baguezan. Buchanan does not think they occur near Kano, as his Kano natives did not know them. In the stomach of one he found green leaves.

It is with some hesitation that I unite the form of *Colius* from Asben and Zinder with the Abyssinian one, but there is no difference whatever between them. On the other hand, they differ from *Colius macrourus macrourus* in being generally paler, the forehead and crown lighter, rump paler, throat and breast lighter and less vinous. The wings measure, ♂ 88–92, ♀ 87, 87 mm. The wings of Senegal birds are often, though not always, much longer.

70. **Halcyon chelicuti eremogiton** subsp. nov.

Halcyon speciei *H. chelicuti* dictae simillimus, sed pallidior, rostro graciliore.

1 ♂, 2 ♀, Zinder, 23.i., 10.ii.1920.

♀, Farniso, near Kano, 2.i.1920.

Type ♀, Zinder, 10.ii.1920, No. 356.

"Iris dark brown. Bill soiled dull sienna reddish with blackish tip." ♀ No. 157, Farniso, is juvenile, the wing-coverts are buff, with blackish centres, the underside (except the entirely white throat and foreneck) buff and more striated than in adult birds. The upper mandible is quite blackish, with only a reddish tinge, merely the basal half of lower mandible being dark reddish.

These birds are nearest to *H. chelicuti chelicuti*, but are distinctly paler on the upperside, especially the scapulars and wing-coverts, and the bill is somewhat slenderer. Wings, ♂ 75, ♀ 81, 76 mm. Bill 36, 37, 37 mm. The blue of the lower back, rump, and upper tail-coverts is paler.

Hitherto all modern authors have united all the *chelicuti* from Abyssinia and Senegal to South Africa. C. H. B. Grant said, "I can see no racial differences between eastern and western, or northern and southern specimens," and Sclater & Praed tacitly endorsed this view. Even Neumann hesitated to divide them, as in his list of the birds of the Lower Senegal he called the bird simply binomial "*Halcyon chelicuti*."

Though I cannot follow all the modern splitting of African subspecies, in this case I must admit at least two races. The "typical" form extends from Abyssinia to the western Senegal Colony, where Riggenbach collected over 26 specimens. In the drier districts bordering the desert the paler *eremogiton* lives; besides Buchanan's I have examined one collected by Boyd Alexander at Zogo, near Lake Chad, which agrees absolutely with the Zinder ones, while others from the Shari River, Kopchi, Serikin Kudu, and Gongolo hardly differ, but are a shade darker, and one from Fashoda also closely approaches our specimens, of which, in fact, the Farniso (Kano) one is a little darker than the Zinder ones, on the scapulars and upper back, but this may be due to its being juvenile.

Rather different from *H. chelicuti chelicuti* are the specimens from southern Africa, being larger, having longer wings and heavier, stumpier bills, and generally a much darker coloration. Their wings measure 85–79, sometimes only 84, exceptionally 81 mm. Southern specimens (South Africa, Transvaal, Angola) have wings of 82–88, sometimes only 81 mm.

East African birds, and those from the Lake districts (Kivu, Tanganyika, etc.) are very dark, but sometimes larger, sometimes smaller. They may thus

be called intermediate. This has already been pointed out by Reichenow, and others.

Chelicuti Stanl. was described from Chelicut in Abyssinia, *variegata* Vieill. and *striolata* Licht. from the Senegal, *pygmaea* from Kordofan and E. Abyssinia. All these names must therefore be synonyms of *chelicuti*. The southern bird must be called

Halcyon chelicuti damarensis Strickl.

This bird was also observed on the edge of the water at Aderbissinat in August. Buchanan found *Halcyon chelicuti eremogiton* frequenting shady groups of tall trees and date-palms. In the stomach of one he found grasshoppers.

71. **Lybius vieilloti frater** Neum.

[*Pogonius vieilloti* Leach, *Zool. Misc.* ii. pl. 97 (1815—Africa ! Almost surely to have been a *Senegal* skin, or from Gambia; it is therefore a violation of probability to say that it came from Abyssinia, whence birds did not, at that time, come to Europe, except the few from Salt's and Bruce's expeditions. Description and figure are not convincing, as such closely allied forms cannot be separated except by comparing series. Moreover the type of *Pogonius* (not *Pogonias* as quoted !), *vieilloti* appears to have disappeared from the British Museum. I therefore agree with Neumann to accept Senegambia as the typical locality of *P. vieilloti*).]

Lybius vieilloti frater Neumann, *Journ. f. Orn.* 1917. ii. p. 201 (Abyssinia, terra typica Barentu, Upper Baria).

♂ ad., Farniso, near Kano, 1.i.1920.

2 ♀, Zinder, 30.i., 13.ii.1920.

♂ ♀, Takukut, Damergu, 1,550 feet, 13.iii.1920.

♀ ?, Timia, Asben, 3,800 feet, 21.vi.1920 (young bird !).

2 ♂, 2 ♀, Mt. Baguezan, Asben, 3,300 feet, May 1920.

" Iris rich sienna-brown. Bill glossless deep black. Feet greyish black."

If one could judge from a single specimen I would say that the specimen from Farniso (Kano) had larger red spots, and was therefore the Senegal bird, while those from Damergu have smaller ones and must be referred to *L. v. frater* Neum. Probably, however, the Kano bird would also belong to the latter, as the late Boyd Alexander collected it also at Yo on Lake Chad ; his specimens also vary somewhat, some having larger spots (like Senegal birds), others very small ones, and the same must also be said of Abyssinian birds. Although the difference of a heavier-spotted Senegal (West African) form and a finer-spotted N.E. African form is admitted by all modern splitters (Ogilvie-Grant, Neumann, Sclater & Praed), I must confess that I can hardly separate the two forms, and wish to emphasise that many single specimens cannot be distinguished, though in a series the difference is visible. (The specimen from Zaria belongs already to the Senegal form.)

72. **Trachyphonus margaritatus margaritatus** (Cretzschm.).

Bucco margaritatus Cretzschmar, *Atlas Reise Abess.* p. 30. pl. 20 (1826—Sennaar and east slopes of Abyssinia, terra typica Sennaar).

3 ♂, 3 ♀, Zinder, January and February 1920.

♂ ♀, Timia, Asben, 24.vi.1920.

" Iris dark brown, umber-brown. Bill dull dark madder-brown, soiled dull reddish brown, medium pale chestnut-brown, tip dark brown or blackish. Feet dull leaden grey."

Tuareg names Agasha and Aghisit-Agur.

Observed in numbers at Agades and near Baguezan in bushes along river-beds, and in neighbourhood of water. " Has a clear piping prolonged call, also a less shrill 'thue-thue-thue-thue.' "

I am unable to distinguish these specimens from others from Abyssinia (Eritrea), the Blue Nile (Brehm, Flower), and Nubia (Shendi, Suakim, Port Sudan, Erkowit, etc.).

The wings of the males all reach 97 mm., like some of the north-eastern specimens, while others from there are smaller, sometimes only 88. ♀ wing 92–96 mm.

73. **Pogoniulus chrysoconus schubotzi** (Rchw.).

Barbatula chrysocoma schubotzi Reichenow, *Orn. Monatsber.* 1912. p. 28 (Fort Archambault on the Shari River).

2 ♂, 1 ♀, Timia, Asben, 3,800 feet, 22, 23, 25.v.1920.

♂, Mt. Baguezan, Asben, 5,200 feet, 31.v.1920.

" Iris dark umber-brown. Bill black. Feet blackish grey to black."

These specimens agree perfectly with those collected by Boyd Alexander near Lake Chad, and on the Shari River. They have very wide white spots on the upper back, the lower back and rump have much yellow, more lemon-yellow on the latter and upper tail-coverts. The difference from *P. chrysoconus chrysoconus* from the western Senegal (Tiali, Riggenbach leg.) is very slight, but the latter are apparently darker on the back, the white patches being more extended.

P. chrysoconus zedlitzi (Neumann) 1909, Sennaar, Blue Nile, only differs in having the back tinged with orange, and the underside perhaps a little paler.

" *Barbatula chrysocoma pallida* " Wettstein, *Akad. Anz. math. nat. Kl. Akademie, Wien*, p. 131 (1916—Talodi in South Kordofan) is, according to the description and distribution—as *schubotzi* is supposed to range to the Bahr-el-Ghazal—the same as *schubotzi*, if the latter is really different from *zedlitzi* from Sennaar. " *B. c. pallida* " has been compared only with *centralis*, which is much darker, but it should have been compared with *P. c. chrysoconus*, *zedlitzi*, and *schubotzi*! Wettstein says the white spots of the upper back are " reinweiss," which refers to *schubotzi*, but not to *zedlitzi*. So far we must admit *schubotzi* and *zedlitzi* as different, but further material and investigation about the relationship of *chrysoconus*, *schubotzi*, and *zedlitzi* is desirable.

The wings of Buchanan's specimens measure: ♂♂, Timia, 58, 58; ♀ 58·5; ♂, Mt. Baguezan, 58·6 mm.; the latter is the palest of the four.

No other specimens were observed by Buchanan.

(This genus must be called *Pogoniulus*, as *Barbatula* is preoccupied by *Barbatula* Linck., 1790, and *Pogoniulus* has priority over *Xylobucco*. Cf. Richmond, *Proc. U.S. Nat. Mus.* xxxv. p. 634, 1908.)

74. **Scoptelus aterrimus cryptostictus** subsp. nov.

Scoptelus subspeciei *S. a. aterrimus* dictae persimilis, sed maris maculis pallidis subterminalibus remigum primariarum minus evolutis, interdum obscuris vel absentibus.

♂ ♀, Mt. Baguezan, Asben, 5,200 feet, 5.vi.1920.

♂ ♀, Aouderas, Asben, 24.vii.1920.

♂, Azzal, Asben, 14.vii.1920.

"Iris dark brown. Bill dull black, corners of mouth yellow. Feet bright black, with white scale-joints."

The males have less-developed pale subterminal spots on the primaries than the Senegal form (*S. a. aterrimus*). In two specimens collected by Boyd Alexander near Yo (on the northern Lake Chad) these pale brown patches are entirely absent, in another exactly as in ours from Asben. The white markings in the middle of the primaries are somewhat variable. The rectrices of our Senegal specimens are, as a rule, without any white spots, but the ♂ from Aouderas has a small white spot at the tip of the outermost tail-feather, as is also found in a male from the Senegal Colony. Adult females have smaller bills and brown throats, and the brown spots near the tips of the primaries are as well developed as in Senegal males, but in a Senegal female they are still larger. The females also have always, or nearly always, white spots near the tips of the outermost primaries. Wings of the Asben birds, ♂ 102, 105, 107, ♀ 98, 98 mm.

Type of *Scoptelus aterrimus cryptostictus:* ♂ ad., Mt. Baguezan, Asben, 5.vi.1920. A. Buchanan leg. No. 678.

This form is evidently spread from Asben to Lake Chad, and the Shari River (Alexander leg.). Buchanan saw it also a little south of Baguezan, at Tebernit on June 27, and at Timia.

75. **Caprimulgus eximius simplicior** subsp. nov.

Caprimulgus eximius speciminibus orientalibus simillimus sed supra minus aurantio-auratus, pallidiore isabellinus; caudae fasciis albicantibus frequentioribus.

♂ ad., Zinder, 26.i.1920.

♂ ad., Takukut, Damergu, 25.iii.1920.

"Iris dark. Bill blackish, slightly more brownish at nostrils. Feet medium pale dull blackish grey, edges of scales whitish."

Only these two specimens were found, among dwarf bushes on desert sand. Nightjars were seen in early morning at Aguellal and in Asben, but whether of this or other species could not be ascertained.

These specimens differ from *C. eximius eximius* (specimens from Shendi, White Nile, and Darfur [Lynes leg.] compared) in being less golden orange, slightly duller, paler all over the upperside and wing-coverts, also on the chest; the whitish bars on the rectrices, speckled with black, are more numerous, being 10 or 11 on the middle pair, and only 8 or 9 distinct ones in *C. e. eximius*, therefore being a little closer together.

Type of *C. e. simplicior* ♂, Zinder, 26.i.1920. A. Buchanan leg. No. 244.

The discovery of this beautiful goatsucker so far west extends its distribution very considerably. It has, however, also recently been obtained by Capt. Lynes somewhere in Darfur, and the Darfur specimens agree entirely with those from the Nile. What appears not to have been described before is the very great length of the middle upper tail-coverts, which extend over two-thirds of the tail, to within 3 cm. of its end, and the width of the middle rectrices, *the edges of which are strikingly disintegrated.* Someone will, I fear, make a new generic name for this species, for this reason. The female has the tips to the outer rectrices less wide and buff, not white. The young bird is paler, but not like the Zinder-Damergu birds.

In the volumes of the *Ibis* is now, since the rediscovery of the species on the

White Nile by Witherby (*Ibis*, 1901, p. 259), which was the fifth specimen known, quite a literature on it.

N. C. Rothschild and Wollaston, *Ibis*, 1902, p. 20, found it numerous at Shendi, between Khartum and the Atbara, and collected 15 skins. They gave an excellent account of its habits and the sort of country which it frequents, and also discovered the eggs and pullus!

A. L. Butler gave more particulars about the localities where it has been found, in *Ibis*, 1905, p. 344, and *Ibis*, 1908, p. 239.

C. eximius eximius breeds near Khartum and at Shendi, and has been found at Meroë, on the White and Blue Nile, and in Kordofan and Darfur. According to Butler it also occurs on the Atbara.

76. **Caprimulgus inornatus** Heugl.

Caprimulgus inornatus Heuglin, *Orn. Nordost-Afr.* i. p. 129 (1869—Bogosland).

♂ ad., Tarrouaji, Asben Mountains, 2.viii.1920.

This specimen is neither of the extreme rufous nor of the quite greyish variety, but rather intermediate. A very reddish example was shot by A. L. Butler near Khartum in May.

(A nightjar different from *C. inornatus* and *eximius* was shot at Aouderas in July, but so much shot to pieces that it was not skinned.)

77. **Tachornis parvus parvus** (Licht.).

Cypselus parvus Lichtenstein, *Verz. Doubl. Berlin Mus.* p. 58 (1823—N.E. Nubia).

2 ♀, Zinder, 17, 19.ii.1920. "Iris dark brown. Bill and feet black."

These specimens agree perfectly with a series from Nubia, and another from the western Senegal Colony. In one the throat is perfectly uniform and very little paler than the abdomen, in the other whitish and distinctly striated. Wings of both 129 mm.

I cannot at present discuss all the forms of this species, but it seems to me that *T. p. griseus* must be a synonym, because the wing is the average measure of *T. p. parvus*, and the coloration varies, some Nubian examples being much paler and greyer than others. The longest wings, i.e. 139 and 140 mm., I find in Benguellan examples, which Reichenow unites with his *brachypterus*, the terra typica of which is clouded in darkness. Reichenow first mentions "Gambia" but casts doubt upon the Gambia birds belonging to his "*brachypterus*" with wings of 120–128, or to *T. p. parvus* with wings of "125–132." In any case, the short-winged form is separable, having a darker underside and shorter wings! It inhabits the Gold Coast, Lower Niger, and Fernando Po, Kamerun, but the Mossamedes and Benguellan birds have longer wings again, and lighter underside. The Hausa name is Soysaywa.

78. **Apus murinus brehmorum** Hart. (?).

Apus apus brehmorum Hartert, "Naumann, *Naturg. Vög. Mitteleuropas*" (sic!) (new edition of Naumann's work), iv. p. 233 (1901—"Südspanien, Madeira, Canaren," type Madeira!).

3 ♂, 5 ♀, Mt. Baguezan, 5,200 feet, 24, 25.v.1920.

Large flocks were feeding over acacias. In July such birds were observed at Aouderas, June 27 at Tebernit, June 11 Igouloulouf, June 12 Faodet, June 18

Assode, all in Asben (Aïr). At none of these places, however, were specimens collected.

The identification of these specimens has been a sore trouble. A number of *brehmorum* are not distinguishable from these birds in coloration, but the majority are distinctly darker; on the other hand, darker examples of *A. murinus murinus*, notably one from Jericho, collected by Meinertzhagen—which I think must be *A. m. murinus*—are indistinguishable: it is still evident to me that *brehmorum* and *A. m. murinus* must be distinguished, but their distribution is not yet quite known.

Another question is the size. One of the Baguezan swifts has a wing of 172 mm., while the others have wings of about 162–165, but this can only be said confidently of three, because the others are all moulting! Swifts do not moult in Europe or North Africa by the end of May! Wings of *A. m. brehmorum* measure 168–178, exceptionally under 168 (164) and above (180). There is thus no evidence that the Asben swifts are really smaller. The dates suggest their nesting on Mt. Baguezan.

A similar difficulty confronted me with the Pallid Swifts which I collected in the Algerian Sahara near Guerrara and El-Alia, and two or three shot near Biskra. They were obviously paler than others from North Algeria (Alger, Bône), and North Tunisia. Could it be that *Apus murinus brehmorum* is restricted to the Atlas region and Canary Islands and Madeira, while *A. m. murinus* extends from the Nile through the Sahara to the Mzab country? Unfortunately I have not seen a swift from Tripoli!

79. **Apus affinis galilejensis** (Antin.).

Cypselus Galilejensis Antinori, *Naumannia*, 1855, p. 307 (Lake of Galilee).

♂, Farniso, near Kano, 25.xii.1919.

1 ♂, 2 ♀, Mt. Baguezan, Asben, 5,200 feet, 25.v., 1.vi.1920.

At Mt. Baguezan seen among large flocks of *Apus murinus*. On February 24 many were seen over the town of Zinder, but not obtained.

Hausa name Bulo bulo, which name is also applied to bats!

I cannot separate these birds from *A. a. galilejensis* from Persia, Palestine, Morocco, Algeria, and Tunisia. On the other hand, specimens formerly received from Zaria are not separable from tropical African (Niger, Gold Coast, Sierra Leone) *A. a. affinis*!

80. **Hirundo daurica domicella** Finsch & Hartl.

Hirundo domicella Finsch & Hartlaub, *Vög. Ostafr.* p. 140 (1870—Casamanze).

♀ ad., Farniso, near Kano, 7.i.1920. "Iris dark. Bill and feet black." Wing 116 mm.

It is not without hesitation that I treat this swallow as a subspecies of *H. daurica*, but after all I see no other choice. It most certainly cannot be treated as a species, as it is merely a smaller form of *H. melanocrissus* from Abyssinia; the latter, however, shows faint striolations on the throat, and thus only differs from some specimens of *H. daurica rufula* in having the rump and shorter upper tail-coverts of the same colour, while they are altogether paler and merging into whitish isabelline on the tail.

The Hausa name given to Buchanan is Saysaywa. This is a rare form in collections. The late W. A. Forbes obtained it at Shonga on the Niger, Giffard and Alexander near Gambaga.

81. **Riparia obsoleta buchanani** subsp. nov.

Riparia formae *R. obsoleta obsoleta* dictae non dissimilis, sed minor, rostro minore, alis brevioribus, colore supra et infra saturatiore, obscuriore, corporis lateribus griseo-brunneis. Subspecici *R. rupestris spatzi* dictae similis, sed minor, alis brevioribus, abdomine brunnescentiore.

♂♂♀♀, Mt. Baguezan, 5,200 feet, 8, 9, 22, 27.v.1920.

♂♂, south of Baguezan, Asben, 3,300 feet, 2, 3.v.1920.

"Iris very dark. Bill black. Feet blackish, slightly tinged with flesh colour."

Not observed before approaching Baguezan, but afterwards seen, though not obtained, at Iberkom June 13, Aguellal June 16, Assode June 18 (1), Timia June 9, at Aouderas in July, and July 8 at Agades, where they nest in the fort. At Baguezan frequenting steep cliffs.

These rock-swallows are in colour between the tropical *rufigula* and allies, and *R. obs. obsoleta*. The upperside is almost sooty brown, but fresh feathers are more cinereous. Chin and throat unspotted, more isabelline than in *obsoleta*, abdomen darker greyish isabelline, flanks brownish grey. Under tail-coverts brownish grey with buff fringes, not very much darker than in *obsoleta*. Wings, ♂ 112–115, ♀ 110–113 mm., in *obsoleta* 116–124 (113 given by me as rarely occurring, but no skin at Tring measures less than 116).

Type of *R. o. buchanani*, ♂, Mt. Baguezan, 27.v.1920. A. Buchanan leg. No. 643.

I found it—like Geyr with his *spatzi* from the foot of the Hoggar Mountains—very difficult to decide where to place this new form. I think, however, that it is a near ally of *R. spatzi*, described as *R. rupestris spatzi* by Geyr, and which I look upon as a dark *obsoleta* form. As *rupestris* and *obsoleta* breed together in western Asia (notably Palestine and evidently Persia), I consider them, like recent observers in Palestine, as two species, and we may look upon *R. fuligula* and *anderssoni* as forms of *rupestris*, *rufigula* (which is also found in Angola!) as a subspecies of *obsoleta*. This, however, is only hypothetical. Another as yet undescribed form has been discovered by Lynes in Darfur.

The specimens of *R. o. buchanani* are not in the best of plumage; they were evidently obtained just after the nesting season, and are beginning to moult: now and then an inner primary or a secondary, some tail-feathers and a few body plumes, on back and breast.

83. **Phoenicurus phoenicurus phoenicurus** (L.).

Motacilla Phoenicurus Linnaeus, *Syst. Nat.* ed. x. p. 187 (1758—"habitat in Europa." Restricted terra typica Sweden).

♂, Farniso, near Kano, 2.i.1920.

2 ♂, Zinder, 23.i., 10.ii.1920.

3 ♀, Mt. Baguezan, 5,200 feet, 11, 29.v.1920.

The males from Kano and Zinder—undoubtedly in their winter quarters—are in beautiful plumage. In one from Zinder the white edges to the throat feathers have mostly disappeared, so that the throat is almost quite black, the

white forehead is also already conspicuous. As redstarts have not very often been recorded from western Africa, the fact that they winter south of the Sahara is of interest.

The occurrence on Mt. Baguezan, in shady glades with tall acacias but no undergrowth, in the middle and end of May is unexpected. The three females are in much-worn plumage, like birds shot in Europe at the same dates, the one from May 29 being worst. I think these birds would have remained in Asben and would not have returned to Europe. Geyr found also redstarts in the desert, near Temassinin, May 12, near Aïn Taïba, May 24, 25, and 26, the latter in feeble condition!

83. Oenanthe oenanthe oenanthe (L.).

Motacilla Oenanthe Linnaeus, *Syst. Nat.* ed. x. p. 186 (1758—"Europa." Restricted terra typica Sweden).

♂, Agades, 15.iv.1920.
♂♂♀, Zinder, 23.i., 19.ii.1920.
♂, Kano, 3.xii.1919.

One of the males from Zinder is a beautiful old bird. The other is a first year's bird with an unusually rufous upperside and moulting body plumage on breast and back on January 23. The collector could not determine its sex, but the entirely black lores and ear-coverts (though some of the latter have small rufous tips) show it to be a male. The fresh growing feathers on the back are not grey, but brownish. The fine adult male, shot February 19, is just finishing its moult on the breast. The ♀ from Zinder also moults a few feathers on the breast and head. In the Kano and Agades specimens I find no moult, but the latter looks rather worn for the time of the year.

Buchanan says wheatears were common at Baban Tubki, near Zinder, and at Kano, but rare at Agades.

84. Oenanthe hispanica melanoleuca (Güld.).

Muscicapa melanoleuca Güldenstädt, *Nov. Comm. Petrop.* xix. p. 468, pl. 15 (1775—Georgia in the Caucasus).

♂ ad., Zinder, 5.ii.1920.

This specimen has the upperside white with only a rusty buff tinge on the back, its feathers are much worn, especially the upper tail-coverts; the remiges, including the inner edges, are entirely black. The bird is purer black and white than old males shot in March and April, and thus much whiter than usual winter specimens. There is no moult.

The locality is very interesting. Though extending in winter to the eastern Sudan, it is not known from the western Sudan. Only one other specimen (presumably of this form) was noticed at Zinder, none elsewhere.

85. Oenanthe leucopyga aegra Hart.

Oenanthe leucopyga aegra Hartert, *Nov. Zool.* xx. p. 55 (1913—Algerian Sahara, type Gara Klima, near Ouargla).

3 ♂, 3 ♀, Agades, 12, 13, 22.iv.1920.
♂ juv., Aouderas, 24.vii.1920.
1 ♂, 2 ♀, 1 ♂ juv., Mt. Baguezan, 5,200 feet, 10, 27.v., 2.vii.1920.

"Iris very dark brown, bill and feet black." The young ♂, July 24 (No. 756), with wings and tail only two-thirds grown, has the bill "pale whitish yellow, except over basal half of upper mandible, which is brown. Feet medium pale leaden brown." Plentiful at Agades, observed on the cliffs of Tegguidi.

These specimens belong to the western form : wings, ♂ 100–103, ♀ 94–97 mm.

The young birds have, of course, black heads. Of the adult ones 4 have the whole crown pure white ; 1 (No. 644) has some white feathers on the nape and sides of crown, one of them just growing—the wings of this bird, a ♂, are browner than those of the white-crowned birds ! Another ♂ (No. 505) has *one* growing white feather at the nape—its wings are also a little brownish ! Three have entirely black heads and distinctly brownish wings, especially wing-coverts. Conclusion (already arrived at from series collected in northern Sahara) : the white crown is only found in fully adult birds, young birds have always black heads, but specimens with black crowns breed sometimes. Probably aged birds always get white crowns in *O. l. aegra*, but of *O. l. leucopyga* I have examined fully aged black-headed birds with quite black wings.

Targi name Sin-é Sin-é.

At Aguellal a clutch of eggs was found on June 16, 1920. The nest was in a hole in a stone wall of a deserted hut in Aguellal village ; it was composed of dry grasses and lined with camel's hair. The eggs agree quite with others collected by me in the Oued Mya, Central Sahara. They are white with a hardly perceptible bluish tinge, almost glossless, and are spotted, chiefly near the larger end, with rusty red spots and dots, without underlying blue-grey markings. They measure 20·4 × 15·3, 20·2 × 14·8, and 20·5 × 19·7 mm.

86. **Cercomela melanura airensis** subsp. nov.

Cercomela subspecici *C. m. lypura* dictae affinis, sed notaeo pallidiore, fere arenicolore, necnon gastraeo brunnescente luteolo distinguenda.

4 ♂, 3 ♀, Mt. Baguezan, 5,200 feet, 8, 10, 14, 20, 22.v.1920.

2 ♂, south of Baguezan, Asben, 3,300 feet, 1.v.1920. "Iris very dark brown. Bill dull black or brown-black. Feet bright black."

♂♀ ad. : Upperside uniform light cinnamon-brown, almost sand-colour, very different from the darker, more fawn-colour, or drab of *C. melanura lypura*, upper tail-coverts and tail brownish black. Ear-coverts brighter, more glossy rufescent brown. Chin and throat dirty white, rest of undersurface brownish buff, middle of abdomen more whitish, under tail-coverts clearer and brighter, the longest sometimes with longitudinal black patches. Under wing-coverts and axillaries buffy white. Wing-feathers dark brown, outer webs margined with colour of back, inner with buffish brown. Wing, ♂ 79–82·5, ♀ 74·5–76·5 mm. Type, ♂ ad., Mt. Baguezan, 14.v.1920. No. 594, A. Buchanan leg.

This is a very distinct form, but possibly the form from the Nile in Nubia—one specimen collected by N. C. Rothschild & Wollaston between Merowe and Obu Hamed, at Dakfala—is different again, being intermediate between *airensis* and *lypura* ; this question must remain unsolved until a series is available.

Cercomela is so closely allied to *Oenanthe* as to be hardly separable !

Buchanan observed this bird also at Tebernit, June 27, at the base of the Tamgak Mountains, June 13, and at Timia in June, but never farther south. He found it frequenting the sides of ravines, among rocks, often perching on bushes.

They often uttered a pleasant broken warble, at times chirped like an English house sparrow.

87. **Myrmecocichla aethiops buchanani** Rothsch.

Myrmecocichla buchanani Rothschild, *Bull. B.O. Club*, xli. p. 33 (1920—"Damergou and Zinder, south to Kano in northern Nigeria").

2 ♂, 2 ♀, Takukut, Damergu, 13.iii.1920.

3 ♂, 1 ♀, Zinder, 27.i.1920.

2 ♂, 1 ♂ juv., Farniso, near Kano, 19, 20.xii.1919, 2.i.1920. "Iris dark brown. Bill and feet black."

This new form is closely allied to *M. aethiops aethiops*, but in fresh plumage not so blackish, and the edges to the feathers of the throat and breast are wider and lighter. The sexes do not differ appreciably. Wings, ♂ 110–114, one from Kano 117, ♀ 102–107 mm.; tail 76–79; bill from base 22–24 mm. The young bird has the edges to the feathers of the underside rufous, not whitish brown as in adults, and not confined to throat and breast, but also on the abdomen.

Another very much smaller and browner subspecies, *Myrmecocichla aethiops sudanensis* has been discovered by Lynes in Darfur and western Kordofan. Its bill is very much smaller, about 15–17 mm. (cf. *Bull. B.O. Club*, xli. p. 18, 1920).

One might be tempted to look upon both these forms (*buchanani* and *sudanensis*) as subspecies of *M. formicivora* from South Africa, but in that species the males have the inner series of upper wing-coverts white—the females, however, not.

Nests, according to Buchanan, in holes in sand banks during rains (September, August). No eggs obtained.

88. **Crateropus fulvus buchanani** subsp. nov.

Crateropus formae *Crateropus fulvus fulvus* dictae simillimus, sed colore pallidiore, minus rufescente, rostroque minore distinguendus.

6 ♂, 2 ♀, Mt. Baguezan, 12.v.–4.vi.1920.

♀, Agades, 21.iv.1920.

♂, Tessalatin, south of Agades, 5.iv.1920.

"Iris umber-brown to clear blackish brown with water-white outer ring. Bill brown-black or black with corners of mouth yellow. Feet pale dull whitish grey-green or pale sage-green." On two labels the iris is described as "glassy white, grey tinted" and "whitish, tinted with stone-grey." "Flight and call exactly like that of a *Colius*" (Buchanan).

These birds were only seen in the places where obtained. They very closely resemble *C. fulvus fulvus* from the Algerian and Tunisian Sahara, but the bill is smaller, slenderer, the back more pale isabelline, less reddish, occiput and crown paler, only the forehead rufous-brown, while in *C. fulvus fulvus* the whole top of the head is rufous-brown, ear-coverts paler. Evidently the iris is also, as a rule, differently coloured, being usually umber to blackish brown. In *C. f. fulvus* the iris, according to books, is brown or rufous-brown, Riggenbach described it as red, and I found it bright red-brown or brown with a whitish outer ring, never blackish brown. However, the iris seems to be variable: Koenig described it as white, and Buchanan marked it in two specimens as whitish and glassy white, tinged grey!

Wings, ♂ 94–97, ♀ 94 mm., in *C. f. fulvus* 95–102 !

Type of *C. f. buchanani*, ♂, Mt. Baguezan, 5,200 feet, 4. vi. 1920. No. 675. A. Buchanan leg.

Several May and June specimens moulting rectrices and some body plumage.

89. **Crateropus plebejus anomalus** subsp. nov.

Crateropus, a subspecie typica occipite striato, colore saturatiore, grisescentiore; a subspeciebus reliquis plumis gularibus jugularibusque magis rotundatis, minus apicatis differt; colore supra brunneigriseo, subtus pallidiore, abdomine isabellino.

♂ ad., Farniso, near Kano, 27. xii. 1919. No. 100, type of *C. p. anomalus*. "Iris clear orange-yellow. Bill black. Feet dark brownish black."

This bird agrees perfectly with several males and females in the British Museum collected by the late Boyd Alexander at various places on the River Yo, in eastern and western Bautchi, and at "Danahaga, N. Nigeria." These birds differ much from all other African *Crateropi*, and it was Alexander's intention to describe them as a new species, as shown by a manuscript name on the labels. If all the other forms which are now treated as subspecies of *C. plebejus* are forms of it, then this new form must also be one of them. It is perhaps nearest to *C. p. plebejus*, but differs from the latter at a glance by the dark centres to the feathers being continued over the occiput and hind-neck, while in *C. p. plebejus* they only reach to 6 mm. beyond the eyes. The upperside is darker, more greyish, not so isabelline, the sides of the head are darker, not isabelline, but greyish brown. The dark centres to the feathers become more or less indistinct in the middle of the back. Quills brown, rectrices brown, darkening towards the end. Feathers of throat dark brown, an almost blackish spot near the tip and a buffy white fringe all round, these fringes becoming less whitish on the chest, where, however, the tips of the feathers have a more distinct whitish guttate tip, which is merely indicated on the throat feathers; chin white; abdomen isabelline, flanks and under tail-coverts slightly browner. Under wing-coverts and inner lining of quills from below brownish isabelline. Wing, ♂ 106–116 (type 115), ♀ 109–113, tail type 110, tarsus 33, bill from forehead 12 mm.

Apparently the only specimen Buchanan met with.

90. **Cercotrichas podobe** (P. L. S. Müller).

Turdus Podobe P. L. S. Müller, Linné's *Natursyst. Suppl.* p. 145 (1776—Senegal. Ex Buffon.)

♀ juv., Aouderas, Asben, 23. vii. 1920.

♂♀ ad., Zinder, 24. i., 13. ii. 1920.

2 ♂, 2 ♀ ad., Takukut, near Damergu, 12, 13, 19. iii. 1920.

♂♀ ad.: "Iris dark brown. Bill black. Feet deep brown-black." Juv.: "Corners of mouth whitish, feet medium blackish leaden grey."

The female has been said to be greyer than the male, but this is not the case: it agrees in colour, but is considerably smaller; wings, ♂ 91, ♀ 84–87 mm. The young agrees in colour of plumage also entirely with the adults.

Found commonly at Azzal and Aouderas, also at Takukut, rare at Zinder. "Frequenting thickets, mouse-like movements." Broken up insects in stomach.

A widely spread species, from N.E. Africa to Senegal, no subspecies distinguishable, unless one considers *C. melanoptera* a subspecies of *podobe*. The

locality "Dongola" for *C. melanoptera*, where it is said to have been found by Hemprich & Ehrenberg, is probably erroneous—it seems to be restricted to southern Arabia.

91. **Agrobates galactotes minor** (Cab.).

Aedon minor Cabanis, *Mus. Hein.* i. p. 39 (1850—"Abyssinien").
Sylvia oliviae Alexander, *Bull. B.O. Club*, xxiii. p. 15 (1908—Lake Chad).

2 ♂, 2 ♀, Zinder, 24.i.–12.ii.1920.
♂, Takukut, Damergu, 26.iii.1920.
♂♀, Agades, 11, 14.iv.1920.
♂♀, Mt. Baguezan, Asben, 19.v., 2.vi.1920.
♂♀, Timia, Asben, 23.vi.1920.

"Iris dark brown. Bill dark brownish, lower mandible whitish flesh-colour, tip darker. Feet brown of various shades to pale blackish brown."

There are considerable variations in size; wings, ♂ 76–82, ♀ 75–80, if correctly sexed. The coloration varies also, some specimens being redder, darker, others more sandy, paler. This form, formerly only known from N.E. Africa, was discovered by Alexander on Lake Chad, and now its range extends to Aïr (Asben).

Buchanan found it "frequenting low shrub, flitting from one bush bottom to another." It has "a sweet somewhat thrush-like broken morning song." Besides the localities where specimens were obtained, observed at Iferouan, Ebazouera, and Tebernit. A nest was found in a thick tangle of vines, six feet from the ground, containing young, at Tokede, 5.vii.1920.

92. **Hypolais pallida reiseri** Hilgert.

Hypolais pallida reiseri Hilgert, *Falco*, 1908 p. 3 (Biskra).

♂♀ ad., Mt. Baguezan, 5,200 feet, 12, 22.v.1920.
♀ juv. ! Aouderas, 24.vii.1920.
2 ♂, Agades, 11, 14.iv.1920.
1 ♂, 3 ♀, Zinder, 26.i.–16.ii.1920.
♂, Takukut, Damergu, 27.iii.1920.

"Iris dark brown. Upper mandible dark brown, lower light yellowish. Feet leaden grey to blackish leaden grey. The young bird has the iris umber-brown, upper mandible dull grey-brown, lower greyish white, feet medium pale whitish leaden grey."

Most of these birds are smaller than topotypical *reiseri* from Biskra, Tuggurt, Mraïer, El-Golea, and In-Salah. They doubtless *nest* in Asben, as suggested by the late dates of the Baguezan birds and shown by the young bird from Aouderas ! The Zinder ones might be and most likely *are* only winter visitors. Oberholser and other American authors and probably Stresemann would separate these birds from *reiseri*, because their wings are mostly shorter, but this is also the case with the Zinder ones.

The ♂ from Asben and Zinder have wings of :

♂, 61·5, 61·5, 63, 63·5, 64·8 mm. ; ♀ 60, 62, 62, 62·5.

On the other hand, specimens from the Algerian Sahara (Biskra, Tuggurt, Mraïer, El-Golea, In-Salah) have wings of :

♂, 63·5, 64·5, 65, 65, 66, 66, 66, 66·5, 66·5, 67, 67, 68 mm. ; ♀ 62·5, 64·5.

I do not venture to name the tropical form, because with such a small series I think it is quite possible that larger specimens might also occur, and I have a strong suspicion that the Zinder birds are winter visitors, and, if so, probably from the Algerian desert, where they are migratory, arriving in April and leaving apparently in August or early in September.

The first unconscious discoverer of *H. p. reiseri* was H. J. Elwes, who shot a specimen in Biskra, 5.v.1882. But at that time birds were not very seriously compared, and so it was labelled as "*pallida*," which is rather different, and recorded by Dixon in the *Ibis*, 1882, as *opaca*, which is still more strikingly different!

93. **Hypolais icterina** (Vieill.).

Sylvia icterina Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.), xi. p. 194 (1817—).

2 ♂ ad., south of Mt. Baguezan, 3,300 feet, 1, 3.v.1920.

Not observed elsewhere. Must be migrant, of course, notwithstanding the late date.

94. **Sylvia cantillans cantillans** (Pall.).

(*Sylvia subalpina* auct.).

Motacilla cantillans Pallas, *Vroeg's Cat. rais. Coll. Ois., Adumbratiuncula*. p. 4 (1764—Italy!).

1 ♂, 2 ♀, Farniso, near Kano, 23, 27.xii.1919, 1.i.1920.
2 ♀, Zinder, 24.i., 10.ii.1920.
♂♀, Damergu, 22.iii.1920.
♀, south of Mt. Baguezan, 3,300 feet, 2.v.1920.

Though the date of the Asben specimen is very late, we may suppose that these birds are only winter visitors in all these places.

In a ♀ from Zinder, No. 350, 10.ii.1920, tail-feathers, primaries, and a few feathers on the back are moulting! ♂ No. 57 from Farniso, 23.xii.1920, evidently in its first year, as shown by its pale rusty edges to the wings, looks more like a female, there being only an indication of the pinkish colour of the ♂ on the underside. The tail is in moult, there being three just-grown new feathers among the rest of much-worn ones.

95. **Sylvia cantillans albistriata** (Brehm.).

Curruca albistriata Brehm, *Vogelfang*, p. 229 (1855—Egypt).

♀, Farniso, near Kano, 5.i.1920.
♂ "♀," Zinder, 23.i., 17.ii.1920.

The ♂ moults body plumage on back, throat, and breast! The supposed ♀ from Zinder must be a ♂, it moults into brick-red on the throat, and into grey on the back! The ♀ from Farniso moults body plumage!

96. **Sylvia communis communis** Lath.

Sylvia communis Latham, *Gen. Syn. Suppl.* i. p. 287 (1787—England).

2 ♂, Farniso, near Kano, 23, 31.xii.1919.
1 ♂, 3 ♀, Zinder, 24.i.–5.ii.1920.
1, Takukut, Damergu, 27.iii.1920.
1 ♀, Mt. Baguezan, 5,200 feet, 9.v.1920.

The ♂ (No. 485) shot March 27 is moulting rectrices and body plumage, the others from December to February are before their moult; the ♀ from May 5 is probably a sick bird that omitted to wander homewards with its kind, though these birds linger behind very late. Geyr observed it May 10–12, in the gardens of Temassinin!

97. **Sylvia hortensis hortensis** (Gm.).

(*Sylvia orphea* auct.).

Motacilla hortensis Gmelin, *Syst. Nat.* i. ii. p. 955 (1789—France and Italy).

1 ♀, Zinder, 26.i.1920.

2 ♂, Agades, 14, 15.iv.1920. "Iris creamy white. Feet greyish black."

Though known to occur in winter in north-eastern Africa (Kordofan, Hota, Zeila, Shendi), this is the first reliable proof of its wintering in western Africa. Geyr observed it as far south as Temassinin.

98. **Acrocephalus scirpaceus scirpaceus** (Herm.).

(*A. streperus streperus* auct.).

Turdus scirpaceus Hermann, *Observ. Zool.*, p. 202 (1804—Alsace).

♀, Zinder, 19.ii.1920.

99. **Phylloscopus bonelli bonelli** (Vieill.).

Sylvia Bonelli Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xxviii. p. 91 (1819—Piémont).

♂, Kano, 3.xii.1919, moulting back.

♂, Farniso, near Kano, 2.i.1920.

♀, Zinder, 10.ii.1920. Moulting on throat.

100. **Spiloptila clamans** (Temm.).

Malurus clamans Temminck, *Pl. Col.* 466 (1828—Nubia, collected by Rüppell).

5 ♂, 4 ♀, Zinder, January and February, 1920.

♂♀, Takukut, Damergu, 11, 24.iii.1920.

2 ♂, 1 ♀, Mt. Baguezan, 5,200 feet, 21, 24.v.1920.

"Iris clear yellowish sienna-brown. Upper and extreme tip of lower mandible black, remainder flesh-colour. Feet pale whitish sienna-brown."

Wings of males 47–49, females 44·5–46 mm. Five of the females differ from all the males in having the black spots on the forehead much narrower, but the ♀ from Mt. Baguezan, though having short wing and tail, has them like the males. Among Nubian birds the same variation in the head is observed, both in large and small specimens!

The occurrence so far west of this species, hitherto known only as a north-eastern form, is very interesting. Buchanan observed it also on June 14 at Iferouan, and June 15 at Aguellal. It frequented the lower parts of "underbrush" and tall grass in half sandy desert, singly or in pairs. Moult seems to be irregular, several specimens moulting tail-feathers and body plumage in January and February, others in March and May.

I cannot unite *Spiloptila clamans* with *Apalis*! The rich rump plumage and the sparse thin feathering of *S. clamans* separate it widely.

101. **Prinia mistacea mistacea** Rüpp.

Prinia mistacea Rüppell, *Neue Wirbelt. Abess.* p. 110 (1835—Gondar in Abyssinia).

2 ♂, 1 sex ?, Farniso, near Kano, December 1919, January 1920.

3 ♂, 2 ♀, Zinder, January, February 1920.

"Iris clear sienna or pale clear umber-brown. Bill blackish, basal portion of lower mandible straw-yellow, but quite black in a quite adult ♂ from Kana, and in the February specimens from Zinder. Feet pale brown to pale clear yellowish brown."

I agree with Sclater & Praed that the specimens from north-western tropical Africa (Nigeria, Portuguese West Africa, and Senegal !), and also ours from Kano and Zinder, agree with Abyssinian examples, also that the East African *P. m. tenella* and South African *P. m. affinis* are well distinguishable subspecies, but I believe that even more races can be separated.

102. **Eremomela flaviventris alexanderi** Scl. & Praed.

Eremomela flaviventris alexanderi Sclater & Praed, *Ibis*, 1918, p. 673 (Upper White Nile to Kordofan and Lake Chad. Type Bara in Kordofan, A. L. Butler leg., British Museum).

3 ♂, 1 ♀, Zinder, 4, 10, 12.ii.1920.

♀, Takukut, Damergu, 13.iii.1920.

♂, Mt. Baguezan, Asben, 5,200 feet, 2.vi.1920.

"Iris brown. Bill dark umber-brown, lower paler. Feet very dark greyish brown."

These birds agree with those from Kordofan. An adult female of *E. f. griscoflava* was obtained by Charles Rothschild & Wollaston at Nakhaila on the Lower Atbara in February 1904.

103. **Eremomela pusilla** Hartl.

Eremomela pusilla Hartlaub, *Syst. Orn. Westafr.* p. 59 (1857—Senegal, Casamanze).

1 ♂ (wing 53 mm.), 1 sex ? (wing 51·5), Farniso, near Kano, 1,700 feet, 22.xii.1919. "Iris dark umber-brown. Bill brownish, lower mandible pale dull yellow. Feet medium dull greenish dark."

Distributed from the Lower Senegal districts (Thiès, Riggenbach leg.) to the Niger and Lower Benuë, Kamerun and Congo (Leopoldville).

104. **Camaroptera brevicaudata chrysocnemis** Zedl.

Camaroptera griseoviridis chrysocnemis Zedlitz, *Journ. f. Orn.* 1911, p. 339 (ex Lichtenstein nomen nudum, 1854—"vom Senegal bis Adamana." Terra typica Senegal).

♂, ♂?, ♀, Farniso, near Kano, 22, 29.xii.1919.

"♂" ♀, Takukut, Damergu, 12.iii.1920.

"Iris light or dark brown. Upper mandible dark brown, lower pale. Feet medium or pale brownish straw colour."

Though mentioned as a "nomen nudum" by Lichtenstein in 1854, this form was not described until 1911. The differences, however, were not very clearly stated, and in part contradictory. They are, in fact, very slight,

but the adult *C. b. brevicaudata* has the underside, from the light-grey throat downwards, almost pure white, while in *C. b. chrysocnemis* the underside is less pure white, more or less tinged with buff (even in adults), the sides more greyish or brownish, the throat, as a rule, less grey. In *C. b. brevicaudata* the back is purer ash-grey, while in *chrysocnemis* it remains more tinged with brownish or greenish, even in adults. As already mentioned by Zedlitz (l.c.) a male from Gambaga (Gold Coast hinterland) agrees, in fact, better with *C. b. brevicaudata*, but the sides are less white.

In *Nov. Zool.*, 1920, p. 459, I have explained the nomenclatorial error in Zedlitz's article, i.e. that there is no reason for the somewhat hazardous theory that the type of *brevicaudata* is lost, and that this bird has not yet been rediscovered. In fact, there are Kordofan specimens now in the British Museum, and they are what Zedlitz called *griseoviridis*, i.e. the real *brevicaudata*.

105. **Sylvietta micrura brachyura** Lafr.

Sylvietta brachyura Lafresnaye, *Rev. Zool.*, 1839, p. 258 (Senegambia).

♂, Farniso, near Kano, 1,700 feet, 5.i.1920.

♀, Zinder, 26.i.1920.

♂♀, Takukut, Damergu, 24.iii.1920.

"Iris medium rich brown. Dull grey-black or blackish brown. Feet pale reddish brown."

The specimen from Zinder is in quite fresh plumage and slightly lighter; the feathers become darker when worn.

The reviews of these birds by Zedlitz (*Journ. f. Orn.*, 1916, p. 25) and Sclater & Praed (*Ibis*, 1918, p. 669) are excellent, but their nomenclature requires an alteration: as *S. micrura* (Rüpp.) was described in 1835, the specific name of the group must, of course, be *micrura*, and not *brachyura* (1839).

106. **Cisticola cisticola aridula** With.

Cisticola aridula Witherby, *Bull. B.O. Club*, xi. p. 13 (1900—60 miles south of Khartum on the White Nile).

♂♀, Zinder, 3, 4.ii.1920.

♂, Takukut, Damergu, 21.iii.1920.

"Iris umber-brown. Bill dark brown, lower pale. Feet pale brown-tinged skin colour."

I am sorry to say that I cannot agree with Sclater & Praed's conclusions, *Ibis*, 1918, p. 650. I still consider Witherby's *aridula* a subspecies, the darker specimens of which are very near *uropygialis* from West Africa (Gold Coast to Niger, Angola, and eastern Africa), but lighter, while the light specimens are *typical aridula*. This subspecies thus occurs in two variations, a darker and a lighter one. Not only will it be seen that both varieties are found in the same places (Nubia, White Nile), but some are intermediate. Of the three specimens collected by Buchanan, one has much wider black markings, thus looking much darker, the other two are practically as light as a specimen collected at Shendi by N. C. Rothschild and A. F. R. Wollaston, which agrees with the type of *aridula*.

107. **Hedydipna platura platura** (Vieill.).

Cinnyris platurus Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xxxi. p. 501 (1819—Senegal !).

3 ♂ ad., near Kano, 22.xii.1919, 1.i.1920.
2 ♂ ad., Zinder, 12.ii.1920.
1 ♂ ad., Damergu, 26.iii.1920.
2 ♂ ad., 1 " ♂ juv.," 2 ♀, Agades, 12, 14, 15.iv.1920.
3 ♀, Mt. Baguezan, Asben, 5,200 feet, May 1920.
Found fairly plentiful at Agades.

In fresh plumage adult females and young males are bright yellow, in old plumage very pale. Females from April 26, May 12 and 14 are moulting from the pale into the bright-yellow underside. One male from Zinder and another from Damergu have a very distinct, though narrow, violet line separating the green jugulum from the dark-yellow breast. As far as I can see *H. platura* and *metallica* do not actually occur together, and in that case the latter would be a subspecies of *platura*. Both, however, are said to be found in Kordofan. Zedlitz discovered a race of *platura* in the Adiabo steppe in N.W. Abyssinia, while *metallica* was found at Tocolai, Ghinda, Sectel, and in Barca.

(The genus *Hedydipna* might as well be suppressed !)

108. **Nectarinia pulchella aegra** subsp. nov.

Nectarinia subspeciei *N. pulchella pulchella* persimilis, sed rostro debiliore, maris macula pectorali plerumque minus splendidiore distinguenda.

♂♀ ad., Agades, Asben, 1,710 feet, 9.vii., 12.iv.1920.
2 ♂, 2 ♀, Timia, Asben, 3,800 feet, 21.vi.1920.
2 ♂, 1 ♀, Azzal, Asben, 1,825 feet, 12, 14.vii.1920.
2 ♂, 1 ♀, Zinder, 23.i., 13.ii.1920.
♂♀, near Kano, 7.i.1920.
Targi name Tagachit-Nakowit.

These birds are very similar to *N. pulchella pulchella* from the Senegal, of which we have 22 adult males in full plumage, a few females, and some males in winter plumage, mostly from Thiès, collected by Riggenbach, by having a slightly thinner and as a rule shorter bill, and the red patch on the breast being, as a rule, duller, less bright. Type : ♂ ad., Timia, 21.vi.1920. No. 688, A. Buchanan leg.

Also noticed at Aouderas.

The males from Zinder are in the female-like dull winter plumage, but two have the long tail feathers, which they do not lose until the next moult ; they have always (or nearly so) retained some metallic green feathers on shoulders and upper tail-coverts. The females in off-plumage seem to have a greyish-black throat—I do not think that such birds are young males, at least not always !

Nectarinia pulchella aegra is very closely allied to and requires careful comparison with *N. p. pulchella* from the Senegal. The North-East African form, however, is much more strikingly different, and it is strange that its distinctness has not been noticed before. It has the larger bill of *N. p. pulchella*, the red breast patch is of a still brighter scarlet and generally more extended, the yellow patch on the sides of the chest not dull greenish yellow, but brighter, almost pure yellow. I name this subspecies—

Nectarinia pulchella lucidipectus subsp. nov.

Nectarinia pulchella pectore clariore scarlatino praepectorisque lateribus purius luteis a forma topotypica distinguenda.

Type of subspecies: ♂ ad. Wad Medani, Blue Nile, 25.vii.1909. Stanley S. Flower leg., No. 856, in the Tring Museum.

Other specimens in the Tring Museum are from Barankwa, Blue Nile, and Roseires, both collected by Major S. S. Flower, from the Kobua River, Lake Rudolf, collected by H. J. A. Turner for Col. Meinertzhagen, near the Gelo River, by Oscar Neumann, from Nimule and Gondokora, collected by L. M. Seth-Smith, and Lado, Emin Pasha leg. Also specimens from Lake Stephanie and Lake Abaya, A. Donaldson Smith leg., Kibero on Lake Albert, W. J. Ansorge leg., and a dozen males from Harar, the Kassam River, and another locality in south-eastern Ethiopia, collected by Zaphiro, belong to *N. p. lucidipectus*, though some of Zaphiro's skins are somewhat intermediate and not quite so typical as those from the Blue Nile.

A nest of *N. pulchella aegra*, hanging suspended in an acacia tree, was found at Timia, Asben, June 21. It has the usual longitudinal purse-shape, and is composed of all sorts of dry material, such as fibres, bark, little twigs, spider-webs, and leaves, lined with white and light-grey feathers, evidently of doves. The eggs are very long, with very faint gloss, greyish white with brown and greyish longitudinal blotches and spots, measuring 17·3 × 10·8 and 17·3 × 11 mm.

109. Cinnyris senegalensis senegalensis (L.).

Certhia senegalensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 186 (1766—Senegal. Ex Brisson).

2 ♂ ad. in full plumage, 4 ♂ juv. or in off-plumage, or in moult, 2 ♀, near Kano, 22.xii.1919–9.i.1920.

Hausa name Makading-Gowdi.

110. Remiz punctifrons (Sund.).

Aegithalus punctifrons Sundevall, *Oefv. Vet. Ak. Förh.* vii. 1850 p. 129 (Sennaar).

2 ♂, 1 ♀, Takuknt, Damergu, 11, 12, 13.iii.1920.

3 ♂, Mt. Baguezan, Asben, 26.v., 1.vi.1920.

"Iris dark. Bill dark bluish grey-black, edges at mouth pale blue-grey. Feet blue-grey."

The March specimens are in very much worn plumage, the Asben ones beautiful, though one still moulting remiges and body plumage.

Frequenting thorn bushes in bush country, waterless except for artificial wells.

The specimens agree perfectly with others from the Nile (Shendi), Atbara, and White Nile.

I do not consider it advisable to separate the African Penduline Tits generically. There is no structural difference except the longer first primary. If this alone is admitted as a generic character, then *Lanius minor* must at once be separated from the other shrikes, the sprosser from the nightingale—to quote only two out of numerous other instances.

111. **Batis senegalensis** (L.).

Muscicapa senegalensis Linnaeus, *Syst. Nat.* ed. xii. i. p. 327 (1766—Senegal. Ex Brisson).

1 ♂, 3 ♀, Zinder, 26.1.1920.
1 ♂, 1 ♀, Agades, 14.iv.1920.
1 ♂ juv., Mt. Baguezan, 5,200 feet, 13.v.1920.
1 ♂ juv., Timia, Asben, 3,800 feet, 22.vi.1920.
♂ ♀, "Iris clear bright yellow. Bill and feet black."

Not uncommon at Agades in April, generally in parties of four or five in bush-country far from habitations.

Hausa name Youngkingalla.

(The distinctness of *B. senegalensis togoensis* Neum. requires confirmation.)

112. **Muscicapa striata striata** (Pall.).

Motacilla striata Pallas, *Vroeg's Cat. Verzam. Vogelen, Adumbratiuncula*, p. 3 (1764—Holland).

♂ ad., Mt. Baguezan, 18.v.1920.

This bird belongs to *M. s. striata*, being dark-coloured, though its wing measures 90 mm.

The date is a very late one! Would probably not have returned to Europe. Not seen anywhere else.

113. **Muscicapa albicollis** Temm.

Muscicapa albicollis Temminck, *Man. d'Orn.* p. 100 (1815—new name for *collaris*, which had been anticipated).

♀, Tegguidi, Asben, 12.viii.1920.

The occurrence in Asben is most interesting; we know that the species passes through Algeria on migration, but there has, so far, been no evidence where it went. The date is a very early one! The specimen was "very thin and weak."

114. **Lanius excubitor leucopygos** Hempr. & Ehrb.

Lanius leucopygos Hemprich & Ehrenberg, *Symbolae Physicae* fol. e and fol. dd, description fol. d (1828—Dongola).

1 ♀, Zinder, 2.ii.1920 (lateral rectrices badly worn, moult on breast and throat).

4 ♂, 1 ♀, Mt. Baguezan, 8.v.–3.vi.1920 (plumage more or less worn, two rectrices moulting, 2.vi.1920).

2 ♂, Agades, 17, 20.iv.1920.

"Iris dark brown. Bill black. Feet greyish or brownish black."

Rare at Agades and Zinder, not seen farther south. Wings, ♂ 100–105, ♀ 95–97 mm.

Formerly only known from Nubia, to Kordofan, Blue and White Nile, but collected by Alexander near Lake Chad, and by Poggiolini at Timbuktu.

115. **Lanius senator senator** L.

Lanius Senator Linnaeus, *Syst. Nat.* ed. x. p. 94 (1758—"habitat in Indiis," errore! Typical locality fixed "Rhine," ex Albin—cf. *Vög. pal. Fauna*, i. p. 434).

1 ♂, 3 ♀, near Kano, 8.xii.1919 to 7.i.1920.
2 ♂, Zinder, 28.i., 12.ii.1920.
1 ♂ ad., Mt. Baguezan, 5,200 feet, 24.v.1920.
♂ juv. Tegguidi, Asben, 12.viii.1920.
Hausa name Suda.

Notwithstanding the late date of the Baguezan male, and that of the young bird from Tegguidi, I do not for a moment believe that these birds nest in Asben. They evidently migrate southwards rather early—at least some of them. On the other hand, some remain up to a rather late date, mostly never to return to the north in the same year, and they are frequently in bad condition (cf. Geyr, *Journ. f. Orn.*, 1918, p. 142!). The specimens from Kano are in beautiful fresh plumage, with rump, scapulars, and edges to feathers of wings brownish buff, and some are still moulting a few of the feathers on back and breast, as well as outer primaries; also one of the Zinder birds still moults a few body feathers. The young bird has nearly the whole of the outer webs of the second to fourth primaries buff.

116. **Harpolestes senegalus senegalus** (L.).

Lanius senegalus Linnaeus, *Syst. Nat.* ed. xii. i. p. 137 (1766—Senegal).

"♂♀," Kano, 13.xii.1919.
"Iris medium dark purplish grey. Bill black. Feet pale bluish grey."
Hausa name Suda.

I must still state that I cannot separate the supposed "*pallida*" of Neumann. On the other hand, I do not quite understand Messrs. Sclater & Praed's remark, *Ibis*, 1918, p. 637, where they say "that it is impossible to recognise any satisfactory races of this shrike from South, West, or East Africa," and then not only recognise *H. s. habessinica*, *erlangeri*, *remigialis*, and even name a new form—a good one no doubt—*H. s. sudanesis* Scl. & Praed. Certainly these are good subspecies, but *rufofuscus* and others are in my opinion equally distinct.

117. **Laniarius barbarus barbarus** (L.).

Lanius barbarus Linnaeus, *Syst. Nat.* ed. xii. i. p. 137 (1766—Senegal. Ex Brisson).

♂, not quite adult, Farniso, near Kano, 27.xii.1919. "Iris dark. Bill black. Feet light leaden grey."

This bird has an unusually dark, somewhat brownish yellow crown, and some of the wing-coverts have rust-brown fringes. It is apparently a younger bird, but not, of course, in its first plumage, which is quite different.

118. **Nilaus afer afer** (Lath.).

Lanius Afer Latham, *Ind. Orn. Suppl.* ii. p. xix (1801—Senegal. Ex *Gen. Synops. Suppl.* ii. p. 76!).

2 ♂, 2 ♀; 1 juv., Timia, Asben, 3,800 feet, 22, 23, 25.vi.1920.
3 ♂, Mt. Baguezan, 5,200 feet, 11, 13, 31.v.1920..
"Iris dark brown. Bill black, inner half of lower mandible blue-grey. Feet medium leaden-grey."

In all these specimens the wings are faded and worn, but in the ♂ of June 25 the new, more blackish remiges are growing, and several specimens show moult of body plumage.

119. **Prionops plumatus haussarum** subsp. nov.

Prinops formae *P. p. plumatus* dictae persimilis, sed fascia nuchali laterumque capitis lutea vel fere absenti, nec schistacea conspicua distinguendus.

3 ♂, 2 ♀, 1 ?, near Kano, December 1919, January 1920. "Iris and bare orbital ring lemon-yellow. Bill blue-black. Feet medium dull orange-chrome."

Hausa name Kara-dangi.

These birds are clearly different from *P. p. plumatus*, of which we have a good series from the western Senegal Colony, as the more or less incomplete band on the nape and behind the ear-coverts is not dark greyish slate or almost black, but brownish buff and sometimes indistinct or nearly absent. The wings measure 113–126 mm., the largest bird being marked as a female, but possibly by error. The 26 Senegalese specimens do not surpass 123, the majority being under 120 or just 120 mm., it is therefore possible that a larger series from Kano would show a larger maximum or average wing-measure. The little series from Kano all belong, of course, to my new subspecies, but some other birds are also very interesting. Three specimens from the province of Zaria, either near the town of Zaria or northwards, agree entirely with our Kano ones, but another, from the collection of the late Schütt in Freiburg, labelled by the late Schneider from whom we bought it as coming from the "Sudan," agrees with the second whitest of our *haussarum*. Its locality is doubtful, but it can hardly have come from the eastern Sudan. There is also a skin from Ilorin, Nigeria, which approaches our new form, though not the whitest specimens. On the other hand, two specimens from the Kaduna River, south of Zaria, have the dark bands on the head darker and might belong to *P. p. plumatus*, and this is possible, as the Kaduna valley is much richer in vegetation and more fertile than the more open, drier country near Kano.

Type of *P. p. haussarum*, ♂ Farniso, near Kano, 15.xii.1919. No. 44, Angus Buchanan leg.

(Neumann wrote about the specimen labelled "Sudan" in *Journ. f. Orn.*, 1905, p. 219, and I discussed the Hausaland ones in *Nov. Zool.*, 1915, p. 259. I shot a *Prionops* near Loko on the Benue and observed it not far from Zaria, in 1886.)

120. **Pycnonotus barbatus arsinoe** (Licht.).

Turdus Arsinoe Lichtenstein, *Verz. Doubl. Zool. Mus. Berlin*, p. 39 (1823—"Fayum in Aegypto").

1 ♀, Agades, 12.iv.1920.

2 ♀, Timia, Asben, 22, 23.vi.1920.

1 ♂, Azzal, Asben, 1,825 feet, 16.vii.1920.

2 ♀, Aouderas, Asben, 2,700 feet, 23.vii.1920. "Iris dark umber-brown. Bill black. Feet grey-black." Targi name, Taynut.

Found always in groves of date-palms, rarely among other trees.

It is interesting to find this Nile bird so far west. The heads are browner than in our Nile specimens, but, all Asben examples being in worn plumage, this is probably due to the state of plumage.

121. Motacilla flava flava L.

Motacilla flava Linnaeus, *Syst. Nat.* ed. x. i. p. 185 (1758—"habitat in Europa." Restricted typical locality South Sweden !).

♂, near Kano, 7.i.1920. Juv., body plumage in moult.

3 ♂, 2 doubtful, apparently 1 ♂ juv., 1 ♀, Zinder, January, February. The males moulting body plumage, one also inner secondaries and outer rectrices.

1 ♀, Mt. Baguezan, Asben, 19.v.1920; late date, no moult.

122. Motacilla flava thunbergi Billberg.

Motacilla Thunbergi Billberg, *Synops. Faunae Scandin.* i. 2, Aves, p. 50 (1828—Lapland).

♂, near Kano, 7.i.1920. Slight moult of body plumage.

♂ ad., Mt. Baguezan, 5,200 feet, 8.v.1920. No moult.

123. Motacilla alba alba L.

Motacilla alba Linnaeus, *Syst. Nat.* ed. x. i. p. 185 (1758—"habitat in Europa." Restricted typical locality Sweden).

♀ ad., Takukut, Damergu, 1,550 feet, 8.iii.1920.

124. Anthus sordidus asbenaicus Rothsch.

Anthus sordidus asbenaicus Rothschild, *Bull. B.O. Club*, xli. p. 33 (November 1920—Mt. Baguezan).

6 ♂, 4 ♀, Mt. Baguezan, 5,200 feet, 9.v.–5.vi.1920. "Iris dark umber-brown. Bill brown-black, cutting-edges of upper and basal two-thirds of lower pale brown or pale dull straw-colour."

This very distinct local form of *Anthus sordidus* is described as nearest to *A. sordidus hararensis* Neumann from Harar (and northern Somaliland), but more rufescent, especially on the rump and upper tail-coverts, and the chest less spotted and flanks paler; there is also, as a rule, less brown on the inner webs of the tail-feathers, but this last character is somewhat variable. The size is very variable, wings of males measuring 93–100, of females 87–91·5 mm. This form is also somewhat similar to *A. sordidus jebelmarrae* Lynes (*Bull. B.O. Club*, xli. p. 16, from Jebel Marra, Darfur, 6,000 feet), but the latter is of a darker brown on the upperside and darker, more rufous-brown on the underside. A pair before me measure ♂ wing 96, ♀ 89·5 mm.

These pipits were not observed anywhere else than on the Baguezan Mountains. They frequented valleys, often where sandy flats joined stony ground. The ♀ shot on June 5 had "eggs in the ovary."

125. Anthus campestris campestris (L.).

Alauda campestris Linnaeus, *Syst. Nat.* ed. x. i. p. 166 (1758—"habitat in Europa." Restricted typical locality South Sweden).

1 ♂, 3 ♀, near Kano, 22.xii.1919–5.i.1920.

3 ♂, 2 ♀, Zinder, 23.i.–13.ii.1920.

Winter visitors. Hausa name "Myshagacomje."

Most specimens still show traces of moult on body plumage, two also moult wing-feathers.

126. Anthus trivialis trivialis (L.).

Alauda trivialis Linnaeus, *Syst. Nat.* ed. x. i. p. 166 (1758—" habitat in Suecia ").

♂ ♀, Zinder, 27.i., 19.ii.1920.
Winter visitors.

127. Alaemon alaudipes alaudipes (Desf.).

Upupa alaudipes Desfontaines, *Mém. de l'Acad.* 1787, p. 504 (Gafsa & Tozer in Tunisia).

♂ ♀ ad., Agades, 21.iv.1920.
♂, north of Aguellal, 15.vi.1920.

These specimens have the upperside rather brownish, darker than in most specimens from the northern Sahara of Algeria and Tunisia. A specimen which I shot in the Oued-el-Abiodh north of In-Salah, 14.iv.1912, one from Gizeh in Egypt, one from Meroë in Nubia (E. & R. Gurney coll.) are, however, absolutely like the Asben ones, and one from near Sidi Okba (near Biskra) comes very close to them in coloration. The question requires attention, for it almost seems as if the southernmost specimens were as a rule darker. Of two May birds from Cape Blanco South (west coast of Sahara), however, one, though terribly worn, is evidently quite pale, and in the Natron Valley in Lower Egypt and Nubia these birds are very variable, sometimes quite greyish, sometimes isabelline.

The only specimen seen north of Agades is the one from Aguellal, in northern Asben. In southern Asben it inhabits the desert between Agades and Tigueddi.

128. Galerida cristata alexanderi Neum.

Galerida cristata alexanderi Neumann, *Bull. B.O. Club*, xxiii. p. 45 (1908—Bautchi in Hausaland).

3 ♂, 3 ♀, near Kano, 13, 26.xii.1919, 2, 7.i.1920.
2 ♂, Zinder, 30.i., 10.ii.1920.
♀, Agades, 16.iv.1920.
3 ♂, 1 ♀, Mt. Baguezan, 5,200 feet, 8, 27, 29.v.1920.
♂, Aouderas, Asben, 30.vii.1920.

" Iris dark brown. Bill pale brown, upper mandible darker. Feet pale whitish brown, pale straw-colour, pale yellowish brown."

It is with much hesitation that I unite all these Crested Larks under the name of *G. c. alexanderi*. Those from the neighbourhood of Kano, Zinder, and Agades agree very well with each other, and with the typical specimens from Bautchi and other places in Hausaland—they are all in more or less worn plumage. The three males from Mt. Baguezan are much more cinnamon or rufous, but they are in heavy moult, most of the feathers of the upperside being fresh and even still growing ; the female, however, though also heavily in moult, has still many of its old feathers and looks very much like one of the Kano skins. The Aouderas specimen, on the other hand, has quite finished its moult, and looks much paler, not so rufous, as the Baguezan ones, and paler, less brownish, than the worn winter birds. Its feathers have still all the pale sandy, almost greyish edges. Although in some countries, Algeria for example, the forms of *Galerida cristata*

are very constant, while those of *Galerida theklae* are very variable, in other countries, Nile valley and Palestine for example, the *cristata* forms vary much; this is especially demonstrated by the wonderful series collected by Meinertzhagen in Palestine and Syria, and there a similar phenomenon is evident, i.e. that the quite freshly moulted birds are most reddish or cinnamon, those shortly after the moult, with feathers a couple of months or so old, palest, while later on, when the edges to the feathers are worn off, the central dark-brown spots are more exposed, the upperside therefore becoming much darker. The spots on the chest in al Crested Larks are less circumscribed in freshly moulted ones, sharper defined and apparently—not really—smaller in worn birds.

Buchanan gives the Hausa name as "Delà." Except perhaps on Mt. Baguezan he found Crested Larks nowhere common, but only saw isolated pairs or single birds. The female shot near Kano, 13.xii.1919, had "a fully formed egg in ovary." Small insects and seeds were found in the stomachs.

129. Ammomanes deserti mya Hart. (?).

Ammomanes deserti mya Hartert. *Ann. & Mag. Nat. Hist.* ser. viii. vol. x. p. 230 (1912—Oued-Mya north of In-Salah, western Sahara).

2 ♂, 5 ♀, Mt. Baguezan, 5,200 feet, 8.v.–2.vii.1920.

1 ♂, south of Baguezan, 3,300 feet, 3.v.1920.

"Iris umber-brown. Bill dull medium lemon-yellow, upper mandible tinged with brown. Feet pale yellowish brown, tinged with white, in the freshly moulted bird medium umber-brown, soiled with white."

♂ No. 723, shot 2.vii.1920, is in beautiful fresh plumage, just through the moult. All the others are much worn, but not yet moulting, except No. 547, shot 3.v.1920, which moults some secondaries and primaries. I cannot confidently separate these birds from *A. d. mya*, which Geyr found throughout the Tuareg Mountains from Kelmet to Ideles. It is true that our birds are generally darker on the upperside, but some Oued-Mya examples can hardly be called different. The one freshly moulted bird agrees so well with examples of *A. deserti algeriensis*, collected by Lord Rothschild and myself on the hills near Biskra by the end of September and early in October, that I cannot separate it, though it cannot be denied that it is darker than *most* of the latter. A *series* of unsoiled, freshly moulted birds would be necessary for a separation of the Asben form; without that it would be a risky experiment to name it.

Similar birds were observed (but not collected) near Aouderas in July, and at Aguellal, Aouderas, Faodet, Iberkom, Iferouan, and Tebernit in June. They frequented level stretches of lava stones and pebbles, and were seen among the huge boulders of the mountains.

A nest was found on Mt. Baguezan, 5,200 feet high, on June 30. It was placed on the sand among a small group of stones, lying on level ground under a projecting rock. The three eggs were in an advanced stage of incubation, and only one could be saved. It agrees with many varieties of the eggs of *Ammomanes deserti algeriensis*, being dirty pinkish white with a ring of brown and underlying greyish spots and a few spots and dots over the rest of the surface. It measures 21 × 16·8 mm. The nest is like those of *A. d. algeriensis*, and pieces of thread and linen are also present.

130. **Ammomanes phoenicurus arenicolor** (Sundev.)

Alauda arenicolor Sundevall, *Oefr. K. Vet. Akad. Förh.*, Stockholm, 1850, p. 128 (Lower Egypt and Arabia Petraea).

3 ♂, 1 ♀, Agades, 1,700 feet, 16.iv.1920.

On an average the bills of these birds are rather large, but Algerian specimens match them not rarely. Coloration and size absolutely as in Algerian and other specimens. Plumage worn.

131. " **Calendula** " **dunni pallidior** subsp. nov.

Formae *Calendula dunni dunni* dictae persimilis, sed pallidior.

1 ♂, 1 ♀, 1 ?, Takukut, Damergu, 8, 21.iii.1920. " Iris dark brown. Bill almost white, upper mandible tinged with brown. Feet creamy white or " very pale whitish skin-colour."

These three specimens are so much like the two adult specimens of *Calendula dunni* in the British Museum (the third is a nestling) that it is not without hesitation that I propose to distinguish them as above. But two of our specimens are much, the female a little paler, less reddish, and the bills certainly less powerful. The wings of the types, marked ♂ and ♀, measure ♂ 85, ♀ 80, our specimens ♂ 80, ♂ (?) 84, ♀ 77 mm. It is, therefore, possible that the form has shorter wings, but more material must be examined. Let us hope that Lynes will come across this species in northern Darfur, and that his specimens will either confirm the difference of the more eastern and more western specimens or show that they vary so much individually that they must be united. *C. dunni* was discovered at the Ogageh Wells in Kordofan.

Type, ♂ ad., Takukut, 21.iii.1920. No. 459, A. Buchanan leg.

I am by no means sure that these birds should be in the genus *Calendula*. It is true that they agree in structure, i.e. the very thick, high bill, shape of wings, and feet with *Calendula crassirostris*, but the colour is more that of a Crested Lark or *Ammomanes*, and in fact a perfect counterpart of *Mirafra cordofanica*, so that I am in doubt if the *Calendulae* should not be lumped into *Mirafra*, which contains many very different forms.

Buchanan found these birds only in an isolated barren desert stretch, where they were generally seen in pairs.

132. **Calandrella brachydactyla hermonensis** Tristr.

Calandrella hermonensis Tristram, *Proc. Zool. Soc.*, London, 1864, p. 434 (Mt. Hermon and Lebanon).

2 ♂, Agades, 13.iv.1920.

Probably still on migration, though sometimes eggs are already found in mid-April in the northern Sahara. Geyr observed Short-toed Larks as late as May 13, north of the Ahaggar Mountains, which he considered to be still on migration.

I am sorry to say that we must accept Tristram's name *hermonensis* for the desert form of this species, which has been named *rubiginosa* by Fromholz and ranges from Marocco throughout the northern parts of the Sahara to Egypt and Palestine. It is true that Tristram's specimens were in badly worn breeding plumage, and some juvenile, but a re-examination of his series shows that the

name *hermonensis* must be applied to the more rufescent rufous-headed desert form. On the other hand, some of Tristram's specimens from Lake Huleh in the plains are more like typical *brachydactyla*—possibly the two forms may meet in northern Palestine. Moreover on migration the greyish *C. b. longipennis* occurs in Palestine!

133. Calandrella brachydactyla longipennis (Eversm.).

Alauda longipennis Eversmann, *Bull. Soc. Imp. Nat. Moscou*, xxi. p. 219 (1848—Songaria).

♀ ad., Zinder, 2.ii.1920.

Though we have found this form in small numbers in the Algerian northern Sahara, i.e. even farther west than Zinder, this seems to be the southernmost locality for it in Africa.

134. Eremopterix leucotis melanocephala (Licht.).

Alauda melanocephala Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 28 (1823—"E. Nubia et Senegambia!" Restricted terra typica Nubia!).

1 ♂ ad., 1 ♂ in moult, 1 ♀, Zinder, 2.ii.1920.

1 ♂ juv., 1 ♀, Tegguidi, Asben, 11.viii.1920.

"Iris dark brown. Bill white, slightly tinged with greyish. Feet pale greyish white, more brownish in female and juv."

In small flocks, mostly on open wind-swept flats.

I have called these birds *E. l. melanocephala*, though this is perhaps not quite correct. As has been noticed by Reichenow, myself, Sclater & Praed, and others, there is much variation in the coloration of the upper wing-coverts, males from the eastern Sudan very often having a black patch on the lesser upper wing-coverts, while this is, as far as I have been able to make out, invariably absent in Senegal specimens. There are, however, specimens from Khartum and Nubia, in which the black patch is entirely absent, and though in the Tring collection they are very much in the minority, they are apparently more frequent in other museums. As I cannot find any other difference between eastern and western birds, I, like others before me, hesitate to give a name to the Senegal form. The old male from Zinder has a black patch, but not so large as in many eastern males, the younger males have no trace of it.

[If we do *not* separate the Nubian and Senegal birds, there still remain four good races:

1. *E. leucotis leucotis* Stanley (*Loxia leucotis* Stanley, *Salt's Travels in Abyssinia*, Append. p. lx., 1814, "Coasts of Abyssinia"). This is a bird with dark-brown back, black and brown (not white!) lesser wing-coverts, and a moderately strong bill. Hab. Abyssinia (Eritrea to Gedaref—at least our Gedaref specimen is clearly typical *leucotis*).

2. *E. leucotis madaraszi* Rchw. (*Pyrrhulauda leucotis madaraszi* Reichenow, *Orn. Monatsber.*, 1902, p. 78, "Ostafrika"). This form has a larger bill than both *leucotis* and *melanocephala*, otherwise agreeing with *melanocephala*. It inhabits East Africa north to the Galla countries, from where we have a good series.

3. *E. leucotis melanocephala* (Licht.). Upperside, as a rule, lighter than in *E. l. leucotis* and *madaraszi*, lesser upper wing-coverts white. Senegal to Asben

and Hausaland and thence to Nubia, where *leucotis leucotis* is, of course, not found, south to Kudurma (Emin Pasha).

4. *E. leucotis smithi* Bp. Bill still larger than that of *madaraszi*, wings a little longer, otherwise no constant differences. Southern Africa.

All these birds vary to some extent. The variation in the upper wing-coverts in *melanocephala* has already been discussed. Among the *madaraszi* collected in the Galla country by Zapphiro is a male in which the white of the sides of the head encircles the eye.]

135. **Eremopterix frontalis frontalis** (Bp.).

Pyrrhulauda frontalis Bonaparte, *Consp. Gen. Av.* i. p. 512 (1850—Nubia. Ex Lichtenstein MS., in Berlin Mus.).

2 ♂, 1 ♀, Zinder, 2.ii.1920.

2 ♂, 1 ♀, Agades, 1,700 feet, 11, 16, 20.iv.1920.

2 ♂, 2 ♀, Azzal, Asben, 12, 17.vii.1920.

♂♀: "Iris dark brown. Bill greyish white or whitish grey. Feet cream-white, sometimes tinged with brown."

There is much variation in the colour of the upperside in the males; No. 749 from Azzal has the upperside grey with a slight brownish tinge, while No. 730 from the same locality is as brown as those from Agades.

Were found very plentiful at Agades and on the plains to the south of that place, and many were seen flitting in large flocks with undulating flight over the wind-swept flats near Zinder, a few seen near Aouderas and Tebernit. None observed near Baguezan.

Hausa name Gulo gulo tabari; Targi Kusouro.

136. **Emberiza striolata sahari** Levaill.

Emberiza Sahari Levaillant jun., *Expl. Scient. Algérie, Atlas, Ois.*, p. ix. bis, fig. 2 (1850—Algeria accepted as terra typica).

4 ♂, 1 ♀, Mt. Baguezan, 5,200 feet, 10–19.v.1920.

3 ♀, Azzal, Asben, 16, 17.vii.1920.

♂, Agades, 22.iv.1920.

♂, Zinder, 2.ii.1920.

"Iris dark brown. Upper mandible dull blackish, lower whitish or yellowish. Feet clear sienna brown, toes a shade darker."

Geyr von Schweppenburg was justly surprised to find the "house-bunting" in the Tuareg Mountains, as he had not come across it south of Ouargla, nor had Hilgert and I found it in El-Golea or in the Tidikelt oases. It is still more surprising to find it in Asben, and even in Zinder! Moreover, the specimens agree well with a large series from Tunisia, Algeria, and Morocco. It is true that all these specimens have a more or less distinctly striolated back, while in Morocco and Algeria some specimens do not show these stripes, but the majority are perfectly similar to the Asben specimens in this and in every other respect. The wings measure 77–81 mm., those of Geyr 78–82; the latter ornithologist remarks that I only gave 75–80, and that was quite correct, but 75 is a rare measurement, and recently collected specimens measure up to 82 mm.

In April and May these birds are already moulting, in Algeria (Biskra) they

appear to moult much later, as those collected end of September and in October were only just through their moult, and some were still moulting on October 4 and 8. Maroccan specimens from May 15 and 18 had not yet any sign of moult.

Buchanan found these birds rather locally, both in the town of Zinder, on the granite rocks near that town, and in the hills north of Agades and Baguezan. They were also seen in great numbers at Igouloulouf and Tebernit.

Hausa name Zeegeegee ; Targi Tarayak.

(*Emberiza striolata djebelmarrae* Lynes is a very distinct, much darker subspecies from the Djebel Marra in Darfur.)

137. **Emberiza septemstriata goslingi** ?

2 ♂, Zinder, 2, 16.ii.1920.

These two birds are still paler than *E. septemstr. goslingi* (*Bull. B.O. Club*, xvi. p. 124, Ubima on the Uelle), but being very much worn it is impossible to be certain about their coloration. A specimen from Gambaga is brighter rufous, but appears to be rather *goslingi* than *E. s. septemstriata*, which has a more blackish throat. As *E. s. goslingi* occurs also in the Bahr-el-Ghazal it is quite possible that both our Zinder specimens and the one from Gambaga belong to it.

138. **Passer simplex saharae** Erl.

Passer simplex saharae Erlanger, *Journ. f. Orn.* 1899, p. 472, pl. 14 (Tunisian Sahara).

2 ♀, Tegguidi, south of Agades, 12.viii.1920.

2 ♂, 1 ♀, Tilaraderas between Agades and Tegguidi, 10.viii.1920.

♂♀, south of Agades, 21.iv.1920.

Bill in ♂, April 21, which is moulting wings and body plumage, "light brownish," that of the August males "deep blue-black."

These birds agree perfectly with specimens of both sexes from the Algerian and Tunisian deserts. It is most peculiar that modern collectors and observers have not come across *P. simplex simplex* in southern Nubia, Ambukol, northern Kordofan, Sennaar, and Berber, where it was observed by Hemprich & Ehrenberg and Heuglin. The few old specimens examined are certainly darker than any *P. s. saharae*, but the light colour of the bill, which Erlanger supposed to be one of its differences, is—as in other sparrows—due to age and season. Several specimens from August are in moult, but also the two April birds ! No *Passer simplex* moults in April in the Algerian Sahara.

Buchanan only found the Desert Sparrow in the deserts between Agades and Tegguidi. Geyr found the species only as far south as Tazzait, but remarks that the country to the south was not suitable for it. It inhabits sandy desert and breeds in trees, bushes, holes in rocks, buildings, tree-trunks, and in wells.

139. **Passer luteus** (Licht.).

Fringilla lutea Lichtenstein, *Verz. Doubl. Mus. Berlin*, p. 24 (1823—"Prope Dongolam Nubiae").

3 ♂ ad., 2 "♂" juv., 1 ♀, Zinder, February 1920.

1 ♂ ad., Takukut, Damergu, 24.iii.1920.

3 ♂, Agades, 12, 22.iv.1920.

"Iris dark brown. ♂ ad. bill dull blackish to dark umber-brown, lower paler ; ♀ whitish grey with brown tinge."

These specimens agree with others from Nubia (Shendi to Khartum). The species has hitherto only been known from N.E. Africa, except for one specimen got by Poggiolini at Dosso in Djerma, between Say on the Niger and Sokoto.

Buchanan observed, but did not collect, the species also at Timia, Iferouan (" plentiful "), Aguellal; at Agades and Zinder (" fairly plentiful "), Tebernit; he saw them in flocks and found them rather wary, and less easy to approach than most other birds.

[*Passer euchlorus* is apparently entirely restricted to southern Arabia. Heuglin never said—as far as I can find—that it occurred at Massaua, but erroneously believed that Hemprich & Ehrenberg's specimens came from the Abyssinian coast. The quotation of Heuglin's second volume given by Reichenow is also wrong.]

140. **Passer griseus griseus** (Vieill.).

Fringilla grisea Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xii. p. 198 (1817—" Etats-Unis ! " Errore: Senegal, cf. Lafresnaye, *Rev. Zool.* 1839, p. 95).

3 ♂, near Kano, 3.xii.1919, 6.i.1920.

7 ♂, 1 ♀, Zinder, 27.i.–19.ii.1920.

1 ♀ ad., Agades, 22.iv.1920.

1 ♂ ad., Mt. Baguezan, 5,200 feet, 13.v.1920.

" Iris dark brown. Bill in April and May quite black, in the winter nearly always lower mandible paler, brown. Feet pale umber-brown."

Hausa name Dola.

Common bird near Zinder, in great flocks in February near the Baban-Tubki wells near Zinder. At Timia met with in June, young found in hole of acacia tree, 21.vi.1920.

(Cf. systematic notes on subspecies, *Nov. Zool.* 1900, p. 44, 1915, p. 264, *Journ. f. Orn.* 1905, p. 352, 1911, p. 36, 264, *Ibis*, 1918, pp. 471–474.)

141. **Petronia dentata buchanani** subsp. nov.

Petronia formae *P. dentata dentata* dictae similis sed notaea pallidiore, magis isabellino haud difficile distinguenda.

♂ ad., Zinder, 19.ii.1920, No. 414, A. Buchanan leg., type of *buchanani*. " Iris dark umber-brown. Bill brown-black. Feet dark umber-brown. Length 5 in."

The entire upperside is very much paler, almost isabelline. Wing 82 mm.

There are in the British Museum two females collected at Yo and Kuka, near Lake Chad, which must belong to this new subspecies. They are also very much paler than females of *P. d. dentata*, the eyebrow is nearly white, wings 77, 77 mm.

142. **Gymnoris pyrgita pallida** Neum.

Gymnoris pyrgita pallida Neumann, *Bull. B.O. Club*, xxi. p. 70 (1908—Khartum to Senegal).

2 " ♂," but I think must be ♂ and ♀, Takukut, Damergu, 21, 22.iii.1920. Wings 83 and 87·5 mm. " Iris dark umber-brown. Bill medium dull blackish grey. Feet medium leaden grey."

Agree with type from Shendi.

143. **Serinus leucopygius riggenbachi** Neum.

Serinus leucopygius riggenbachi Neumann, *Bull. B.O. Club*, xxi. p. 44 (1908—"Senegambia and western Sudan").

2 ♂ juv., near Kano, 3, 23.xii.1919.

3 ♂♀, in moult, Zinder, 30.i.1920.

3 ♂, Takukut, Damergu, 22, 24.iii.1920.

2 ♀ ad., Azzal, Asben, 14.vii.1920 (fresh plumage, bat wings still moulting).

"Iris dark brown. Bill brown, darker in adults, basal two-thirds of lower mandible paler. Feet pale brownish."

This subspecies, of which we have received a series from Riggenbach, mostly from Thiès, is very distinct, differing from *S. l. leucopygius* chiefly in the throat and chest being white with dark greyish-brown spots, which leave a patch in the middle of the throat unspotted. The jugulum and sides of body are heavily spotted, but vary a good deal. Possibly the two Azzal specimens belong to another still paler subspecies, but more material would be required to separate them. The Kano, Zinder, and Damergu specimens certainly agree with the true *riggenbachi* from Senegal. A number were observed at Azzal, but unfortunately only two obtained.

144. **Serinus mozambicus hartlaubii** (Bolle).

Crithagra Hartlaubii Bolle, *Journ. f. Orn.* 1858, p. 355 (West Africa. Restricted terra typica Senegal).

2 ♂, near Kano, 22, 29.xii.1919.

Buchanan says that quantities of this bird are sold at the ships' side at Lagos.

(About the name *mozambicus* see *Ibis*, 1918, p. 242. Unfortunately this name must be adopted.)

145. **Erythrospiza githaginea zedlitzi** Neum.

Erythrospiza githaginea zedlitzi Neumann, *Orn. Monatsber.* 1907, p. 145 (Eastern Algeria and Tunisia, type Biskra).

3 ♂, 1 ♀, Agades, 12, 14.iv.1920. "Iris very dark. Bill ♂ full dull orange-chrome, ♀ dull yellowish chrome. Feet ♂♀ pale whitish brown."

Fairly numerous at Agades, also observed Mt. Baguezan, 2.vii.1920, and at Tebernit (common), and Iberkom in northern Aïr.

Hilgert and I found this species very sparingly among the rocks of the southern Oued-Mya, but Geyr observed it as far south as the Hoggar Mountains, where it did damage to the corn.

146. **Textor albirostris albirostris** (Vieill.).

Coccothraustes albirostris Vieillot, *Nouv. Dict. d'Hist. Nat.* xiii. p. 535 ("Afrique." Restricted typical locality Senegal! Cf. *Nov. Zool.* 1907, p. 485.

3 ♂, 2 ♀, Farniso, near Kano, 5, 6.i.1920. "Iris dark. Bill grey-black. Feet brown-black."

Neither of these birds has the base of the culmen much swollen, nor is it reddish white, but black tinged with white, distal end entirely black. I expect that the colour of the bill changes in the various seasons. (About the anatomy cf. *Bull. Amer. Mus. New York*, xxxvii. p. 243.)

147. **Sporopipes frontalis pallidior** subsp. nov.

Sporopipes formae typicae senegalensi similis, sed pallidior.

♂♀ ad., ♂♀ juv., Zinder, 10.ii., 28.i.1920.

2 ♂, 2 ♀ ad., Takukut, Damergu, 13, 22.iii.1920.

"Iris dark brown. Bill pale whitish flesh-colour. Feet whitish umber or fleshy brown. Young birds bill darker, more greyish."

Sporopipes frontalis frontalis (*Loxia frontalis* Daudin, *Traité d'Orn.* ii. p. 445, 1800—Senegal !) comes from Senegambia ; it extends apparently across Africa to Abyssinia, at least I cannot distinguish Abyssinian specimens. The Damergu and Zinder birds differ from Senegambian ones in having the hind-neck paler rufous, the back slightly paler, sides of head lighter. Wings of males 67–70, ♀ 67–68 mm. It is small wonder that the desert-like regions of Zinder and Damergu should contain a paler race, and only remarkable that not more of these birds are paler than their brethren in more moist and fertile districts. The pale aspect of two specimens from Zaria, in central Hausaland, has already been noted in *Nov. Zool.* 1915, p. 261 ; in fact these two birds are somewhat intermediate between *S. f. pallidior* and *S. f. frontalis*. *S. f. loitanus* van Someren from East Africa is darker. Neumann's *S. f. emini* is not known to me, but it would be very strange if the latter—described as being paler !—were the same as typical *frontalis*, when the East African form (Loita, Taveta, Tsavo, etc.) is darker !

Type of *T. f. pallidior*, ♂, Zinder, 9.ii.1920. No. 345, A. Buchanan leg.

Specimens from March and February are in moult. The young birds are duller and lack the white tips to the frontal feathers.

Hausa name Cheesakee. Seen in middle of bush in company with other birds. Feeding on minute grass-seeds on ground.

148. **Ploceus cucullatus cucullatus** (P. L. S. Müll.).

Oriolus cucullatus P. L. S. Müller, *Natursystem, Suppl.* p. 87 (1776—Senegal. Ex Buffon).

2 ♂ in non-breeding plumage, 1 ♀, near Kano, December 1919.

Hausa name, Gado.

149. **Ploceus luteolus luteolus** (Licht.).

Fringilla luteola Lichtenstein, *Verz. Doubl. Zool. Mus. Berlin*, p. 23, note (1823—Senegambia !).

♂ ? near Kano, 2.i.1920, juv.

2 ♂, nearly in breeding plumage, 2 in non-breeding plumage, 2 ♀, Zinder, January and February 1920.

♂, in full plumage, Agades, 12.iv.1920.

♂♀, in full plumage, Mt. Baguezan, 31.v., 1.vi.1920.

♂ juv. (first plumage), Timia, 22.vi.1920.

Also observed at Igouloulof, Iferouan, Tebernit, and Aouderas.

150. **Ploceus vitellinus vitellinus** (Licht.).

Fringilla vitellina Lichtenstein, *Verz. Doubl. Zool. Mus. Berlin*, p. 23 (1823—Senegambia !).

♀, Agades, 11.iv.1920.

1 (in non-breeding dress), ♀, Mt. Baguezan, 5,200 feet, 9.v., 1.vi.1920.

151. **Pyromelana franciscana franciscana** (Isert).

Loxia franciscana Isert, *Schriften Ges. naturf. Freunde Berlin*, 1789, p. 332, Taf. 9 (near Accra on the Gold Coast).

2 ♂, in brown plumage, 1 ♀, near Kano, 29.xii.1919, 7.i.1920.

152. **Amadina fasciata fasciata** (Gm.).

Loxia fasciata Gmelin, *Syst. Nat.* i. 2, p. 859 (1789—ex Brown, *Ill.* p. 64, pl. 27—no locality! I substitute *Senegal*, as these birds were mostly introduced from there).

4 ♂, 1 ♀, Zinder, January and February 1920. "Iris dark brown. Bill dull whitish grey. Feet whitish brown."

These specimens agree well with Senegal ones. The amount of barring on the back is very variable.

Hausa name Youngka-Allah or Beywahallah.

Plentiful on the wells of Baban Tubki near Zinder. Seeds of *Pennisetum* and *Sorghum* in stomachs.

153. **Aidemosyne cantans cantans** (Gm.).

Loxia cantans Gmelin, *Syst. Nat.* i. 2, p. 859 (1789—ex Brown, *Ill.* p. 66, pl. 27—no locality! Dakar, Senegal, is the designated locality, cf. Sclater & Praed, *Ibis*, 1918, p. 440!).

2 ♂, 3 ♀, near Kano, 30.xii.1919, 6.i.1920.

♀, Zinder, 30.i.1920.

♂♀? Agades, 22.iv., 9.vii.1920.

These birds agree quite with Senegal specimens, of which we have a good series. They do not show any bars on the upperside except one male from Kano (No. 123). See the review of the subspecies in *Ibis*, 1918, pp. 439, 440.

Were also observed at Aderbissinat in August and Aouderas in July. Very few noticed at Agades.

154. **Pytelia melba citerior** Strickl.

Pytelia citerior Strickland, *Contr. Orn.* 1852, p. 151 (Kasamanze River, Senegambia).

1 ♂ ad., 1 ♀ juv., near Kano, 27.xii.1919, 5.i.1920.

2 ♂, 3 ♀, Zinder, 4, 6.ii.1920.

The ♂ from Kano is richer in colour, darker than the Zinder ones, but as the latter are worn, the difference is probably due to the state of their plumage.

Buchanan found these birds frequenting under-brush in undisturbed bush country and very shy. Tiny grass seeds found in crop.

155. **Estrilda** [1] **senegala brunneiceps** (Sharpe).

Lagonosticta brunneiceps Sharpe, *Cat. B. Brit. Mus.* xiii. p. 277 (1890—"north-eastern Africa throughout eastern Africa and the south-east and south-west portions of the continent." Partim! Restricted typical locality Erithrea; type Maragaz, Eritrea, in Brit. Mus.).

3 ♂, Zinder, 16.ii.1920.

1 ♂, 2 ♀, Aouderas, Asben, 26, 30.vii.1920.

♂ juv. Timia, Asben, 23.vi.1920.

[1] I propose to suppress the genus *Lagonosticta*. Certainly *Estrilda cinerea* and *senegala* cannot be separated generically.

♂ ad. : "Iris dark brown, narrow bare ring around eye clear yellow. Bill medium dull crimson, palest at base, blackish along top of culmen and along lower mandible as well as on cutting-edges. Feet umber-brown."

Also observed in May at Baguezan and at Agades. "It is essentially a bird of cultivated districts. Very plentiful in Hausaland, but not so in Asben."

Specimens from the Galla countries have much browner females, but I cannot satisfactorily separate the males!

A nest was found in the recess of ceiling logs in one of the buildings in the fort at Agades on April 14. It contained two glossless white eggs, measuring 15·4 × 11·5 and 14 × 11·2 mm.

156. **Estrilda cinerea** (Vieill.).

Fringilla cinerea Vieillot, *Nouv. Dict. d'Hist. Nat.* (nouv. éd.) xii. p. 176 (1817—"Afrique." As terra typica I designate Senegal, whence these birds have been introduced for a hundred years).

2 ♀ ad., Farniso, near Kano, 27.xii.1919. "Iris dark. Bill reddish purple. Feet blackish brown."

157. **Uraeginthus bengalus bengalus** (L.).

Fringilla bengalus Linnaeus, *Syst. Nat.* ed. xii. i. p. 323 (1766—ex Brisson, Bengal errore! I substitute the correct locality Senegal!).

1 ♂, 1 ♀?, near Kano, 26, 29.xii.1919.

1 ♂, 1 juv., Zinder, 13.ii.1920.

♂♀, Damergu, 22.iii.1920.

"Iris medium brick-red. Bill medium reddish purple, tip and cutting-edges black. Feet pale umber-brown."

Hausa name Assèsèta.

These birds are mostly in such worn plumage that it is difficult to compare them satisfactorily, but I do not think they belong to any other race. They are not *perpallidus*. *U. b. togoensis* appears to me to be indistinguishable from *U. b. bengalus*.

158. **Steganura paradisea verreauxii** (Cass.) ?

Vidua verreauxii Cassin, *Proc. Acad. Philad.* 1850, p. 56 (Abyssinia).

2 ♂ ad., 2 ♂ in first plumage, Zinder, 30.i., 17.ii.1920.

I cannot be sure from this limited material (the fully plumaged males worn) to which race these birds belong. The nape-band is brown in the middle, faded yellow (in one merely cream-colour) on the edges. I do not think, however, that they ever had the deep brown band of the quite distinct *S. p. aucupum* from Senegambia.

Hausa name Zelidu.

159. **Hypochera chalybeata neumanni** Alex.

Hypochera neumanni Alexander, *Bull. B.O. Club*, xxiii. p. 33 (1908—"Yo, near Lake Chad, 19.xi.1904").

2 ♂ ad., 1 ♂, moulting from juv. to ad., 2 ♂ juv., near Kano, 5, 23.xii.1919 2.i.1920.

1 ♀, Zinder, 16.ii.1920.

These specimens agree absolutely with the form *neumanni* of Alexander, which he also collected near Bautchi and which we have from Zaria, central Hausaland. They are quite different from Alexander's *nigeriae*, which was badly described and is still unique. Cf. *Nov. Zool.* 1915, p. 263, *Ibis*, 1918, p. 450. Though the brown wings of the *Hypocherae* may possibly not be a *specific* character, they are a *constant* one, and not always "due to the faded condition of the plumage," as Alexander suggested, *Bull. B.O. Club*, xxiii. p. 15. Of course, quite fresh feathers are darker than old faded ones, but dark-quilled forms like *ultramarina*, *chalybeata* and others, have not the brown quills which *funerea*, *wilsoni*, and *amauropteryx* have in freshly moulted plumage. In the excellent review of these birds in *Ibis*, 1918, pp. 449, 450, the colour of the wings has not been mentioned, but it would have enhanced the utility of the authors' review.

Mr. Buchanan says he also saw this species at Agades!

160. **Lamprotornis caudatus** (P. L. S. Müll.).

Turdus caudatus P. L. S. Müller, *Natursystem, Suppl.* p. 144 (1776—Senegal! Ex Daubenton and Buffon).

7 ♂ ad., 1 ♀ (much worn and faded to earthy brown, probably young, commencing to moult tail), near Kano, December 1919, January 1920. "Iris clear creamy white. Bill and feet black."

Hausa name Kilach-illa.

The variation in colour in these birds is very striking. Of the seven adult males, six are purplish blue, one green. Among the masses sent by Riggenbach from the western Senegal Colony, mostly from Diourbel, Ouomine, Gassam, and Thiès, green ones are nearly as numerous as purplish-blue ones, and a few are of a wonderful purple nearly all over. (Cf. Neumann, *Journ. f. Orn.* lxv. ii. p. 204, note 13, 1917.)

161. **Spreo pulcher pulcher** (P. L. S. Müll.).

Turdus pulcher P. L. S. Müller, *Natursystem, Suppl.* p. 139 (1776—Senegal).

2 ♂, 1 ♀, near Kano, 5.i.1920.

1 ♀, Takukut, Damergu, 24.iii.1920.

"Iris creamy white. Bill and feet black."

These specimens agree with the typical Senegal birds, though the wings are sometimes somewhat long. ♂ 118 and 122 mm., the first being the same as several Senegal males, the latter apparently an exceptional outside measurement; ♀ 111 and 113 mm., which is about the same as the bigger Senegal females.

In August Buchanan saw many at Aderbissinat. Small numbers were seen south of Baguezan, but unfortunately not collected. They were seen in acacia bush, but none farther north. Near Takukut (Damergu) fairly common.

162. **Lamprocolius chalybeus hartlaubi** Neum.

Lamprocolius chalybeus hartlaubi Neumann, *Orn. Monatsber.* 1908, p. 64 (Senegal).

3 ♂, Zinder, 27.i., 6.ii.1920.

♀, Agades, 9.vii.1920.

♂, Azzal, Asben, 13.vii.1920.

"Iris yellow-chrome or orange-yellow. Bill and feet black."

Hausa name Shya; Tuareg Tagadoquot; at Zinder called Eyrindoula.

Nesting numerously in trees in the flooded area at Aderbissinat in August. Very few at Agades and Azzal, but never seen farther northwards. Seen near villages and in low bush, generally in small flocks. Small insects found in stomachs.

The specimens agree perfectly with typical *L. c. hartlaubi* from Senegal; the subspecies is a very distinct one, differing as described by its author.

163. **Buphagus africanus** (L.).

Buphaga africana Linnaeus, *Syst. Nat.* ed. xii. i. p. 154 (1766—Senegal. Ex Brisson!).

♀ ad., Farniso, near Kano, 2.i.1920. "Iris rich reddish orange. Bill: outer half rich reddish orange-chrome; inner half full yellow-chrome. Feet brown-black."

164. **Cryptorhina afra** (L.).

Corvus afer Linnaeus, *Syst. Nat.* ed. xii. i. p. 157 (1766—"Senegalia." Ex Brisson ii. p. 40, pl. iii.).

2 ♂, 1 ♀ ad., Kano, 3.xii.1919.

1 ♂, 1 ♀, Zinder, 19.ii.1920.

"Iris: narrow inner ring clear sienna, outer broader ring beautiful clear purple. Bill and feet black in ♂. In ♀ basal two-thirds whitish, as if stained with blood-red."

The Kano specimens are in beautiful fresh plumage, with steel-blue gloss, wings and tail still moulting, the Zinder ones worn, tail and wings browner, upperside less glossy, duller.

Except at Kano only seen near Zinder, chiefly near the wells of Baban Tubki, in flocks.

165. **Corvus albus** P. L. S. Müll.

(*Corvus scapulatus* auct.).

Corvus albus P. L. S. Müller, *Natursystem, Suppl.* p. 85 (1776—Senegal. Ex Buffon).

2 ♂, 1 ♀ ad., Kano, 11, 13.xii.1920.

These are the only specimens collected, but the species was also seen at Aderbissinat, many at Aouderas in July, at Baguezan in May, Timia in June, Iferouan and Igouloulof in northern Aïr, Tebernit, and Assode. They were fairly common at Zinder, very common at Agades.

An egg was taken near Mt. Baguezan, 29.vi.1920. It measures 41·5 × 19·2 mm., and resembles eggs of other crows and ravens. The nest was in the top of an acacia tree in a secluded valley. The parent bird was on the nest, which contained only this single egg.

Hausa name Hankaka.

166. **Corvus corax ruficollis** Less.

(*Corvus umbrinus* auct.).

Corvus ruficollis Lesson, *Traité d'Orn.* p. 329 (1831—no locality! Type probably Cape Verde Islands. Cf. *Nov. Zool.* 1913, p. 37).

♂, Mt. Baguezan, Asben, 10.v.1920.

♀, Agades, 16.iv.1920.

Angus Buchanan phot.

CATTLE BEING WATERED, BABAN-JUBKI WELLS, ZINDER.

Angus Buchanan phot.

OUTSKIRTS OF ZINDER.

BRITISH MUSEUM
Z D
NATURAL HISTORY

Angus Buchanan phot.

BARREN COUNTRY SOUTH OF MT. BAGUEZAN, ASBEN.

BRITISH MUSEUM
Z D
NATURAL HISTORY

Angus Buchanan phot.

WEST OF MT. BAGUEZAN, ASBEN.

BRITISH MUSEUM
Z D
NATURAL HISTORY

Angus Buchanan phot.

VIEW OF AOUDERAS MTS., ASBEN, FROM S.W.

BRITISH MUSEUM
ZOOD
NATURAL HISTORY

Angus Buchanan phot.

AGUELLAL MTS., NORTH ASBEN, 3,100 FEET.

BRITISH MUSEUM
Z D
NATURAL HISTORY

Angus Buchanan phot.

IN THE AGUELLAL MTS., NORTH ASBEN, LOOKING WEST.

BRITISH MUSEUM
Z D
NATURAL HISTORY

Angus Buchanan phot.

TYPE OF "BOULDER OUTCROP," LOW HILL. FIRST CAMEL WITH RIDING SADDLE ("RACHLA").

BRITISH MUSEUM
Z
NATURAL HIST

Angus Buchanan phot.

TYPICAL BOULDER RANGE IN ASBEN.

BRITISH MUSEUM
Z D
NATURAL HISTORY

Angus Buchanan phot.

APPROACHING AOUDERAS MTS. AND VILLAGE FROM SOUTH.

BRITISH MUSEUM
Z D
NATURAL HISTORY

The male is in fairly fresh plumage and shows very little brown on the hind-neck. The ♀ is a young bird ; it has some very faded chocolate-brown feathers on back and breast, while the fresh feathers are very dark.

Was found in desolate places and very difficult to approach.

Poggiolini got a specimen from Sokoto, otherwise it had not been known from south of the Sahara. It is a pronounced desert bird, inhabiting the Sahara from immediately south of the Atlas Mountains to Asben, and from east to west.

The two Asben specimens are very large, wing 408 mm. Cf. *Nov. Zool.*, 1913, p. 38.

167. **Corvus rhipidurus** Hart.

(*Corvus affinis* auct., nec Shaw, 1809 !)

Corvus rhipidurus Hartert, *Bull. B.O. Club*, xxxix. p. 21 (1918—new name for *C. affinis*, which was preoccupied, as were *brachyurus* and *brachyrhynchus* !).

♂, Mt. Baguezan, 10. v. 1920.

♀, Timia, Asben, 24. vi. 1920.

" Iris deep umber-brown. Bill and feet black."

Tuareg name Taralgie.

Also observed at Aouderas in July, Iferouan and Tebernit in June. It was never seen at Agades or anywhere farther south. The remarkably short tail made it very conspicuous in flight.

The occurrence so far west is very interesting. Hitherto it has not been recorded farther westwards than Kordofan ! Southwards it ranges to Karamoyo in Uganda, but not to Kavirondo, as erroneously stated.

CAPTAIN ANGUS BUCHANAN'S AÏR EXPEDITION.

V.

ON THE LEPIDOPTERA COLLECTED BY CAPTAIN A. BUCHANAN IN NORTHERN NIGERIA AND THE SOUTHERN SAHARA IN 1919—1920.

By LORD ROTHSCHILD, F.R.S., Ph.D.

THE itinerary and an account of the collecting expedition will be found in Dr. E. Hartert's article on the birds; so I will only repeat here that the specimens recorded were all collected at Kano and northwards to the Mountains of Baguezan, in the large territory of Asben or Aïr, and the route taken went via Zinder (Damagarim), Damergou, and Agades. The character of the fauna is distinctly "desert"; many of the species being widespread, reaching to Karachi in India and farther.

RHOPALOCERA.

PAPILIONIDAE.

1. Papilio pylades pylades Fabr.

Papilio pylades Fabricius, *Entom. Syst.* iii. 1. p. 34 (1793) (Africa).

The 9 specimens taken are quite typical, though rather small.

1 ♀ Farniso, near Kano, December 30, 1919; 7 ♂♂ Zinder, February 1–26, 1920; 1 ♂ Bande, S. Damagarim, September 16, 1920.

2. Papilio demodocus demodocus Esp.

Papilio demodocus Esper, *Ausl. Schmett.* pt. i. p. 205. pl. li. f. 1 (1798) (China, Bengal).

2 ♂♂ Kano, December 3–11, 1919.

PIERIDAE.

3. Herpaenia eriphia lacteipennis Butl.

This subspecies appears in two very distinct seasonal forms, as follows:

(A) Form. pluv. lacteipennis Butl.

Herpaenia lacteipennis Butler, *Ann. Mag. Nat. Hist.* (4) xviii. p. 489 (1876) (Abyssinia).

8 ♂♂, 3 ♀♀ Abourak, Damergou, August 30, 1920; 1 ♀ Aderbissinat, Damergou, August 24, 1920; 2 ♂♂ Tchingaraguen, Damergou, August 31, 1920; 8 ♂♂, 1 ♀ N. of Tanout, Damergou, September 2, 1920; 2 ♂♂ Marzia, Damergou, September 6, 1920.

(B) Form. arid. **straminea** Auriv.

Herpaenia straminea Aurivillius, *Jägersk. Exped., Lepid.* p. 4.

8 ♂♂, 6 ♀♀ Zinder, Damagarim, January 31, 1920; 1 ♀ Takoukout, Damergou, March 14, 1920.

4. **Pieris mesentina** (Cram.).

Papilio mesentina Cramer, *Pap. Exot.* vol. iii. pt. xxiii. p. 140. pl. cclxx. ff. A, B (1780) (Côte de Coromandel).

There appear to be two forms among Captain Buchanan's series, and I should have treated them as seasonal forms without question if he had not collected both forms in several individuals each on the same day on Mt. Baguezan.

Form A, in the ♂, is much larger, and above generally has the dark markings purer black; below, the dark pattern is dark brown and clear cut.

Form B, in the ♂, is smaller, and the dark pattern above is more smoky black and less clear-cut below, and much paler cinnamon-brown. In the ♀ the differences are not so marked, as these show enormous variation individually *inter se*.

1 ♂ A, Kano, December 6, 1919; 3 ♂♂ B, 5 ♀♀ Farniso, near Kano, December 22–26, 1919; 2 ♂♂ A, Baban Tubki, S. of Zinder, September 13, 1920; 5 ♂♂ B, 5 ♀♀ Zinder, January 31–February 2, 1920; 1 ♂ A, Bande, S. Damagarim, September 16, 1920; 4 ♂♂ A, Aderbissinat, N. Damergou, August 27, 1920; 2 ♂♂ A, Abourak, Damergou, August 30, 1920; 1 ♂ A, Tchingaraguen, Damergou, August 31, 1920; 1 ♂ A, 2 ♀♀ N. of Tanout, Damergou, September 2, 1920 (1 ♀ has very wide black borders to both pairs of wings above with no pale markings in border); 4 ♂ A, 3 ♂♂ B, 3 ♀♀ Mts. of Baguezan, Asben, September 1–3, 1920; 15 ♂ B, 5 ♀♀ Aouderas, Asben, July 23–31, 1920; 2 ♂♂ B, 1 ♀ Tebernit; 1 ♂, 1 ♀ Ajiron, Asben, June 27, 1920.

5. **Pieris gidica westwoodi** Wallengr.

Pieris westwoodi Wallengren, *Rhopal. Caffr.* p. 9 (1857) (Caffraria).

The present single specimen is of the dry-season form.

(B) Form. arid. **abyssinica** Luc.

Pieris abyssinica Lucas, *Rev. Zool.* (2) iv. p. 328 (1852) (Abyssinia).

1 ♀ Zinder, Damagarim, February 2, 1920.

6. **Pieris creona** (Cram.).

Papilio creona Cramer, *Pap. Exot.* vol. i. pt. viii. p. 148. pl. xcv. ff. C, D, E, F (1776) (East Indies).

1 ♂ Baban Tubki, S. of Zinder, September 13, 1920; 1 ♂ Makochia, September 15; 1 ♂ Bande, S. Damagarim, September 16, 1920.

7. **Pieris daplidice albidice** Oberth.

Pieris daplidice var. *albidice* Oberthür, *Etud. d'Entom.* vi. p. 47 (1881) (Algeria).

The two specimens sent are two extreme examples, as extreme as any of the most typical examples collected by Hartert and Hilgert in the Central Sahara.

1 ♂ Tebernit, Asben, June 27, 1920; 1 ♀ Mts. of Baguezan, Asben, July 2, 1920.

8. **Teracolus amatus calais** Cram.

Of this insect there are two seasonal forms. Aurivillius states that the dry-season form = *carnifer* Butl., is distinguished by the red of the underside, but this character is not constant, the examples from the western side of Africa being more often below as yellow as the wet-season form *calais*. A better character is the less black above and smaller size of the dry-season form.

(A) Form. pluv. **calais** Cram.

Papilio calais Cramer, *Pap. Exot.* vol. i. pt. v. p. 84. pl. liii. ff. C, D (1775) (Cape of Good Hope).

2 ♂♂ Mazia, Damergou, September 5, 1920.

(B) Form. arid. **carnifer** Butl.

Teracolus carnifer Butler, *P.Z.S. Lond.* 1876. p. 138. pl. vii. ff. 8, 9 (Mynpuri, N.W. Punjab).

6 ♂♂, 2 ♀♀ Aouderas, Asben, July 23–29, 1920.

9. **Teracolus phisadia phisadia** (God.).

Pieris phisadia Godart, *Encycl. Méth. Hist. Nat. Entom.* vol. ix. p. 132. no. 40 (1819–1824) (?).

The large series sent by Captain Buchanan are all from May—July and apparently dry-season *phisadia*, but again here we find the red of the underside of dry-season *arne* Klug absent in these western examples.

1 ♂ Mazia, Damergou, September 6, 1920; 40 ♂♂, 21 ♀♀ Aouderas, Asben, July 22–29, 1920; 5 ♂♂, 3 ♀♀ Azal, N. of Agades, July 13–15, 1920; 2 ♂♂ Arra district, Mts. of Baguezan, Asben, May 1, 1920; 2 ♂♂, 2 ♀♀ south of Mts. of Baguezan, Asben, May 2, 1920; 3 ♂♂, 3 ♀♀ Timia, Asben, June 26; 1 ♀ Tebernit, Asben, June 27, 1920.

The ♀♀ vary from almost ♂ coloration to pure yellow and cream-white.

10. **Teracolus chrysonome** (Klug).

The species has two seasonal forms as follows:

(A) Form. pluv. **chrysonome** Klug.

Pontia chrysonome Klug, *Symb. Phys.* pl. vii. ff. 9–11 (1829–1845) (Ambukol).

11 ♂♂, 5 ♀♀ Baguezan Mts., Asben, May 8—July 3, 1920; 2 ♂♂, 2 ♀♀ S. of Mts. Baguezan, May 1, 1920; 1 ♂, 1 ♀ Tebernit, Asben, June 27, 1920; 2 ♂♂, 2 ♀♀ Timia, Asben, June 21–26, 1920; 4 ♂♂ Aouderas, Asben, July 23, 1920; 1 ♂, 1 ♀ Aderbissinat, Damergou, August 24–27, 1920; 1 ♀ N. of Tanout, Damergou, September 2, 1920.

(B) Form. arid. **helvolus** Butl.

Teracolus helvolus Butler, *P.Z.S. Lond.* 1888. p. 94 (Somaliland).

2 ♂♂, 1 ♀ Takoukout, Damergou, March 13–14, 1920; 8 ♂♂, 3 ♀♀ Zinder, Damagarim, January 24—February 14, 1920.

11. **Teracolus amelia** Lucas.

This species has also two well-characterised seasonal forms, of which the dry-season form is a discovery of Captain Buchanan's.

(A) Form. pluv. **amelia** Lucas.

Idmais amelia Lucas, *Rev. Zool.* (2) iv. p. 427 (1852) (Senegal).

(B) Form. arid. **insignis** form. nov.

Differs from *amelia* form. *amelia* in being much smaller, and in having the black stigma at discoecellulars reduced to a thin line. Below the differences of colour are very striking; on the forewing the apical portion of outer third of forewing is dull mauve-strawberry, and the tornal half is black with the nervures strawberry, whereas in form. *amelia* the whole is black-brown; the cellular area is reddish orange, **not** golden yellow; on the hindwing the whole outer two-fifths are mauve-strawberry, **not** black-brown, and the golden lines in the basal one-third in form. *amelia* are replaced by bright scarlet ones.

Expanse: form. *amelia* 60 mm.; form. *insignis* 52 mm.

1 ♂ Farniso, near Kano, December 27, 1919.

12. **Teracolus celimene angusi** subsp. nov.

(A) Form. arid. **angusi**.

Differs from the dry-season forms of the other races of *celimene* above in the almost obsolete white marginal spots, and below in the absence of dark colouring of the veins in the basal two-thirds of hindwing.

1 ♂ Zinder, Damagarim, February 14, 1920.

13. **Teracolus halimede halimede** (Klug).

A great confusion has arisen in this species, owing to most authors having misinterpreted Klug's *halimede* and *acaste*. Klug figures and describes from Ambukol, on plate vii. ff. 12–15, ♀♀ of an undoubted wet-season form, to which he gives the name *halimede*. On the same plate (ff. 16, 17) he figures a ♀ of a not quite extreme dry-season form also from Ambukol, which he calls *acaste*. Now, most authors have applied this name *acaste* to the East African and Abyssinian race of this species, which is distinguished from true *halimede* by its large size and in the yellow patch on the inner area never reaching vein 3, whereas in the typical form it extends beyond vein 3, reaching in the wet-season generation veins 4 and 5, and even 6. Professor Aurivillius, in Seitz, and also in his *Rhopalocera Aethiopica*, gives Arabia as the country inhabited by *halimede*, uniting with it as a synonym *coelestis* of Swinhoë; whereas for *acaste* he gives a huge range in continental Africa, from the Senegal to Somaliland and East Africa, quite ignoring the fact that both the types of *halimede* and *acaste* came from Ambukol on the White Nile. The true position at present is as follows: there are 3 races or subspecies of *Teracolus halimede*: 1st, *halimede halimede* Klug,

White Nile to Senegal; 2nd, *halimede coelestis* Swinh., Arabia; and 3rd, the large form from Abyssinia and East Africa, which is without a name.

T. halimede halimede has two well-marked seasonal forms, and apparently some among the dry-season forms are occasionally slightly intermediate.

(A) Form. pluv. **halimede** Klug.

Pontia halimede Klug, *Symb. Phys.* pl. vii. ff. 12–15 (1829–1845) (Ambukol).

7 ♂♂, 3 ♀♀ N. of Tanout, Damergou, September 2, 1920.

(B) Form. arid. **acaste** Klug.

Pontia acaste Klug, *Symb. Phys.* pl. vii. ff. 16, 17 (1829–1845) (Ambukol).

1 ♂, 3 ♀♀ Aouderas, July 23; 4 ♂♂ Timia, Asben, June 26, 1920.
Of these 2 ♂♂ and 1 ♀ are not quite extreme dry-season forms.

[I here describe the East African forms:

Teracolus halimede aurivillii subsp. nov.

Differs from *halimede halimede* in its larger size and in the yellow on the inner area of forewing never reaching vein 3. There are two seasonal forms:

(A) Form. pluv. **aurivillii** Rothsch.

(B) Form. arid. **restricta** form. nov.

This differs from form. arid. *acaste* in the most extreme development in the ♀ being exactly like the ♂, only with a band of somewhat obliterated discal spots on the forewing; less extreme examples do not differ much beyond the differences detailed above for the subspecies.

At Tring are 59 specimens from Suakin, Abyssinia, and British East Africa. Type of *h. aurivillii* ♂ Jubilando, British East Africa; type of form. arid *restricta* ♀ Kiboko River, B.E. Africa.

The three forms of *halimede*, therefore, are as follows:

1. **Teracolus halimede halimede** (Klug).

(A) Form. pluv. **halimede** Klug.

(B) Form. arid. **acaste** Klug.

2. **Teracolus halimede coelestis** Swinh.

(A) Form. pluv. **coelestis** Swinh.

(B) Form. arid. **swinhoei** Rothsch.

Differs from *f. a. acaste* by being larger, and less yellow.

3. **Teracolus halimede aurivillii** Rothsch.

(A) Form. pluv. **aurivillii** Rothsch.

(B) Form. arid. **restricta** Rothsch.]

14. **Teracolus eris eris** (Klug).

Here, again, the seasonal forms are easily distinguished.

(A) Form. pluv. **eris** Klug.

Pontia eris Klug, *Symb. Phys.* pl. vi. ff. 15, 16 (1829-1845) (Ambukol).

1 ♂ Aderbissinat, August 27; 1 ♂ N. of Tanout, September 2; 1 ♂ Mazia Damergou, September 6, 1920.

(B) Form. arid. **fatma** Feld.

Idmais fatma Felder, *Reise Novara*, vol. ii. pt. ii. p. 189. no. 185. pl. xxv. f. 3 (1865) (Kordofan).

2 ♂♂, 1 ♀ Takoukout, Damergou, March 10–13, 1920.

14. **Teracolus eupompe eupompe** (Klug).

This species is most complicated, because in very wet areas a very extreme wet-season form, *pseudacaste* Butl., is found together with normal wet-season specimens, and intermediates between wet- and dry-season forms, but no extreme dry-season forms; while at the opposite end of the series—i.e. in very dry areas—only intermediate and extreme dry-season forms are obtained. The series of forms appear to be as follows:

Form. pluv. extr. **pseudacaste** Butl.
,, ,, norm. **eupompe** Klug.
,, arid. extr. **dedecora** Feld.
,, interm. **theopompe** Feld.

The series sent by Captain Buchanan consists of 9 ♂♂, 5 ♀♀ of *eupompe*; 11 ♂♂, 3 ♀♀ *theopompe*; and 1 ♂, 1 ♀ *dedecora*.

(A) Form. pluv. extr. **pseudacaste** Butl.

Teracolus pseudacaste Butler, *P.Z.S. Lond.* 1876. p. 156. pl. vi. f. 11 (White Nile).

(B) Form. pluv. norm. **eupompe** Klug.

Pontia eupompe Klug, *Symb. Phys.* pl. vi. ff. 11-13 (1829-1845) (Arabia).

3 ♂♂, 3 ♀♀ Mts. of Baguezan, Asben, July 1–2, 1920; 5 ♂♂, 2 ♀♀ Aderbissinat, Damergou, August 24–27, 1920; 1 ♂ N. of Tanout, Damergou, September 2, 1920.

(C) Form. intermed. **theopompe** Feld.

Anthopsyche theopompe Felder, *Reise Novara*, vol. ii. pt. ii. p. 183. no. 175 (1865) (Nubia).

1 ♂ Takoukout, Damergou, March 14, 1920; 1 ♂, 1 ♀ Mts. S. of Baguezan, May 3, 1920; 6 ♂♂, 2 ♀♀ Mts. of Baguezan, May 22—July 2, 1920; 3 ♂♂ Aouderas, Asben, July 23, 1920.

(D) Form. arid. extr. **dedecora** Feld.

Anthopsyche dedecora Felder, *Reise Novara*, vol. ii. pt. ii. p. 184. no. 177 (1865) (Khartoum).

1 ♂, 1 ♀ Takoukout, Damergou, March 11–14, 1920.

15. **Teracolus achine** (Cram.).

Here, again, we find great complications owing to the climatic influences. There appear to be four different seasonal forms, but they are not always confined to definite geographical areas, and intergrade completely in some districts.

T. gavisa Wallengr. is the extreme wet-season, and *simplex* Butl. is the extreme dry-season, form, while *achine* Cram. appears to be the normal wet-season form. Aurivillius puts *antevippe* Boisd. down as the intermediate form between the wet- and dry-season forms, and this appears to be the fact in very wet areas. In the Southern Sahara, however, Captain Buchanan's series shows that *antevippe* is the normal wet-season form and *simplex* the dry-season form. This would be to be expected, for in very dry areas either *only* the dry-season forms of seasonably dimorphic species occur, or else a form only slightly different is found as the second generation. *T. ithonus* Butl. is the normal dry-season form.

(A) Form. pluv. extr. **gavisa** Wallengr.

Anthopsyche gavisa Wallengren, *Lepid. Rhop. Caffr.* p. 13 (1857) (Caffraria).

(B) Form. pluv. norm. **achine** Cram.

Papilio achine Cramer, *Pap. Exot.* vol. iv. pt. xxix. p. 94. pl. cccxxxviii. ff. E, F (1781) (Cape of Good Hope).

(C) Form. interm. **antevippe** Boisd.

Anthocharis antevippe Boisduval, *Hist. Nat. Ins. Spec. Gén.* i. p. 572. no. 18. pl. 18. f. 3 (1836) (Senegal).

1 ♂ Farniso, near Kano, December 31, 1919; 1 ♂ Makochia, Damagarim, September 15, 1920.

(D) Form. arid. extr. **simplex** Butl.

Teracolus simplex Butler, *P.Z.S. Lond.* 1876. p. 148. no. 71 (Natal).

3 ♂♂ Farniso, near Kano, December 16, 1919—January 3, 1920. (The explanation of the apparent anomaly in the dates is explained by the fact that the ♂ *antevippe* of December 31 is a much worn and broken specimen, evidently a survivor from several months earlier.)

(E) Form. arid. norm. **ithonus** Butl.

Teracolus ithonus Butler, *P.Z.S. Lond.* 1876. p. 146. no. 66. pl. vi. f. 7 (Natal).

16. **Teracolus liagore** (Klug).

Professor Aurivillius suggests, in Seitz, that this may be only the extreme dry-season form of *ephyia* Klug. I do not agree with him, as in the large series of this insect sent by Captain Buchanan the wet-season form is totally unlike *ephyia*, which has a wet-season form more like the typical dry-season form. Seeing that I treat all the various insects grouped by Professor Aurivillius under *eupompe* and *achine* as seasonal forms only, it is more than likely that I shall be accused of inconsistency for treating *liagore* and *ephyia* as two species; but I maintain the cases are very different. While *eupompe* and *achine* have an enormous range, being spread all over Africa almost, *liagore* and *ephyia* are apparently confined absolutely to the desert region from the Nile to Senegambia, and up to 1910 were only known with certainty from the Egyptian Soudan. In *Bull. Soc. Entom. France*, 1908, M. de Joannis records a few lepidoptera collected by a Monsieur R. Chudeau in the Sahara between the Ahaggar Mts. and Asben or Aïr, and among them he records *liagore* as having been got in September 1905, at the Oued Kadamellet north of Aïr. This record had apparently escaped the notice both of the author and editor in Seitz.

(A) Form. arid. **liagore** Klug.

♂ *Pontia liagore* Klug, *Symb. Phys.* pl. vi. ff. 5, 6 (1829–1845) (Ambukol).

♀ Resembles ♂, but the black arrow-marks on margin of hindwings larger, and in some specimens traces of, or occasionally a full though faint darker band in orange apex.

10 ♂♂ Zinder, Damagarim, January 31—February 2, 1920; 1 ♂, Takoukout, Damergou, March 13, 1920; 2 ♂♂, 1 ♀ Azzal, N. of Agades, July 13–15, 1920; 1 ♂ Aguellal, Asben, June 16, 1920; 1 ♀ Timia, Asben, June 21, 1920; 5 ♂♂, 2 ♀♀ Aouderas, Asben, July 23–29, 1920; 23 ♂♂, 3 ♀♀ Mts. of Baguezan, Asben, May 8—July 1, 1920; 1 ♂ S. of Mts. Baguezan, Asben, May 1, 1920.

(B) Form. pluv. **liagoroides** form. nov.

♂. Differs from form. arid. *liagore* in the whole costa of forewing being black, in the termen of forewing being much more broadly edged with black, and by the black arrow marks on hindwings being much larger and joined to form a complete marginal band. ♀. Differs in complete heavy band to the hindwing, heavy black termen, black costa, and either heavy black band in orange apex or else basal portion of forewing to discocellulars grey, apparently the more extended the more obsolete the apical dark band becomes.

16 ♂♂, 3 ♀♀ Mts. of Baguezan, Asben, July 1–3, 1920; 1 ♂ Tchingaraguen, August 31; 3 ♂♂, 2 ♀♀ Aderbissinat, August 27; 1 ♀ N. of Tanout, Damergou, September 2, 1920.

17. **Teracolus daira daira** (Klug).

Professor Aurivillius, in Seitz, has united *heuglini* Feld., *thruppi* Butl., *evagore* Klug, *daira* Klug, *yerburii* Swinh., and *nouna* Luc. as various gradations of the seasonal form of one species, because he says that the dry-season forms are indistinguishable. This is not quite correct, and although I agree with him that we have here only one single **species**, yet I think by these very dry-season forms we can separate *daira* Klug into three local races, or even four if we get larger material. As we are dealing with already-named forms, and only the one race comes into question in connection with Captain Buchanan's collection, I will not go into the Arabian and East African forms, but only notice the typical race and the N.W. African one.

(A) Form. pluv. **daira** Klug.

Pontia daira Klug, *Symb. Phys.* pl. viii. ff. 1, 2 (1829-1845) (Ambukol).

(B) Form. arid. **evagore** Klug.

Pontia evagore Klug, *Symb. Phys.* pl. viii. ff. 3, 4 (1829-1845) (Ambukol).

♂. Differs from the N.W. African *nouna* Luc. in the orange apex being much more red, and in the black margin to termen and apex being much narrower. ♀. Differs in the apex of forewing being duller, more ferruginous, in the dark band in apex being larger and more distinct, and in the black on margin of hindwings being less.

1 ♂ Farniso, near Kano, December 25, 1919; 1 ♂, 1 ♀ Zinder, Damagarim, January 31, 1920; 3 ♀♀ Mts. of Baguezan, May 22, June 3, July 2, 1920.

18. **Teracolus evarne evarne** Klug.

There appear to be two local forms of this insect, and although these specimens from Captain Buchanan are very small they cannot belong to the Somaliland race *philippsi-sharpei*, as there are no black dots on margin whatever.

(A) Form. pluv. **evarne** Klug.

Pontia evarne Klug, *Symb. Phys.* pl. vi. ff. 1-4 (1829-1845) (Ambukol).

1 ♀ N. of Tanout, Damergou, September 2, 1920.

(B) Form. arid. **citreus** Butl.

Teracolus citreus Butler, *P.Z.S. Lond.* 1876. p. 152. no. 120 (White Nile).

4 ♂♂ Takoukout, Damergou, March 11-14, 1920; 1 ♀ S. of Mts. Baguezan, May 3; 3 ♂♂ Mts. of Baguezan, Asben, May 20-23, 1920.

19. **Eronia cleodora** Hübn.

There are three seasonal forms of this insect.

(A) Form. pluv. **erxia** Hew.

Eronia erxia Hewitson, *Illust. Exot. Butt.* vol. iv. Pier. i. text (1867) (Natal).

(B) Form. pluv. extr. **dilatata** Butl.

Eronia dilatata Butler, *P.S.Z. Lond.* 1888. p. 96 (Taveta).

(C) Form. arid. **cleodora** Hübn.

Eronia cleodora Hübner, *Samml. Exot. Schmett.* ii. pl. 130 (1822–1836).

The single specimen obtained is somewhat intermediate between *erxia* and *cleodora*.

1 ♂ Farniso, near Kano, December 22, 1919.

20. **Eronia buqueti buchanani** subsp. nov.

♂. Differs from *b. buqueti* in the distinct green tinge of the wings and the olive-grey apical area.

♀. Differs in the almost complete absence of the dark apex and termen, which are only indicated by a rusty suffusion.

3 ♂♂, 2 ♀♀ Timia, Asben, June 24–26; 2 ♂♂ Aouderas, Asben, July 29, 1920. Type: ♂ Timia.

22. **Catopsilia florella** (Fabr.).

Papilio florella Fabricius, *Syst. Entom.* p. 479. no. 159 (1775) (Sierra Leone).

1 ♂ Baguezan Mts., Asben, May 8, 1920; 1 ♂ Aouderas, Asben, July 29, 1920; 3 ♂♂ Aderbissinat, Damergou, August 27, 1920; 1 ♂ Abouzak, Damergou, August 30, 1920; 2 ♂♂ Baban Tubki, N. of Zinder, September 13, 1920; 1 ♂ Zinder, Damagarim, February 1, 1920; 2 ♂♂ Makachia, Damagarim, September 15, 1920; 1 ♂ Barbara, N. Nigeria, September 18, 1920; 2 ♂♂, 1 ♀ Kano, N. Nigeria, December 11–13, 1919; 1 ♀ Zigawa, N. Nigeria, September 19, 1920.

23. **Terias brenda** Doubld. & Hew.

The two seasonal forms are as under:

(A) Form. pluv. **brenda** Doubld. & Hew.

Terias brenda Doubleday & Hewitson, *Gen. Diurn. Lepid.* p. 79. no. 30. pl. ix. f. 6 (1847) (Sierra Leone, Ashanti).

2 ♂♂, 1 ♀ N. of Tanout, Damergou, September 2, 1920.

(B) Form. arid. **maculata** Auriv.

Terias brenda maculata Aurivillius, in Seitz, *Grosschmett. Erde*, vol. xiii. p. 64. pl. 22C (1910) (range of species).

24. **Terias floricola** (Boisd.).

Captain Buchanan only obtained the dry-season form. Three of his six specimens are very extreme.

(A) Form. pluv. **floricola** Boisd.

Xanthidia floricola Boisduval, *Faun. Entom. Madag. Lépid.* p. 21. no. 2 (1833) (Bourbon, Mauritius, and Madagascar).

(B) Form. arid. norm. **ceres** Butl.

Terias ceres Butler, *Ann. Mag. Nat. Hist.* (5) xvii. p. 218. pl. v. f. 33 (1886) (Mauritius).

1 ♂ Kano, N. Nigeria, December 11, 1919; 2 ♂♂ Farniso, near Kano, December 18, 22, 1919.

(C) Form. arid. extr. **parva** form. nov.

Differs from *ceres* in its much smaller size and the much more obliterated markings on the underside.

2 ♂♂ Kano, N. Nigeria, December 9–11, 1919; 1 ♀ Farniso, near Kano, December 19, 1919.

25. **Terias brigitta** (Cram.).

Papilio brigitta Cramer, *Pap. Exot.* vol. iv. pt. xxviii. p. 82. pl. cccxxxi. ff. B, C (1780) (coast of Guinea).

This insect varies much in size and depth of colour.

(A) Form. arid. **brigitta** Cram.

The smallest ♂ expands 32 mm. and the largest 52 mm.; the smallest ♀ 34 mm. and the largest 52 mm.

2 ♂♂, 2 ♀♀ Kano, N. Nigeria, December 3–12, 1919; 9 ♂♂, 13 ♀♀ Farniso, near Kano, December 11–31, 1919; 7 ♂♂, 2 ♀♀ Zinder, Damagarim, January 23—February 4, 1920; 1 ♂ Aouderas, Asben, July 29, 1920.

(B) Form. pluv. **zoë** Hopff.

Terias zoë Hopffer, *Monatsber. Königl. Akad. Wiss. Berlin*, 1855. p. 640 (Querimba).

The smallest ♂ expands 36 mm., the largest 48 mm.; the smallest ♀ expands 38 mm., the largest 50 mm.

1 ♂ Baguezan Mts., Asben, June 6, 1920; 7 ♂♂ Aderbissinat, Damergou, August 27, 1920; 11 ♂♂, 6 ♀♀ Tchingaraguen, Damergou, August 31, 1920; 2 ♂♂ Baban Tubki, S. of Zinder, September 13, 1920.

DANAIDAE.

26. **Danaida chrysippus alcippus** (Cram.).

Papilio alcippus Cramer, *Pap. Exot.* vol. ii. pt. xi. p. 45. pl. cxxvii. ff. E, F (1777) (coast of Guinea and Sierra Leone).

D. chrysippus chrysippus was described from Egypt, while *D. chr. orientis* Auriv. was described from East Africa and has also a white hindwinged form, *alcippoides* Moore, corresponding to *alcippus*. The subspecies *orientis* in both forms is at once recognisable by the broader and more conspicuous white subapical band of the forewings. True *chrysippus* occurs in the Sahara south to the northern slopes of the Ahaggar Mts., south of these *alcippus* takes its place in the whole of the region of West Africa proper. *Alcippus* also occurs sporadically among typical *chrysippus* in Egypt and Arabia.

1 ♀ Mts. of Baguezan, Asben, July 1, 1920; 2 ♂♂ Aouderas, Asben, July 22,

26, 1920; 1 ♂ Makoehia, Damergou, September 15, 1920; 6 ♂♂ Zinder, Damagarim, September 23, 1920 (one has very dark-brown basal two-thirds of forewings); 16 ♂♂ Kano, December 7–13, 1919; 8 ♂♂ Farniso, near Kano, December 16–30, 1920.

SATYRIDAE.

27. **Ypthima asterope** (Klug).

This species has two seasonal forms like most of the tropical Old World *Satyridae*. Unfortunately, Professor Aurivillius has paid no attention to this, and lumps all the names given to forms of this insect as trivial aberrational names, as in truth they were so given by Strand. In order not to create too many new names I here use Strand's name of *inocellata* for the dry-season form, it having been given to such a specimen, though Strand at the time did not realise this and considered it only as an aberration.

(A) Form. pluv. **asterope** Klug.

Hipparchia asterope Klug, *Symb. Phys.* pl. xxix. ff. 11–14 (1829–1845) (Syria and Arabia).

1 ♂, 1 ♀ Mts. of Baguezan, Asben, July 2, 1920; 1 ♀ Abourak, Damergou, August 30, 1920.

(B) Form. arid. **inocellata** Strand.

Ypthima asterope ab. *inocellata* Strand, *Intern. Entom. Zeitschr. Stuttg.* vol. 23. p. 112 (1909) (Uluna-Langenburg).

5 ♂♂, 1 ♀ Farniso, near Kano, December 20–31, 1920.

NYMPHALIDAE.

28. **Byblia ilithyia** (Drury).

The two seasonal forms are as follows:

(A) Form. arid. **ilithyia** Drury.

Papilio ilithyia Drury *Illust. Nat. Hist.* vol. ii. p. 29. pl. xvii. ff. 1, 2 (1773) (Senegal).

(B) Form. pluv. **polinice** Cram.

Papilio polinice Cramer, *Pap. Exot.* vol. iv. pt. xxxii. p. 169. pl. ccclxxv. ff. G, H (1781) (Côte de Coromondel).

1 ♂, 1 ♀ Aouderas, Asben, July 27, 1920.

29. **Precis oenone crebrene** (Trimen).

Junonia crebrene Trimen, *Trans. Entom. Soc. Lond.* 1870. p. 353 (South Africa).

1 ♀ Kano, N. Nigeria, December 7, 1919; 9 ♂♂, 8 ♀♀ Farniso, near Kano, December 11, 1919—January 3, 1920.

30. **Precis orythia madagascariensis** (Guen.).

Junonia madagascariensis Guenée, in Vinson, *Voy. Madag. Lepid.* p. 37 (1864) (Madagascar).

5 ♂♂ Kano, N. Nigeria, December 3–13, 1920; 5 ♂♂, 1 ♀ Farniso, near Kano, December 17–27, 1920.

31. **Pyrameis cardui** (Linn.).

Papilio cardui Linnaeus, *Syst. Nat.* edit. x. p. 475 (1758) (Sweden).

46 ♂♂♀♀ Mts. of Baguezan, Asben, July 1–2, 1920; 1 ♀ Ajieou, Asben, June 27, 1920.

32. **Acraea terpsichore** (Linn.).

Papilio terpsichore Linnaeus, *Syst. Nat.* edit. x. p. 466. no. 45 (1758) (Asia).

7 ♂♂ Kano, N. Nigeria, December 11, 1919; 1 ♂ Farniso, near Kano, December 24, 1920; 7 ♂♂, 1 ♀ Zigawa, N. Nigeria, September 19, 1920 (♀ = ab. *janisca* God., *Encycl. Method.* vol. ix. p. 233 [1819]).

33. **Acraea encedon** (Linn.).

Papilio encedon Linnaeus, *Syst. Nat.* edit. x. p. 488 (1758) (India).

The aberrations *encoedon*, *alcippina*, and *lycia* only are represented.

26 ♂♂♀♀ Kano, N. Nigeria, December 7–13, 1919.

LYCAENIDAE.

34. **Virachola livia pallescens** subsp. nov.

♂. Differs from *l. livia* Klug in the much paler colour and less sharply defined markings.

1 ♂ Zinder, Damagarim, January 31, 1920; 1 ♂ Timia, Asben, June 26; 1 ♂ Agirou, Asben, June 27, 1920; 5 ♂♂, 15 ♀♀ Mts. of Baguezan, May 8–12, 1920.

35. **Virachola dinochares** (Gr. Sm.).

Deudoryx dinochares Grose Smith, *Ann. Mag. Nat. Hist.* (5) xix. p. 64 (1887) (Delagoa Bay).

Professor Aurivillius places *dinochares* as a synonym under *licinia* Mab., but I do not agree with his determination.

1 ♀ Kano, N. Nigeria, December 13, 1919; Farniso, near Kano, December 20, 1919.

36. **Virachola antalus** (Hopff.).

Sithon antalus Hopffer, *Monatsb. Akad. Wiss. Berlin*, 1855. p. 641 (Mozambique).

1 ♀ Farniso, near Kano, December 16, 1919.

37. **Iolaus nursei** Butl.

Iolaus nursei Butler, *P.Z.S. London*, 1896. p. 251. pl. 10. f. 16. ♂ (Sheikh Othman).

1 ♀ Aouderas, Asher, July 26, 1920.

38. **Spindasis buchanani** sp. nov.

♀. This is quite unlike any known species. Thorax black-grey; abdomen black-grey, banded on sides with white. Forewing above blackish grey or blackish slate-grey; the basal two-fifths obliquely clothed with long ashy scales giving a cloudy appearance, a whitish mark in base of cell, an oblique whitish transverse antemedian band, a median and postmedian white band of coalescent patches converging to form a V with its base on vein 2, an indistinct pale-grey submarginal band. Hindwings with same ground colour as forewings, but with the ashy scales occupying at least the basal three-fifths of wing. An irregular whitish V with its base on vein 1 in outer two-fifths of wing, and a pale-grey indistinct submarginal band. Fringes of both wings white. Forewing below white; a curved brown line on basal one-third of costal area, a subbasal brown dash and a quadrate brown patch with central silver spot in cell, a grey quadrate baso-subbasal patch ringed in brown below median vein, an oblique median and a curved postmedian band converging almost on vein 1, grey edged with dark brown, with a row of silver spots in each, terminal area grey with submarginal row of dots and marginal hair line dark brown. Hindwing below cream-buff with three discal bands of kidney-shaped rusty-grey patches ringed with brown and with silver central spots, the subbasal band has these patches separate, the outer two bands coalescent; the two inner bands consist of four patches, the outer one of three and reaching vein 3. Basal and terminal areas rusty grey, a submarginal row of brown dots and a post-discal band edged with brown and centred with silver.

Length of forewing: 15–16 mm. Expanse: 32–34 mm.

1 ♀ Farniso, near Kano, December 27, 1920; 1 ♀ Zinder, Damagarim, January 31, 1920.

39. **Lycaenesthes princeps** Butler.

Lycaenesthes princeps Butler, *Ann. Mag. Nat. Hist.* (4) xviii. p. 484 (1876) (Abyssinia).

1 ♂ Dambiri, Damergou, September 7, 1920.

40. **Castalius cretosus lactinatus** Butl.

Castalius lactinatus Butler, *P.Z.S. Lond.* 1885. p. 764. pl. xlvii. f. 3 (Somaliland).

3 ♂♂ Mts. of Baguezan, Asben, May 17—June 3, 1920.

41. **Tarucus theophrastus** (Fabr.).

Hesperia theophrastus Fabricius, *Entom. System.* vol. iii. pt. 1. p. 281. no. 82 (1793) (Morocco).

2 ♂♂ Kano, N. Nigeria, December 5, 1919; 5 ♂♂ Farniso, near Kano, December 17–31, 1919; 6 ♂♂, 1 ♀ Zinder, January 24—February 1, 1920; 5 ♂♂ Baban Tubki, S. of Zinder, September 13, 1920; 1 ♂ Mazia, Damergou, September 6, 1920.

42. **Tarucus mediterraneae** B. Baker.

Tarucus mediterraneae Bethune Baker, *Trans. Entom. Soc. Lond.* 1917. p. 281. pls. xiv. ff. 7, 7*b*. xvi. f. 7, xix. f. 26 (Alexandria).

1 ♂ Dambiri, Damergou, September 7, 1920; 1 ♀ Takoukout, Damergou, March 13, 1920; 1 ♂ Zinder, Damagarim, January 31, 1920; 3 ♂♂, 2 ♀♀ Aouderas,

Asben, July 23–29, 1920; 1 ♀ Azzal, N. of Agades, July 15, 1920; 1 ♂ Arra, S. of Baguezan Mts., May 1, 1920 (aberration central black spots coalescent into large patch); 41 ♂♂, 42 ♀♀ Mts. of Baguezan, Asben, May 16—July 3, 1920.

43. **Syntarucus plinius telicanus** (Hübn.).

Papilio telicanus Hübner, *Europ. Schmett.* i. ff. 371, 372, 553, 554 (1798–1803).

It is doubtful if the single specimen belongs to the typical form (in which case the ground colour below would be very pale), or to the form *S. telicanus* or *plinius* Fabr. (*Entom. Syst.* iii. 1, p. 284, no. 92 [1793] [India]), (in which case it would be very dark.)

1 ♂ Makochia, Damagarim, September 15, 1920.

44. **Syntaruchus pulchra** (Murray).

Lycaena pulchra Murray, *Trans. Entom. Soc. Lond.* 1874. p. 524. pl. x. ff. 7. 8 (W. Africa).

3 ♂♂ Kano, N. Nigeria, December 11, 1919.

45. **Azanus ubaldus** (Cram.).

Papilio ubaldus Cramer, *Pap. Exot.* vol. iv. pt. xxxiii. p. 209. pl. 390. ff. L, M (1782) (Côte de Coromandel).

1 ♂ Farniso, near Kano, December 27, 1919; 9 ♂♂, 1 ♀ Mts. of Baguezan, Asben, May 10–12 and July 1, 1920; 1 ♂ Iferouan, June 14; 1 ♀ Tebernit, June 27; 2 ♂♂ Ajiron, Asben, June 27, 1920; 1 ♂ Mazia, Damergou, September 6, 1920.

46. **Azauns moriqua** (Wallengr.).

Lycaena moriqua Wallengren, *Lepid. Rhop. Caffr.* p. 39. no. 9 (1857) (Caffraria).

Mr. Riley, who kindly identified most of the *Lycaenidae* for me, considered the single ♂ enumerated below as *moriqua* and not *A. mirza* (Ploetz.), (*Lycaena mirza*, *Stett. Entom. Zeit.* vol. xli. p. 203, no. 179 [1880] [Victoria Camaroons]).

1 ♂ Makochia, Damagarim, September 15, 1920.

47. **Lampides boeticus** (Linn.).

Papilio boeticus Linnaeus, *Syst. Nat.* edit. xii. vol. i. pt. ii. p. 789. no. 226 (1767) (Barbary).

2 ♂♂ Mts. of Baguezan, Asben, May 8 and July 1, 1920; 1 ♂ Takoukout, Damergou, September 3, 1920; 1 ♂ Farniso, near Kano, December 27, 1919.

48. **Catachrysops eleusis** (Demais.).

Lycaena eleusis Demaison, *Bull. Soc. Entom. France*, 1888. p. lxvi. (Nubia).

17 ♂♂, 5 ♀♀ Farniso, near Kano, December 12–31, 1920; 20 ♂♂, 10 ♀♀ Zinder, Damagarim, January 24—February 6, 1920; 7 ♂♂, 3 ♀♀ Mts. of Baguezan, May 9—June 3, 1920; 1 ♂ Aguellal, Asben, June 16, 1920.

49. **Catachrysops osiris** (Hopff.).

Lycaena osiris Hopffer, *Monatsb. Königl. Akad. Wiss. Berl.* 1855. p. 642 (Querimba).

2 ♂♂, 1 ♀ Kano, N. Nigeria, December 6–13, 1919; 1 ♀ Farniso, near Kano, December 27, 1919.

50. **Zizera antanossa** (Mab.).

Lycaena antanossa Mabille, *Bull. Entom. Soc. France*, 1877. p. lxxii. No. 6 (Madagascar).

2 ♂♂, 1 ♀ Farniso, near Kano, December 17–25, 1919; 1 ♂ Zinder, Damagarim, February 1, 1920; 3 ♂♂ Makochia, Damagarim, September 15; 1 ♂ Bande, S. Damagarim, September 16, 1920.

51. **Zizera lysimon** (Hübn.).

Papilio lysimon Hübner, *Europ. Schmett.* i. ff. 534, 535 (1798–1803).

26 ♂♂, 4 ♀♀ Farniso, near Kano, December 16–29, 1919; 4 ♂♂, 7 ♀♀ Kano, N. Nigeria, December 3–13, 1919; 1 ♀ Zigawa, N. Nigeria, September 19, 1920; 2 ♂♂, 4 ♀♀ Aderbissinat, N. Damergou, August 27–28, 1920; 1 ♂ Dambiri, Damergou, September 7, 1920; 2 ♂♂ Aouderas, Asben, July 22, 1920.

GRYPOCERA.

HESPERIIDAE.

52. **Sarangesa eliminata** Holl.

This insect has two seasonal forms.

(A) Form. pluv. **eliminata** Holl.

Sarangesa eliminata Holland, *P.Z.S. Lond.* 1896. p. 9. no. 18. pl. v. f. 9 (Abyssinia; Somaliland).

Mabille, in his catalogue of the *Hesperiidae* in Wytsman's *Genera Insectorum*, gives a perfectly imaginary quotation, viz. "**Butt. Afr.**" instead of "**P.Z.S.Lond.**"

The solitary specimen sent is evidently a very belated individual of the wet-season brood.

1 ♂ Farniso, near Kano, December 31, 1919.

(B) Form. arid. **deserticola** Rebel.

17 ♂♂, 8 ♀♀ Zinder, Damagarim, January 24, 1920.

53. **Hesperia machacoana** Butler.

1 ♀ Farniso, near Kano, December 19, 1919.

54. **Gegenes nostrodamus** (Fabr.).

Hesperia nostrodamus Fabricius, *Entom. Syst.* iii. (1). p. 328. no. 246 (1793) (Barbary).

1 ♂ Aderbissinat, S. Damergou, August 27, 1920.

55. Gegenes hottentota (Latr.).

Hesperia hottentota Latreille, *Encycl. Méth. Hist. Nat. Entom.* vol. ix. p. 777. no. 133 (Cape of Good Hope).

2 ♀♀ Farniso, near Kano, December 19, 31, 1919.

56. Parnara mathias (Fabr.).

Hesperia mathias Fabricius, *Entom. Syst. Suppl.* p. 433. nos. 289–290 (1798) (India).

1 ♂ Farniso, near Kano, December 27, 1919; 5 ♂♂ Aderbissinat, N. Damergou, August 27, 1920; 3 ♂♂ Abourak, Damergou, August 30, 1920.

57. Parnara fatuellus (Hopff.).

Pamphila fatuellus Hopffer, *Monatsb. Berl. Akad. Wiss.* 1855. p. 643. no. 25 (Querimba).

1 ♀ Kano, N. Nigeria, December 11, 1919.

58. Platylesches chameleon (Mab.).

Pamphila chameleon Mabille, *Bull. ou Compt.-Rend. Soc. Entom. Belg.* 1891. p. clxxix. (Sierra Leone).

1 ♂ Makochia, Damagarim, September 15, 1920.

HETEROCERA.

ARCTIIDAE.

Lithosiinae.

59. Siccia conformis Hmpsn.

Siccia conformis Hampson, *Cat. Lepid. Phal. Brit. Mus. Suppl.* vol. i. p. 706. no. 843*a*. pl. xxxvii. f. 13 (1914) (Minna, N. Nigeria).

2 ♂♂, 1 ♀ Aouderas, Asben, July 23, 1920.

Arctiinae.

60. Utetheisa pulchella (Linn.).

Phalaena pulchella Linnaeus, *Syst. Nat.* ed. x. i. p. 534 (1758) (S. Europe, Mauritania).

3 ♂♂, 5 ♀♀ Kano, N. Nigeria, December 11–12, 1920.

AGARISTIDAE.

61. Aegocera brevivitta rectilineoides subsp. nov.

♂. Differs from *b. brevivitta* Hmpsn. in having the hindwing yellow, with a red outer area and central red spot as in *rectilinea* Boisd., not entirely red as in *b. brevivitta*, with only base and cilia yellow.

1 ♂ Tanout, Damergou, September 6, 1920.

62. **Aegocera rectilinea** Boisd.

Aegocera rectilinea Boisduval, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. i. pl. 14. f. 5 (1836).

1 ♀ Zinder, Damagarim, September 11, 1920; 1 ♀ Agades, S. of Asben, July 10, 1920; 1 ♀ Aouderas, Asben, July 21, 1920. (The Zinder example has the forewings much suffused with black, while the one from Aouderas is very pale in colour.)

NOCTUIDAE.

Agrotinae.

63. **Chloridea peltigera** (Schiff. & Den.).

Phalaena Noctua peltigera Schiffermüller & Denis, Ank. *Syst. Werk. Schmett. Wienergeg.* p. 89 (1775) (Vienna).

1 ♂, 1 ♀ Mts. of Baguezan, Asben, May 24–June 1, 1920; 1 ♂, 3 ♀♀ Aderbissinat, Damergou, August 28, 1920.

64. **Chloridea nubigera** (Herr.–Sch.).

Heliothis nubigera Herrich-Schäffer, *Syst. Bearb. Schmett. Eur.* p. 366 (1845) (Asia Minor).

2 ♂♂, 2 ♀♀ Aderbissinat, Damergou, August 28, 1920.

65. **Chloridea obsoleta** (Fabr.).

Bombyx obsoleta Fabricius, *Entom. Syst.* iii. 1. p. 456. no. 155 (1793) (S. America).

9 ♂♂, 12 ♀♀ Aderbissinat, Damergou, August 26—September 18, 1920.

The 9 ♂♂ have the ground colour olivaceous, but only 5 ♀♀ have it olivaceous and the others rufous-brown. All 21 specimens have the row of white postmedian points on the veins very prominent, unlike any specimens I have examined.

66. **Chloridea flavigera** Hmpsn.

Chloridea flavigera Hampson, *Ann. Mag. Nat. Hist.* (7) xix. p. 242. no. 58*a* (1907) (Buluwayo).

3 ♂♂ Aderbissinat, N. of Damergou, August 26–28, 1920.

67. **Chloridea hyalosticta** (Hmpsn.).

Heliothis hyalosticta Hampson, *Trans. Entom. Soc. Lond.* 1895. p. 298 (Karáchi).

14 ♂♂, 13 ♀♀ Azzal, N. of Agades, July 12–16, 1920; 1 ♂, 1 ♀ Aouderas, Asben, July 21, 23, 1920; 2 ♀♀ Aderbissinat, N. of Damergou, August 26, 1920.

68. **Timora chrysita** de Joan.

Timora chrysita de Joannis, *Bull. Soc. Entom. France*, 1910. p. 225 (Dioudougou).

4 ♂♂ Aderbissinat, N. of Damergou, August 26, 29, 1920; 7 ♂♂, 2 ♀♀ Tanout, Damergou, September 6, 1920; 1 ♂ Kaleloua, Damagarim, September 6, 1920.

69. **Timora metarhoda** Druce.

Timora metarhoda Druce, *Ann. Mag. Nat. Hist.* (7) xi. p. 201 (1903) (Gambia).

1 ♀ Baban Tubki, S. of Zinder, September 13, 1920.

70. **Timora buchanani** sp. nov.

♂♀. Differs from *metarhoda* by the cream-white hindwings, and in the two longitudinal mauve bands of the narrower forewings.

4 ♂♂, 2 ♀♀ Azzal, Asben, July 13–15, 1920. (Type ♂, July 14.)

71. **Timora decorata** (Moore).

Pradatta decorata Moore, *P.Z.S. Lond.* 1881. p. 365 (Saidabad, Kashmir).

6 ♂♂, 8 ♀♀ Makochia, Damagarim, September 15, 1920; 1 ♂ Tanout, Damergou, September 6, 1920; 2 ♂♂, 3 ♀♀ Kaleloua, N. Damagarim, September 8, 1920; 1 ♀ Zinder, Damagarim, September 11, 1920; 6 ♂♂, 5 ♀♀ Bande, S. Damagarim, September 16, 1920.

72. **Timora terracottoides** sp. nov.

♂♀. Differs from *terracotta* Hmpsn. in the very strongly developed longitudinal silvery line above vein 1 of forewing, in the row of marginal silvery dots on forewing, and in the suffused, dusky, **not** pure creamy-white hindwing. This insect is very variable in the ground colour of the forewings; some are deep grey-brown, others umber-brown, some are olive-stramineous, others maroon-red.

4 ♂♂, 1 ♀ Bande, S. Damagarim, September 16, 1920; 1 ♀ Songo, Damagarim, September 17, 1920; 8 ♂♂, 2 ♀♀ Makochia, Damagarim, September 15, 1920; 6 ♂♂, 11 ♀♀ Kaleloua, N. Damagarim, September 8, 1920; 2 ♂♂, 1 ♀ Baban Tubki, S. of Zinder, September 18, 1920. (♂ Kaleloua, type.)

73. **Adisura callima** B. Baker.

Adisura callima Bethune Baker, *Ann. Mag. Nat. Hist.* (8) viii. p. 508 (1911) (Malange, W. Africa).

1 ♂ Aderbissinat, N. of Damergou, August 26, 1920.

74. **Adisura affinis** sp. nov.

Differs from *atkinsoni* Moore in deeper maroon suffusion, in the heavy, complete blackish outer one-third of hindwings, and especially in the postmedian line of spots being confluent and forming an oblique line running from centre of inner margin to vein 6, near termen, **not** a curved line of separate dots.

2 ♂♂, 1 ♀ Barbara, N. Nigeria, September 18, 1920; 1 ♂ Kaleloua, N. Damagarim, September 8, 1920; 3 ♂♂, 2 ♀♀ Songo, S. Damagarim, September 17, 1920; 15 ♂♂, 19 ♀♀ Makochia, Damagarim, September 15, 1920; 6 ♂♂, 4 ♀♀ Bande, S. Damagarim, September 16, 1920.

75. **Euxoa segetum** (Schiff. & Den.).

Phalaena Noctua segetum Schiffermüller & Denis, *Ank. Syst. Werk. Schmett. Wienerg.* p. 81, 252, ff. 3*a*, *b* (1775) (Vienna).

1 ♂ Mts. of Baguezan, Asben, June 1, 1920.

ZENOBIINAE.

76. **Spodoptera mauritia** (Boisd.).

Hadena mauritia Boisduval, *Faun. Entom. Madag. Lépid.* p. 92. no. 3. pl. 13. f. 9 (1833) (Mauritius, Bourbon).

1 ♂ Aderbissinat, N. of Damergou, August 28, 1920.

77. **Spodoptera abyssinia** Guen.

Spodoptera abyssinia Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* vol. v. Noct. i. p. 154. no. 244 (1852) (Abyssinia).

3 ♂♂ Agades, S. of Asben, July 9–10, 1920.

78. **Laphygma exigua** (Hübn.).

Noctua exigua Hübner, *Samml. Europ. Schmett.* Noct. f. 362 (1808).

1 ♂, 1 ♀ Azzal, Asben, July 12, 15, 1920; 1 ♂, 1 ♀ Mts. of Baguezan, Asben, June 1, 1920; 1 ♀ Aouderas, Asben, July 21, 1920; 1 ♂, 1 ♀ Agades, S. of Asben, August 7, 8, 1920; 1 ♂ Zinder, Damagarim, February 18, 1920; 1 ♀ Baban Tubki, S. of Zinder, September 13, 1920.

Erastriinae.

79. **Eublemma dissoluta** sp. nov.

Nearest to *syrtensis* Hmpsn. and *suava* Hübn.

♂. Antennae yellowish brown, shaft whitish; head, thorax, and abdomen cream-white. Forewing creamy isabelline; a broad median band somewhat darker, with brown edges, two postmedian bands of this darker isabelline, three dark-brown patches between apex and vein 6, and some smaller similar markings between veins 2 and 4; marginal hair-line dark brown. Hindwing cream colour with two indistinct buff bands, termen smeared with dark brown.

♀. Antennae brown; head, thorax, and abdomen creamy grey. Forewing basal half dirty pinkish wood-brown, with dark band in centre and margin; outer half paler, more isabelline, an indistinct waved postmedian greyish line, and a clouded brown subterminal broad band. Hindwing dirty cream colour, termen broadly brown, and two indistinct transverse bands dark grey-brown.

Length of forewing: ♂ 13 mm.; ♀ 15 mm. Expanse: ♂ 30 mm.; ♀ 35 mm.

1 ♂, 1 ♀ Zinder, Damagarim, February 17, 1920.

80. **Eublemma parva** (Hübn.).

Noctua parva Hübner, *Samml. Europ. Schmett.* Noct. f. 356 (1808).

1 ♂, 1 ♀ Zinder, Damagarim, February 20, 1920.

81. **Eublemma deserti** (Rothsch.).

Thalpochares deserti Rothschild, *Int. Entom. Zeitsch. Stuttg.* xxiii. p. 142 (1909) (Mraier, S. Algeria).

1 ♂, 1 ♀ Mts. of Baguezan, Asben, May 9, 1920.

82. **Eublemma bipartita** sp. nov.

♀. Antennae honey-yellow; head and thorax snow-white; abdomen pale buffish grey. Forewing basal half pure white, outer half yellowish rusty brown, a small wedge running in from costa and fringe white. Hindwing creamy white, washed with rusty buff on outer half.

Expanse: 18 mm.; length of forewing: 8 mm.

2 ♀♀ Takoukout, Damergou, March 12, 1920.

83. **Eublemma perkeo** sp. nov.

This insect much resembles a minute *arcuinna*.

♂. Head, thorax, and abdomen dull pale wood-grey-brown. Forewing, basal half sooty brown clouded with paler colour, outer half whitish grey with brown-grey cloudings. Hindwing black, basal and terminal areas whitish grey, a curved median white band.

Expanse: 11·25 mm.; length of forewing: 5 mm.

1 ♂ Zinder, Damagarim, February 19, 1920.

84. **Eublemma bulla** (Swinh.).

Micra bulla Swinhoe, *P.Z.S. Lond.* 1884. p. 518. pl. 47. f. 9 (Karáchi).

1 ♂ Bande, S. Damagarim, September 16, 1920.

85. **Eublemma griseola** (Ersch.).

Thalpochares griseola Erschoff, in *Fedtsch. Reis.* p. 51. pl. 4. f. 55 (1874).

1 ♂ Azzal, N. of Agades, July 13, 1920.

86. **Ozarba punctigera** Walk.

Ozarba punctigera Walker, *List. Lepid. Ins. Brit. Mus.* xxxii. p. 685 (1865) (China, Moreton Bay).

1 ♂, 5 ♀♀ Makochia, Damagarim, September 15, 1920; 1 ♀ Zinder, September 11; 1 ♂, 1 ♀ Baban Tubki, S. of Zinder, Damagarim, September 13, 1920.

87. **Ozarba rufula** Hmpsn.

Ozarba rufula Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. x. p. 445. no. 5676. pl. clxii. f. 18 (1910) (Bombay).

1 ♀ Bande, S. Damagarim, September 16, 1920; 1 ♀ Azzal, N. of Agades, July 1920; 1 ♂ Agades, S. of Asben, July 10, 1920.

88. **Ozarba venata** Butl.

Ozarba venata Butler, *Ill. Het. Brit. Mus.* vii. p. 69. pl. 130. f. 12 (1889) (Dharmsala).

1 ♂ Songo, S. Damagarim, September 17, 1920; 2 ♀♀ Makochia, Damagarim, September 15, 1920; 1 ♀ Baban Tubki, S. of Zinder, September 13, 1920.

89. **Ozarba damagarima** sp. nov.

♂. Nearest to *sancta* Stdgr., but darker and at once distinguishable by the broad, indistinct, and broken dark submarginal band of the hindwings. Antennae black-brown; head and thorax mixed wood-grey and whitish; abdomen cinnamon brown-grey, a white band above anal tuft. Forewings, ground colour mauve-brown with whitish smears, two antemedian, irregular, much twisted black bands, a similar median band with an hourglass-shaped white patch enclosing two grey spots at end of cell, a postmedian similar band; terminal hair-line black. Hindwing deep orange-yellow, a dusky area at base and a broken wide sooty subterminal band; fringe checkered sooty and white.

♀. Similar, but forewing much darker; hindwing rufous-orange, outer one-third sooty black.

Expanse: 15 mm.; length of forewing: 6 mm.

1 ♀ Zinder, Damagarim, September 11, 1920 (type); 1 ♂ Makochia, Damagarim, September 15, 1920; 1 ♀ Tanout, Damergou, September 4, 1920; 1 ♂ Agades, S. of Asben, July 10, 1920.

90. **Pseudozarba opella** (Swinh.).

Acontia opella Swinhoe, *P.Z.S. Lond.* 1885. p. 456. pl. 27. f. 16 (Poona).

1 ♀ Azzal, N. of Agades, July 10, 1920; 2 ♀♀ Aouderas, Asben, July 23, 1920.

91. **Pseudozarba abbreviata** sp. nov.

♀. Antennae dark brown; head greyish cinnamon; thorax and abdomen darker greyish cinnamon-brown. Forewing short and truncated, termen convex; basal one-third cinnamon, costal area densely stippled with black; median one-third slaty grey-black, edged with a bright cinnamon line basad and distad; outer one-third cinnamon somewhat clouded with grey, four minute white marks on costa, terminal hair-line black. Hindwing silky yellowish grey, darker and more smoky on outer half.

Expanse: 13 mm.; length of forewing: 5 mm.

1 ♀ Azzal, N. of Agades, July 15, 1920 (type); 1 ♀ Aderbissinat, N. of Damergou, August 29, 1920; 1 ♂ Agades, S. of Asben, July 1920.

92. **Pseudozarba bella** sp. nov.

♀. Antennae black; head and thorax pale maroon; abdomen brownish wood-grey. Forewing, basal two-fifths maroon with black distad edge and slightly clouded with black distad, outer three-fifths creamy white, the central part strongly irrorated with black scales, terminal line and a patch about veins 6 and 7 blackish maroon. Hindwing wood-grey.

Expanse: 15 mm.; length of forewing: 6 mm.

1 ♀ Mts. of Baguezan, Asben, July 1, 1920.

93. **Eulocastra aethiops** (Dist.).

Tarache aethiops Distant, *Ann. Mag. Nat. Hist.* (7) 1. p. 223 (1898) (Pretoria).

1 ♂ Kaleloua, N. Damagarim, September 8, 1920; 2 ♀♀ Makochia, Damagarim, September 15, 1920; 1 ♀.

94. **Eulocastra sahariensis** sp. nov.

♂. Antennae deep black with yellowish cilia on sides and undersurface; head and frons black, a small brownish inter-antennal patch; thorax and patagia black-brown, rest of thorax dark cinnamon-brown; abdomen sooty brown-grey.

Forewing: basal one-fourth brownish cinnamon with paler shading, costa black with two pale spots; rest of wing deep black, a creamy dot in cell and two creamy spots at discocellulars, a curved irregular brownish cinnamon postmedian band, beyond which are some whitish marks in costal half of wing, a subterminal row of cream dots. Hindwing dark grey.

♀. Differs from ♂ in the non-ciliated brown antennae and the obsolescence of much of the paler markings of the forewings, owing to black suffusion.

Expanse: ♂ 20 mm.; ♀ 17·5 mm. Length of forewing: ♂ 8·5 mm.; ♀ 7 mm.

1 ♂ Makochia, Damagarim, September 15, 1920 (type); 1 ♀ Bande, S. Damagarim, September 16, 1920.

95. **Eulocastra pseudozarboides** sp. nov.

♀. In appearance much like a very pale *Pseudozarba opella*. Antennae brown; head and thorax greyish buff; abdomen cream-grey. Forewing greyish buff with darker yellowish cloudings; a median broad band black with a projection distad along median vein; an interrupted postdiscal line black, broadening at costa into a spot; terminal area broadly grey, interrupted between veins 2 and 4, a line of four black dots subterminally between costa and median vein. Hindwing pale cream-grey.

Expanse: 20 mm.; length of forewing: 8·5 mm.

1 ♀ Mts. of Baguezan, Asben, May 12, 1920.

96. **Tarache zelleri** (Wallengr.).

Acontia zelleri Wallengren, *Anteckn. I. Zool.* i. p. 59 (1856).

2 ♂♂, 1 ♀ Aderbissinat, N. of Damergou, August 28, 1920; 1 ♂, 2 ♀♀ Tanout, Damergou, September 3–6, 1920; 1 ♂, 1 ♀ Azzal, N. of Agades, July 13, 15, 1920; 1 ♂ Agades, July 9, 1920; 1 ♂ Makochia, Damagarim, September 15, 1920.

97. **Tarache gratiosa** (Wallengr.).

Acontia gratiosa Wallengren, *Anteckn. I. Zool.* i. p. 59 (1856).

1 ♀ Aderbissinat, N. of Damergou, August 28, 1920.

98. **Tarache buchanani** sp. nov.

♂. Antennae black-brown; head and thorax snow-white; abdomen, first two segments pure white, rest cream colour above, dirty white at sides, anal tuft greyish buff. Forewing: basal two-thirds snow-white, strongly angled in below median vein, costa with five olive-grey spots, rest of white area with scattered, similarly tinted dots; outer one-third black-brown with some whitish scribbling, strongly angled out above median vein and with a white patch between veins 2 and 4 in terminal area. Hindwing silky white with broad, blackish-grey

marginal band. The Asben ♂ differs in the great reduction in strength of the outer dark area of forewings and the absence of the band of hindwings below vein 3 and its great evanescence above that vein.

Expanse: 28 mm.; length of forewing: 12 mm.

1 ♂ Tanout, Damergou, September 6, 1920 (type); 1 ♂ Aouderas, Asben, July 21, 1920.

99. **Tarache asbenensis** sp. nov.

♂. Antennae dark brown; head and thorax cream-white; abdomen buffish grey, anal tuft yellower. Forewing: basal two-fifths cream-white with indistinct olive-grey costal spots; outer three-fifths sooty black-brown, a blacker quadrate patch basad between median vein and inner margin, a large, creamy, wedge-like spot running in from costa, fringe intermittently white. Hindwing rusty yellowish grey with darker marginal band.

Expanse: 22 mm.; length of forewing: 9·5 mm.

1 ♂ Mts. of Baguezan, Asben, May 16, 1920.

100. **Hoplotarache karachiensis** (Swinh.).

Acontia karachiensis Swinhoe, *P.Z.S. Lond.* 1889. p. 410 (Karáchi).

2 ♂, 1 ♀ Agades, S. of Asben, August 9, 1920; 1 ♂, 2 ♀♀ Azzal, N. of Agades, July 15–16, 1920; 3 ♂♂, 1 ♀ Aouderas, Asben, July 21–23, 1920.

Catocalinae.

101. **Crypsotidia conifera** Hmpsn.

Crypsotidia conifera Hampson, *Cat. Lepid. Phal. Brit. Mus.* vol. xii. p. 249. no. 7371. pl. cciii. f. 4 (1913) (N. Rukuru Valley).

5 ♂♂, 4 ♀♀ Zinder, Damagarim, February 15–20, 1920; 1 ♂ Mts. of Baguezan, May 1920.

102. **Crypsotidia griseola** sp. nov.

♂♀. Antennae brown-black; head and thorax mouse-grey, minutely freckled with black scales; abdomen yellowish wood-grey, sparsely and minutely freckled with black.

Forewing mouse-grey, a subbasal and a very broad median band with irregular edges darker grey; beyond the median band is a strongly waved, blackish line from costa to median vein; a postdiscal darker cloud band with almost black patch towards costa; fringe whitish and grey. Hindwing dirty white with broad, dark, wood-grey marginal band; fringe white. One ♀ is decidedly melanistic.

Expanse: 23·75 mm.; length of forewing: 10 mm.

5 ♂♂, 9 ♀♀ Zinder, Damagarim, February 14–20, 1920 (type ♂).

103. **Crypsotidia parva** sp. nov.

♀. This is the smallest species, hitherto obtained, of the genus. Antennae brown; head and thorax wood-brown; abdomen pale wood-grey. Forewing: basal two-thirds bright wood-brown, an antemedian and a postmedian zigzag

greyish-white line enclosing distad the distinctly dark-grey reniform; outer third much paler wood-brown-grey, a large brown patch from costa before apex, a terminal white line dotted with black. Hindwing semivitreous pearl-grey, darker towards margin.

Expanse: 15 mm.; length of forewing: 6 mm.

1 ♀ Farniso, nr. Kano, December 22, 1919.

104. **Cyligramma latona** (Cram.).

Phalaena latona Cramer, *Pap. Exot.* vol. i. part ii. p. 20. pl. xiii. f. B (1775) (coast of Guinea).

1 ♀ Mts. of Baguezan, Asben, June 6, 1920.

105. **Achaea catella** Guen.

Achaea catella Guenée, *Hist. Nat. Ins. Spec. Gén.* vii. Noct. iii. p. 247. no. 1667 (1852) (Senegal).

1 ♀ Baban Tubki, S. of Zinder, September 13, 1920.

106. **Grammodes stolida** (Fabr.).

Noctua stolida Fabricius, *Syst. Entom.* p. 599. no. 38 (1775) (East India).

1 ♀ Bande, S. Damagarim, September 16, 1920; 1 ♀ Tanout, Damergou, September 6, 1920; 7 ♂♂, 8 ♀♀ Aderbissinat, N. of Damergou, August 18–24, 1920; 1 ♂ Agades, S. of Asben, August 8, 1920; 6 ♂♂, 4 ♀♀ Mts. of Baguezan, Asben, May 13—July 2, 1920.

107. **Grammodes buchanani** sp. nov.

Although the hindtibiae are hardly, if at all, spined, this is a true *Grammodes*.

♀. Antennae brown, each segment banded narrowly with white; head and thorax mauve, microscopically freckled with white; abdomen wood-brown.

Forewing: basal one-fifth mauve-grey, an antemedian band deep chocolate-brown, edged distad with white, and being nearly three times as broad below median vein than above it; a broad median band dark chocolate-brown, edged distad with white between the antemedian and median bands; the wing is mauve-grey above median vein and olive-yellow below; a postmedian zigzag brown line running out into points and widening into a large blackish apical patch; between this and median vein the wing is mauve-grey from costa to vein 6, olive-yellow from vein 6 to inner margins; rest of wing mauve-grey, shaded with sooty grey towards termen and with white spot below apex. Hindwing wood-grey, saturated with dull buff and clouded with darker grey, a median line and a submarginal and marginal band sooty blackish grey.

Expanse: 23·75 mm.; length of forewing: 10 mm.

1 ♀ Zinder, Damagarim, September 11, 1920.

108. **Parachalciope mixta** sp. nov.

♀. Size, shape, and general pattern similar to *P. deltifera* (Feld.), but with the postmedian band on the hindwings as in *Chalciope hyppasia* (Cram.). The oblique white band on the forewing between median vein and tornus is not of uniform width as in *deltifera*, but gradually expands in width towards tornus.

Expanse: 48 mm.; length of forewing: 22 mm.

1 ♀, no data.

109. **Mocis frugalis** (Fabr.).

Noctua frugalis Fabricius, *Syst. Entom.* p. 601. no. 45 (1775) (India).

1 ♂ Aderbissinat, N. of Damergou, August 26, 1920.

110. **Plecopterodes moderata** (Wallengr.).

Grammodes moderata Wallengren, *Wien. Entom. Monats.* vol. iv. p. 174. no. 69 (1860) (Caffraria).

1 ♀ Kaleloua, S. Damagarim, September 8, 1920.

111. **Gnamptonyx innexa** (Walk.).

Alamis innexa Walker, *List Lepid. Ins. Brit. Mus.* pt. xv. p. 1797 (1858) (St. Vincent, Cape Verd Islands).

This is almost as variable a species as *Cortyta leucoptera* (Hmpsn.).

4 ♂♂, 2 ♀♀ Mts. of Baguezan, Asben, May 16—June 16, 1920; 3 ♂♂, 4 ♀♀ Aguellal, Asben, June 16, 1920; 1 ♀ Aouderas, Asben, July 21, 1920; 5 ♂♂, 4 ♀♀ Azzal, Asben, July 12–16, 1920; 12 ♂♂, 4 ♀♀ Agades, S. of Asben, August 7–9, 1920.

112. **Cortyta acrosticta** (Püngl.).

Pericyma acrosticta Püngler, *Iris*, vol. xvi. p. 290. pl. vi. f. 6 (1903) (Engeddi, Dead Sea).

This has nothing to do with *vetusta* Wlk., where Hampson put it as an aberration; it is much nearer *rosacea* Rebel.

1 ♀ Agades, S. of Asben, July 9, 1920.

Phytometrinae.

113. **Phytometra ni** (Hübn.).

Noctua ni Hübner, *Samml. Europ. Schmett.* noct. f. 284 (1802).

1 ♂, 2 ♀♀ Aderbissinat, N. of Damergou, August 28, 1920.

114. **Phytometra chalcytes** (Esp.).

Phalaena Noctua spirilingua cristata chalcytes Esper, *Schmett.* vol. iv. pt. ii. p. 447. no. 167. pl. exli. noct. 62. f. 3 (1789) (Central Italy).

1 ♂ Aderbissinat, N. of Damergou, August 28, 1920.

Noctuinae.

115. **Polydesma collutrix** (Geyer).

Coenipeta collutrix Geyer, *Zutr. Hübn. Samml. Exot. Schmett.* p. 22. no. 443. pl. 152. ff. 885, 886 (1837) (S. Africa).

4 ♂♂, 1 ♀ Bande, S. Damagarim, September 16, 1920.

116. **Melanephia tristis** (Snell.).

Acontia tristis Snellen, *Tijds. v. Entom.* vol. xv. p. 52. pl. 4. ff. 12, 13 (1872) (mouth of Congo River).

1 ♀ Bande, S. Damagarim, September 16, 1920.

117. **Asplenia melanodonta** (Hmpsn.).

Melipotis melanodonta Hampson, *P.Z.S. Lond.* 1896. p. 263 (Aden).
Asplenia rubrescens Hampson, *P.Z.S. Lond.* 1916. p. 133. pl. 2. f. 1 (Somaliland).

The fine series of 65 examples of this insect sent by Captain Buchanan proves that *melanodonta* and *rubrescens* are one and the same species; the *rubrescens* examples are much the most numerous, but unfortunately *melanodonta*, being the older name, must stand for the species. Like *Cortyta leucoplera*, it is a most variable insect, ranging from clear buffish cinnamon with no markings, to rusty brown banded and shaded with sooty black-brown.

1 ♀ Aouderas, Asben, July 25, 1920; 8 ♂♂, 4 ♀♀ Azzal, N. of Agades, July July 12–16, 1920; 25 ♂♂, 10 ♀♀ Agades, S. of Asben, July 10—August 8, 1920; 6 ♂♂, 7 ♀♀ Aderbissinat, N. of Damergou, August 18–28, 1920; 1 ♂, 3 ♀♀ Tanout, Damergou, September 3–6, 1920.

118. **Pandesma anysa sennaarensis** Feld. & Rog.

Pandesma sennaarensis Felder & Rogenhofer, *Reise der Novara, Zoology*, vol. ii. sect. 2. pl. cxi. and *Tafel-Erkl.* p. 26 (1872) (Cape Colony and Sennaar).

The series from Asben varies very much in size, the smallest ♂ having an expanse of 32 mm. and the largest 48 mm.; the smallest ♀ has an expanse of 36 mm. and the largest 50 mm.

12 ♂♂, 14 ♀♀ Mts. of Baguezan, Asben, May 7—June 1, 1920; 1 ♀ Azzal, N. of Agades, July 12, 1920.

119. **Tathorhychus exsiccata** (Led.).

Spintherops exsiccata Lederer, *Verh. Zool. Bot. Ver. Wien*, vol. v. p. 204. pl. 2. f. 12 (1855) (Beirut).

2 ♀♀ Zinder, Damagarim, February 18, 1920.

120. **Raphia buchanani** sp. nov.

♂♀. Antennae dark grey, basal three-fifths in ♂ strongly pectinated, diminishing rapidly on distal two-fifths to almost a cylindrical last five joints, in ♀ the pectinations on basal half are shorter and diminish gradually to the last five or six almost cylindrical joints; head and thorax sooty grey; abdomen paler. Forewing sooty grey with a cinnamon suffusion; a subbasal black sinuate line below median, an antemedian and a postmedian strongly sinuate black line, from which latter a black line joins termen along vein 5. Hindwings white, a sooty marginal hair-line and a sooty smear at tornus.

Expanse: ♂ 32 mm.; ♀ 45 mm.

3 ♂♂ Barbara, N. Nigeria, September 18, 1920; 1 ♀ Aouderas, Asben, July 23, 1920.

121. **Acantholipes circumdata** (Walk.).

Hydrelia circumdata Walker, *List Lepid. Ins. Brit. Mus.* xv. p. 1763 (1858) (Congo).

1 ♂ Azzal, N. of Agades, July 12, 1920; 5 ♀♀ Zinder, Damagarim, February 17–20, 1920.

Hypeninae.

122. **Rhynchina sahariensis** sp. nov.

♀. Antennae brown-grey; head and thorax rufous-buff; abdomen pale buffish grey. Forewing, basal half cinnamon-rufous, a pinkish cinnamon spot on costa; a broad oblique median postmedian band pinkish cinnamon from costa to median vein, sooty black from median to inner margin; rest of wing cinnamon-rufous, fringe sooty grey. Hindwing greyish wood-brown.

Expanse: 15 mm.; length of forewing · 6 mm.

1 ♀ Azzal, N. of Agades, July 13, 1920; 1 ♀ (type) Agades, S. of Asben, July 9, 1920; 1 ♂, 1 ♀ Tanout, Damergou, September 3, 1920; 1 ♀ Kaleloua, N. Damagarim, September 8, 1920; 1 ♀ Makochia, Damagarim, September 15, 1920.

123. **Rhynchina buchanani** sp. nov.

♀. Antennae brown-grey; head and thorax whitish grey, freckled with darker grey; abdomen brownish buff.

Forewing: basal two-thirds obliquely whitish grey, freckled and clouded with blue-grey, most strongly below median vein, and with indistinct and broken sinuate subbasal median and postmedian sooty-grey lines; outer one-third blue-grey clouded with whitish grey, mostly near apex; marginal hair-line sooty grey; fringe chequered grey and white. Hindwing pale cinnamon brown, somewhat clouded towards termen.

Expanse: 20 mm.; length of forewing: 8 mm.

1 ♀ Azzal, N. of Agades, July 13, 1920.

124. **Hypena sordida** sp. nov.

♀. Uniform sooty brown-grey; forewing an angled dull orange antemedian line, within which is a black dot on subcostal vein; an oblique median band also dull orange, a postdiscal oblique darker grey shadow band. Hindwing uniform sooty brown-grey.

Expanse: 20 mm.; length of forewing: 8 mm.

1 ♀ Bande, S. Damagarim, September 16, 1920.

LYMANTRIIDAE.

125. **Nygmia fasciata** (Walk.).

Dulichia fasciata Walker, *List Lepid. Ins. Brit. Mus.* iv. p. 809 (1855).

1 ♀ Baban Tubki, S. of Zinder, September 13, 1920.

126. **Casama griseola** sp. nov.

♂. Antennae yellowish grey; head and thorax mouse-grey; abdomen yellowish mouse-grey. Forewing ash-grey, a black lunate discocellular stigma, a faint indication of a postmedian line, and some blackish marginal dots. Hindwing opalescent white.

♀. Similar but larger; thorax darker grey. Forewing darker grey, stigma ringed with white, marginal dots running into wing as streaks.

Expanse: ♂ 22·5 mm.; ♀ 28 mm. Length of forewing: ♂ 9·5 mm.; ♀ 12 mm.

1 ♂ (type) Takoukout, Damergou, March 10, 1920; 1 ♀ Zinder, Damagarim, February 20, 1920.

127. **Casama uniformis** (Rothsch.).

Oeneria uniformis Rothschild, *Novit. Zool.* vol. xx. p. 118. no. 22 (1913) (S. Oued Mya).

2 ♂♂ Mts. of Baguezan, Asben, May 7 and 26, 1920.

SPHINGIDAE.

128. **Acherontia atropos** (Linn.).

Sphinx atropos Linnaeus, *Syst. Nat.* edit. x. vol. i. p. 490. no. 8 (1758) (Europe).

1 ♀ Kano, N. Nigeria, September 23, 1920.

The following species was omitted accidentally from its correct place:

85*a*. **Eublemma pseudonoctua** sp. nov.

♂. This insect resembles a small species of the subfamily Noctuinae. Antennae pale cinnamon; head, thorax, and abdomen cinnamon.

Forewing whitish cinnamon; the basal two-thirds suffused with rufous, a post-median band leaden grey-brown edged with orange-rufous.

Hindwing pale greyish cinnamon.

Expanse: 12 mm.

2 ♂♂ Zinder, Damagarim, February 1920.

(*To be continued.*)

REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY IN SOUTH AMERICA.

By C. E. HELLMAYR.

PART I.

DURING the years 1826–33 M. Alcide d'Orbigny, on behalf of the French Government, travelled in the south-western portion of the South American continent, and transmitted large collections of various objects of natural history to the Paris Museum. The ornithological results of his exertions were very important and rich in novelties, owing to the fact that he was the first European naturalist to visit Bolivia and the inner districts of Argentine. It is hardly worth while commenting upon his merits as an explorer and collector, which are familiar to every working ornithologist through the sumptuous volumes dealing with the scientific results of his travels.

The account of the ornithological collections of the enterprise forms the *troisième partie* of the fourth volume of the *Voyage dans l'Amérique méridionale*, published at Paris from 1835 to 1847.[1] As so often happens with works planned on a large scale, the volume was never completed, and ended suddenly with the matter relating to the Toucans.

Soon after commencing this great work, d'Orbigny secured the assistance of his countryman A. de Lafresnaye, and under their joint authorship appeared in the *Magasin de Zoologie* a preliminary list of the species collected during his travels, together with Latin descriptions of the new ones and critical notes upon others.

This "*Synopsis Avium*, ab Alcide d'Orbigny, in ejus per Americam meridionalem itinere, collectarum et ab ipso viatore necnon A. de Lafresnaye in ordine redactarum," was issued in two parts: the first, pp. 1 to 88, in the seventh volume for 1837; the second, pp. 1 to 34, in the eighth volume for 1838, of the *Magasin de Zoologie*, edited by Guérin-Ménéville. This list, too, was never finished, and, ending with the genus *Prionites*, is even less complete than the "Oiseaux" of the *Voyage*.

In the winter of 1904, while staying at his house, the late Count Berlepsch

[1] Much uncertainty exists about the dates of issue and contents of the numerous livraisons of the work. According to Messrs. Sherborn & Woodward (*Ann. Mag. Nat. Hist.* (7) vii. 1901, pp. 388–390) the several parts of the ornithological portion were published as follows:

pp. 1–48: 1835.
pp. 49–158: 1837.
pp. 159–232: October 1838.
pp. 233–352 [date unknown].
pp. 353 to end: 1847.

It appears, however, that the plates were issued in advance of the corresponding letterpress. This was certainly the case with pl. 2, contained in livr. 1, published 1834, while the text of *Phalcobaenus montanus* was edited in 1837. The same applies evidently to pl. 3 to 6 *bis*, all of which are quoted by the compilers of the *Synopsis Avium* in 1837. Furthermore, Tschudi (*Arch. f. Naturg.* 10, i. Heft 3, pp. 302–303), as early as 1844, quotes plates 62 to 66, with the remark "sine descriptione," although, according to Sherborn and Woodward, the text relating to the Woodpeckers and Toucans did not appear until 1847.

suggested to me the desirability of a thorough revision of d'Orbigny's material, in view of the uncertainty attached to the proper identification of many of the species described or mentioned in the *Voyage* and in the *Synopsis Avium*. I readily agreed to undertake that work, in which I have been materially assisted by a series of manuscript notes, chiefly on Bolivian birds, generously placed at my disposal by the Count.

I set to work in February 1904, during a short sojourn at Paris, and, as far as time and other duties permitted, I have ever since been accumulating material for the present study. In the winter 1905–6, when residing in the French capital, I devoted much time and labour to d'Orbigny's birds, and in subsequent years ten other visits to the Paris Museum were chiefly employed in collecting data on this subject. Various types belonging to certain difficult groups were most obligingly forwarded to me by my friend, Mons. A. Ménégaux, while others I was allowed to take over with me to England for comparison with the series at London and Tring. Thus I have successively worked over the whole of d'Orbigny's series as still represented in the French National Collection. In some cases I have not succeeded in tracing particular examples,[1] which, however, does not imply that they no longer exist in the Paris Museum, since researches of that kind are seriously hampered by the fact that a number of specimens, particularly among the larger birds, have been mounted, and have to be looked for in the show gallery, housed in a separate building.

By far the greater portion of the birds, however, are kept in the skin collection, and, with very few exceptions, still bear the original labels, on which, besides number, locality, and year of entry at the Museum, the scientific name used in d'Orbigny's writings is to be found. In the case of the specimens having been mounted, these data were transcribed on the new Museum labels, while d'Orbigny's old ones are often attached to the bottom of the stand. In nearly every instance I give an exact copy of the original label (or its substitute), so that ornithologists may be able to control any particular statement of mine.

While the bulk of d'Orbigny's collection remained in the Paris Museum, a considerable number of alleged "duplicates" went into other lands. M. de Lafresnaye, the joint author of the *Synopsis Avium*, appears to have obtained examples of the new species whenever there was more than one specimen, and these, if properly identifiable as being of d'Orbigny's collecting, have certainly the claim to be regarded as cotypes. In a joint communication with Mons. Ménégaux[2] I have explained, however, why the labelling of certain specimens as "types" in the Lafresnaye Collection should generally be mistrusted. We are glad to learn that Messrs. Bangs and Penard are at present engaged in a thorough revision of that important collection, now in the Museum of Comparative Zoology at Cambridge, Mass.

Besides those given to Lafresnaye, specimens of d'Orbigny's passed into the Massena Collection, and thus found their way to the Museum of the Academy of Natural Science at Philadelphia.[3] Others again, by exchange, went to the Vienna, Leyden, and British Museums; but all of these were mere duplicates

[1] The types of the following species described as new by d'Orbigny and Lafresnaye could not be found: *Myothera analis*, *Thamnophilus affinis*, *Synallaxis bitorquata*, *Troglodytes guarayana*, *Muscipeta stramineo-ventris*, *Pyrrhula cinerea*, *Anubates squamiger*.

[2] *Auk*, 23, 1906, pp. 480–483.

[3] See Stone, *Proc. Ac. N. Sci. Phila.* 51, 1899, p. 52.

of species well represented in the original series at Paris, and, consequently, of no importance for our own purpose.

In compiling the present memoir I have paid special attention to geographical distribution and local variation, and, as I have had the advantage of consulting very large series of most of the species treated in the succeeding pages, it is hoped that the results of my studies may not be entirely devoid of interest to the student of neotropical ornithology. During the past few years, I am sorry to say, certain authors have been remarkably industrious in contributing to the synonymy of American birds. Many of the supposed new "species" and "subspecies" are based upon characters which the experienced specialist at once recognises as useless in the respective groups. The ornithologist beginning work in a new field, however clever he may be, should keep in mind that not everything new to him must necessarily be new to science. On reading such diagnoses as those given by Cherrie or Chubb, one is forced to the conclusion that the authors are not conversant either with the existing literature or with the subject about which they are writing. It is to be hoped that authors generally will soon realise that similar contributions are a hindrance rather than an advantage to science.

In concluding these introductory remarks I have to tender my warmest thanks to the late Count Berlepsch for constant help and advice during the preparation of this paper, either by the loan of specimens or by offering criticism on disputed points. To Lord Rothschild and Dr. Ernst Hartert I am under great obligations for giving me free access to the wonderful bird-collection in the Tring Museum. Nor must I forget to acknowledge the assistance I received from the late Prof. Emile Oustalet and my friend, Mons. A. Ménégaux, while working in the ornithological laboratory of the Paris Museum.

For the sake of brevity, the articles in the *Magasin de Zoologie* are quoted as "L. & O., *Syn. Av.* i." or "ii.," the ornithological portion of d'Orbigny's work as "O., *Voyage*" or "d'Orb., *Voyage*."

I wish once more to emphasise that the dates on d'Orbigny's labels refer to the time when the specimen was received at the Museum. E.g. the entry "de Patagonie, février 1831" does not mean that the specimen in question was collected in Patagonia in February 1831, but indicates that it reached the Museum at that date.

Sarcoramphus gryphus = Vultur [1] gryphus Linn.

Sarcoramphus gryphus (L.)[2]; d'Orbigny, p. 17 (general distribution); L. & O., *Syn. Av.* i. p. 1 (oris Patagonicis, republica Chiliana, Boliviana, Peruviana et Columbiana).

No. 1, adult (mounted): "de la Patagonie, par M. d'Orbigny, 1831."

No. 2, "♂" ad. (mounted): "de la Patagonie. Mâle, par d'Orbigny, 1831."

Ridgway's observations [3] leave hardly any doubt as to the brown, dark-billed *S. aequatorialis* Sharpe being merely the immature stage of the ordinary Condor. In fact, a fine adult from the Andes of Quito in the Munich Museum, which ought

[1] *Vultur* Linnaeus, *Syst. Nat.* 10, i. 1758, p. 86. Genotype by subs. desig. (Allen, *Bull. Amer. Mus.* 24, 1907, p. 11): *Vultur gryphus* L.

[2] *Vultur gryphus* Linnaeus, *Syst. Nat.* 10, i. p. 86 (1758—ex Klein: Chili).

[3] *Auk*, ii. 1885, pp. 169-171.

to belong to the species described by Orton & Sharpe, is an extreme example of the large, black *V. gryphus*, with mostly ivory-white bill.

Sarcoramphus[1] papa (Linn.).

Sarcoramphus papa (L.)[2]; d'Orbigny, *Voyage*, p. 28 (general distribution); L. & O., *Syn. Av.* i. p. 1 (prov. Paraguayensi, imperio Brasiliano, republica Peruviana et Boliviana).

No d'Orbignyan specimen of the King Vulture in the Paris Museum.

Cathartes urubu = Coragyps atratus brasiliensis (Bonap.).[3]

Cathartes urubu (nec Vieillot)[4]; d'Orbigny, p. 31 (general distribution); L. & O., *Syn. Av.* i. p. 1 (Brazil, Argentine, Chili, Bolivia, Peru, etc.).

No d'Orbignyan specimen in the Paris Museum.

N.B.—*Coragyps* appears to be the earliest available generic name for the Black Vulture since *Catharista* Vieill. 1816 (type by designation of Gray, 1855: *Vultur aura* L.) becomes a pure synonym of *Cathartes* Ill. 1811 (type by designation of Vigors, 1825: *Vultur aura* L.). See *Opinion*, No. 62, of the Internat. Comm. Zool. Nomenclature.

Cathartes aura = Cathartes sp.

Cathartes aura "Ill."; d'Orbigny, *Voyage*, p. 38. pl. i. fig. 3 (general distribution); L. & O., *Syn. Av.* i. p. 2 (tota America meridionali).

There is only an adult bird from unknown locality, obtained by d'Orbigny in 1829, in the Paris Museum. The colour of the bare part of the head being bleached through exposure to light, it does not help us in elucidating the question as to which species the Turkey Vulture of d'Orbigny should be referred. Sharpe[5] thinks it might be his *Oenops pernigra*; but this conjecture is hardly well founded, since both description and figure indicate a bird with a red head.

The neotropical Turkey Vultures are involved in great confusion, and it is only with the help of large series from various localities that their systematic status can be made out.

Ibycter gymnocephalus Lafr. & Orb.

Ibycter gymnocephalus Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 2 (1837—Cochabamba, rep. Boliviana; descr. orig.); d'Orbigny, *Voyage*, Ois. p. 50 ("en descendant de la Cordillère orientale de Cochabamba, en Bolivie, aux plaines inondées de la province de Moxos, pendant une navigation sur le Rio Securi et autres . . .").

Of this alleged new species no specimens were obtained, so it will ever remain a mystery to ornithologists. It is, however, highly probable that the bird

[1] *Sarcoramphus* Duméril, *Zool. Analyt.* 1806, p. 32. Genotype: *Vultur papa* L. (subs. desig. Vigors, *Zool. Journ.* ii. 1825, p. 381).

[2] *Vultur Papa* Linnaeus, *Syst. Nat.* 10, i. p. 86 (1758—ex Edwards & Albin: "in India occidentali").

[3] *Cathartes brasiliensis* Bonaparte, *Consp. Av.* i. p. 9 (1850—"ex Amer. merid., Antill."—hab. restr. South Brazil (ex Wied), auct. Berlepsch, 1908).

[4] *Vultur urubu* Vieillot, *Hist. Nat. Ois. Amér. Sept.* i. p. 23, pl. 2 (September 1807—Carolina and Florida); belongs to the group of *Cathartes aura* (L.). Cf. Hellmayr, *Abhandl. Bayr. Ak. Wissens.* ii. Kl. 22, no. 3, 1906, p. 567.

[5] *Cat. B. Brit. Mus.* i. 1874, p. 27, note.

observed by d'Orbigny pertained to the ordinary *Ibycter ater* Vieill., secured by Rusby on the Beni River, N. Bolivia.[1]

Phalcoboenus montanus Orb. = P. megalopterus (Mey.).[2]

Phalcoboenus montanus d'Orbigny, *Voyage*, Ois., livr. 1, pl. ii. figs. 1, 2 (ad. et juv.) (1834); L. & O. *Syn. Av.* i. 1837. p. 2 ("in plano Andescenti, rep. Boliviana"; descr. ad. et juv.); idem, *Voyage*, Ois., 1837, p. 51 (western slope of Andes, on the way from Tacna [N.W. Chili] to La Paz; Andean Plateau, 4,000 metr.; Cochabamba; Cordillera of Potosi).

Two adults in black plumage and one young bird in the well-known rufous-brown livery, mounted in the galleries. These are the types of *Phalcoboenus montanus* d'Orb.

This species, which ranges over the mountainous parts of S. Peru, Chili, W. Bolivia, and N.W. Argentine, has been fully dealt with by Ridgway, in *Bull. U.S. Geol. and Geogr. Surv. Terr.* for February 1876, No. 6, second series, pp. 462–464.

Polyborus vulgaris = Polyborus tharus (Mol.).[3]

Polyborus vulgaris "Vieill."[4]; L. & O., *Syn. Av.* i. p. 3 (imperio Brasiliano, rep. Argentina, Chiliana, Boliviana, et Peruviana); d'Orbigny, *Voyage*, p. 55 (Banda Oriental, La Plata, pampas of Buenos Ayres, marshes on the limits of Paraguay, arid coasts of Patagonia and Chili, deserts of the Peruvian littoral, etc.).

No d'Orbignyan example in the Paris Museum.

Polyborus chimango = Milvago chimango (Vieill.)

Polyborus chimango Vieill.[5]; L. & O., *Syn. Av.* i. p. 3 (rep. Argentina, oris Patagonicis, Chiliana et Boliviana); d'Orbigny, *Voyage*, p. 60 ("dans toute la rép. Argentine, sur la côte du Chili et sur celle du Pérou").

No. 1, 2, ♀ ad., adult (not sexed): "du Chili, 1829, par d'Orbigny," mounted in the galleries.

Polyborus chimachima = Milvago chimachima (Vieill.)

Polyborus chimachima Vieill.[6]; L. & O., *Syn. Av.* i. p. 3 (prov. Paraguayensi, centrali rep. Boliviana); d'Orbigny, *Voyage*, p. 63 ("sur les frontières du Paraguay, . . . jamais vu au sud du 28e degré . . ., mais . . . au centre de la république de Bolivie [Santa Cruz de la Sierra, Chiquitos]").

No. 1, ♂ ad. (mounted): "de Santa Cruz, Bolivio, par M. d'Orbigny, 1834."

There is no constant difference between specimens from Bolivia and Paraguay on one side and those from Brazil on the other.

[1] See Allen, *Bull. Am. Mus. N.H.* ii. 1889, p. 105.

[2] *Aquila megaloptera* Meyen, *Nov. Act. Acad. Leop.-Carol.*, 16, suppl., p. 64, pl. viii. (1834—Chile; = juv.).

[3] *Falco Tharus* Molina, *Saggio Stor. Nat. Chili*, p. 265 (1782—Chili).

[4] *Polyborus vulgaris* Spix, *Av. Bras.* i. p. 3 (1824—"in campis Minas Geraës").

[5] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 5 p. 260 (1816—ex Azara, No. 5: "se voit rarement au Paraguay; mais il est si commun à la rivière de La Plata . . .").

[6] *L. cit.* 5, p. 259 (1816—ex Azara, No. 6: Paraguay).

Rosthramus sociabilis = Rostrhamus sociabilis (Vieill.)

Rosthramus sociabilis (Vieill.)[1]; L. & O., *Syn. Av.* i. p. 3 (prov. Corrientesensi, rep. Argentina); d'Orbigny, *Voyage*, p. 73 ("Corrientes, au 28 degré de lat. sud, à la frontière du Paraguay, et même jusque près de Buenos Ayres"; descr. ad. and juv.).

No. 1, adult (mounted): "par M. d'Orbigny, de Corrientes, juillet 1829."

As I have shown in another connection,[2] the name *R. sociabilis* had been erroneously applied by the late R. B. Sharpe[3] to the short-tailed, slate-grey species (without white on either upper- or under-tail coverts) found in Northern Brazil (vicinity of Pará).

R. sociabilis was founded upon Azara's description of a bird in immature plumage from the Argentine province of Corrientes. D'Orbigny's specimen is, therefore, topotypical. On examination it proves to be the long-tailed species (with white upper- and under-tail coverts and white base to the rectrices) which was afterwards described as *Cymindis leucopygus* Spix.[4] Besides d'Orbigny's, I have examined an adult male and a young female, secured by S. Venturi at Barracas al Sud, near Buenos Ayres, both preserved in the Tring Museum. The Munich Collection possesses several examples of the same bird from Surinam.

It is thus seen that *R. sociabilis* (*R. leucopygus* Spix) is widely diffused in South America. The Everglade Kite is also known to breed as far north as Cuba, tropical Florida, and Eastern Mexico. *Rostrhamus hamatus* (Temm.)[5] appears to have a much more limited range. In fact, the only specimen with definite locality I have seen is an adult male taken by O. Martins on November 15, 1908, at Utinga, a village on the outskirts of the city of Belem, State of Pará,[6] which, save for its blacker tail, is precisely similar to the bird spoken of in my review of Spix's types. *Rostrhamus taeniurus* Cab.,[7] with several irregular whitish bars across the tail, was most probably based upon a slightly immature individual of the same species. The juvenile plumage depicted by Temminck[8] I have not yet met with.

Circaetus coronatus = Harpyhaliaetus coronatus (Vieill.).

Circaetus coronatus (Vieill.)[9]; L. & O., *Syn. Av.* i. p. 3 (Patagonia et imperio Brasiliano); d'Orb. p. 75 (Patagonie [sur les bords du Rio Negro], . . . et près du Paraguay, dans la province de Corrientes . . .").

No d'Orbignyan example in the collection.

The geographical range of this Eagle extends southwards to the mouth of the Rio Negro in Patagonia. Its northern limits are not easy to define, at least

[1] *Herpetotheres sociabilis* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 18, p. 318 (1817—ex Azara, No. 16: "commun dans le district de *Corrientes*, entre les parallèles de 27 et 30 degrés"; descr. juv.).

[2] *Abhandl. Bayr. Akad. Wiss.* ii. Kl., 22, No. 3, 1906, pp. 569–570.

[3] *Cat. B. Brit. Mus.* 1., July 1874, p. 327; *Handlist Birds*, i. 1899, p. 269.

[4] *Av. Bras.* i. p. 7, pl. 2 (1824—"ad flumen Amazonum," N. Brazil).

[5] *Falco hamatus* (Illiger MS.) Temminck, *Rec. Pl. col.*, livr. 11, pl. 61 (June 1821—"Brésil"; type in the Leyden Museum).

[6] It is recorded by Snethlage (*Bol. Mus. Goeldi*, 8, 1914, p. 137), s. n. *R. hamatus*.

[7] *Journ. f. Orn.* ii. p. lxxx. (1854—Pará).

[8] *Rec. Pl. col.*, livr. 39, October 1823, pl. 231.

[9] *Harpyia coronata* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 14, p. 237 (1817—ex Azara, No. 7: Paraguay et rivière de La Plata).

in western South America, since *Urubitornis solitaria* (Tsch.), with which it has commonly been mixed up, proved to be quite distinct.[1]

Haliaetus melanoleucus = Geranoaëtus melanoleucus (Vieill.).

Haliaetus melanoleucus (Vieill.)[2]; L. & O., *Syn. Av.* i. p. 3 (rep. Argentina, Chiliana, Boliviana, Patagonia); d'Orbigny, p. 76 (Corrientes, Entrerios, Santa Fé, Buenos Ayres, Banda Oriental, et en Patagonie [jusqu' au 42e lat. sud], dans tout le Chili . . .").

No. 1, adult (mounted): "de Patagonie, 1831, par d'Orbigny."

This species ranges over western South America from Colombia down to Chili. In the eastern half of the continent its distributional area is more southerly, and extends from S.E. Brazil, Paraguay, throughout Argentine to Tierra del Fuego.

Harpyia destructor = Thrasaëtus harpyja (Linn.).[3]

Harpyia destructor (Daud.)[4]; L. & O., *Syn. Av.* i. p. 4 (rep. Boliviana); d'Orbigny, p. 81 (au pied des Andes [république de Bolivie], vers le 17e degré lat. sud, Yuracarès, Santa Cruz de la Sierra).

No d'Orbignyan example in the Paris Museum.

Morphnus urubitinga (Gm.).

Morphnus urubitinga (Gm.)[5]; L. & O., *Syn. Av.* i. p. 4 (Corrientes et Buenos Ayres, Argentine; Chiquitos, Bolivia); d'Orbigny, p. 84 (Corrientes, Banda Oriental; prov. Chiquitos, à l'est des Cordillères).

No d'Orbignyan specimen in the Paris Museum.

Morphnus[6] *urubitinga* ranges over a great part of tropical America, from Buenos Ayres and Uruguay northwards to Costa Rica. Farther north, in Guatemala and Mexico, it is replaced by *M. ridgwayi* (Gurn.),[7] which may be only subspecifically distinct.

Nisus hemidactylus = Geranospiza caerulescens gracilis (Temm.).[8]

Nisus hemidactylus (nec Temminck)[9]; L. & O., *Syn. Av.* i. p. 4 (Corrientes, Chiquitos); d'Orbigny, p. 86 (Corrientes, Chiquitos).

No. 1, adult (mounted): "Corrientes, d'Orbigny, juillet 1829, No. 17." ♂ jeune. *G. caerulescens*, No. 566."—Wing, 325; tail, 230 mm.

From Eastern Bolivia I have examined an adult male taken by G. Garlepp at Santa Cruz de la Sierra, on September 19, 1889.

[1] See Kothe, *Ornith. Monatsber.* 20, 1912, pp. 1–4.

[2] *Spizaëtus melanoleucus* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv éd., 32, p. 57 (1819—ex Azara No. 8: Paraguay).

[3] *Vultur Harpyja* Linnaeus, *Syst. Nat.* 12, i. p. 121 (1766—ex Hernandez et Maregrave: Mexico).

[4] *Falco destructor* Daudin, *Traité d'Orn.* ii. p. 60 (1800—ex Manduyt: "Guiano").

[5] *Falco Urubitinga* Gmelin, *Syst. Nat.* 1, i. p. 265 (1788—ex Brisson ex Maregrave: Eastern, Brazil).

[6] *Morphnus* Cuvier, 1817 (type by subseq. design. of Gray, 1841: *Falco urubitinga* Gm.) replaces *Urubitinga* Lafr. 1843. See *Opinion* 62, Smithson. Inst. Wash., publ. 2256, March 1914, p. 149.

[7] *Urubitinga ridgwayi* Gurney, *List Diurn. Birds of Prey*, p. 148 (1884—Mexico and Guatemala; type locality not specified).

[8] *Falco gracilis* Temminck, *Rec. Pl. col.*, livr. 16, pl. 91 (1821—"parties orientales du Brésil," coll. Prince Wied).

[9] *Falco hemidactylus* Temminck, *Rec. Pl. col.*, livr. 1, pl. 3 (1820—"Brésil").

Both are extreme examples of *G. c. gracilis*, with the lower parts, from chin to anal region, regularly barred with white, and the under-tail coverts plain buffy white.

G. caerulescens gracilis is the *southern* representative of the typical form. It ranges all over Brazil, from Maranhão, Ceará, and Piauhy south to Espirito Santo and S. Paulo in the south, and to Mattogrosso in the west, whence its area extends to E. Bolivia (Santa Cruz, Caiza), N. Argentine (Salta, Tucumán, Chaco, Corrientes), and Paraguay.

G. c. caerulescens (Vieill.) is found in the Guianas, Venezuela (Orinoco basin, plain of Valencia), E. Colombia (Bogotá), and Brazil, north of the Amazons (Manáos, Rio Branco, Rio Negro).

A third nearly allied form, *G. caerulescens niger* (Dubus) inhabits Central America.

Nisus concentricus = Micrastur gilvicollis (Vieill.).[1]

Nisus concentricus "Ill., Cuv."[2]; L. & O., *Syn. Av.* i. p. 4 (Yungas et Moxos, E. Bolivia); d'Orbigny p. 88 ("Yungas, versant oriental des Andes, . . . au sein des immenses forêts de Yuracarès . . .".).

No d'Orbignyan specimen in the Museum. I have, however, examined an immature female, taken by G. Garlepp on July 27, 1891, at San Mateo, Yuracarès, N.E. Bolivia, which is precisely similar to Guianan skins in corresponding plumage.

M. gilvicollis is peculiar to, and the only species of the genus found in, the great Amazonian forest region.[3] Its range extends from the Guianas and the mouth of the Amazons (Pará), across the continent well to the eastern slopes of the Andes in Ecuador and Peru, and south to the head-waters of the upper Rio Madeira in Western Brazil, and to N.E. Bolivia (Yuracarès).

All records of *M. gilvicollis* from outside this area are due to erroneous identification of some allied species, or else the localities are unreliable.

In another paper[4] I have given my reasons for uniting *M. pelzelni* Ridgw. to *M. gilvicollis*. Two adult birds from Peru, the type locality of the former "species," taken respectively by the late W. Hoffmanns at Chuchurras, prov. Huánuco, and by the brothers Watkins at Yahuarmayo, Marcapata, which I have, lately had an opportunity of inspecting, tend to corroborate this view, as they are absolutely indistinguishable from Guianan examples.

In view of the discussion that has taken place regarding the proper specific name of this Hawk, it may be well to give some details about the types in the Paris Museum, which I have carefully compared with specimens of the various species.

The type of *Sparvius gilvicollis* Vieill.,[5] an adult bird in good plumage, is by

[1] *Sparvius gilvicollis* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 10, p. 323 (1817—no locality given; type in Paris Museum examined).

[2] *Nisus concentricus* (Illiger MS.) Lesson, *Traité d'Orn.*, livr. 1, p. 60 (February 1830—Cayenne, coll. Poitean; type in Paris Museum examined).

[3] Miss Snethlage (*Bol. Mus. Goeldi* 8, 1914, p. 126) records *M. ruficollis* from Pará; but I am not prepared to accept this identification without further evidence. All the specimens I have seen from that district were undoubtedly referable to *M. gilvicollis*.

[4] *Nov. Zool.* 17, 1910, p. 410.

[5] Mounted specimen: "*M. gilvicollis* Vieill. *Type*. Amérique méridionale. No. 552."—Wing, 185 (somewhat worn); tail, 155; bill, 15½ mm.

no means referable to the "plumbeous phase" of *M. ruficollis* (Vieill.),[1] as has been suspected by certain authors, but proves to be an example of the species named *M. concentricus* by Ridgway and others. In coloration it is practically identical with two adults from Cayenne and Pará. Throat greyish; foreneck and chest closely barred with dark grey and white, without the slightest trace of rufous; belly and under-tail coverts white, with narrower dusky bars, becoming evanescent on the longer crissal feathers; the upper parts plain dark slate-grey; the tail with three white cross-bands, the terminal one included; axillaries and under-wing coverts white, only the exterior carpal coverts finely vermiculated with dusky; bill dark brown (bleached), base of lower mandible dull yellow; outer and inner toe equal in length.

The type of *Nisus concentricus* Less.[2] is beyond doubt an immature example[3] of the same species. The upper-parts are dark slaty; the upper-tail coverts still retaining numerous white transverse spots (sign of immaturity); tail with four white cross-bands; checks and auricular region dark brown, on the posterior border of the latter a few whitish spots, remains of the "crescent" characteristic of the juvenile plumage; under-surface buffy whitish, with exception of the throat and crissum, crossed by numerous regular, dusky-brown transverse lines, which are, however, much narrower than in the type of *M. gilvicollis*; bill dark horn brown, lower mandible yellowish; outer and inner toe equal in length.

M. gilvicollis appears to be pretty common in certain localities. I have examined fourteen adults and several immature specimens from British Guiana; one each from Sarayacu, Iquitos, E. Peru, and Yahuarmayo, S.E. Peru; two from Huánuco, C. Peru; two adults from Cayenne; one young bird from S. Mateo, N. Bolivia; and eleven skins from Amazonia (Pará, Rio Negro, Rio Xingú, Rio Curuá, and R. Madeira).

M. ruficollis (Vieill.)[4] evidently replaces the preceding species in Central and Eastern Brazil. Its range extends from S. Piauhy (Lake of Paranaguá) and Bahia through the eastern provinces south to São Paulo, and in the west to Mattogrosso (Chapada, Villa Bella de Mattogrosso),[5] Paraguay, and N. Argentine. Specimens recorded from "Trinidad," Guiana, Venezuela, and Colombia were either wrongly labelled or erroneously identified as belonging to that species, which has been frequently confused with *M. zonothorax* (Cab.), of N. Venezuela and N. Colombia. I am not any more inclined to accept, without further information, the reported occurrence at Pará as established beyond doubt.

With regard to *M. jugularis* Gurney,[6] I can positively assert that whatever

[1] *Sparvius ruficollis* Vieillot, *Nouv. Dict. d'Hist. Nat.* 10, p. 322 (1817—"l'Amérique méridionale, I substitute Rio, S.E. Brazil.

[2] *Traité d'Ornith.*, livr. 1, p. 60 (February 1830—Cayenne, coll. Poiteau).

[3] The mounted type is labelled: "Cayenne, M. Poiteau, 1822. ♂. *Micr. gilvicollis* V.—*Nisus concentricus* Less. *Type*," and measures: wing, 165; tail, 160; bill (from anterior edge of cere) 14½ mm.

[4] The mounted type is labelled: "Cabinet de Lisbonne, 1808. Amérique méridionale, Brésil. —No. 548 *bis*. ♀. *Micrastur ruficollis* (Vieill.) *Type*." It measures: wing, 175; tail, 170 mm. It is an example of the "rufous phase"; having the sides of head, throat, foreneck, and chest bright cinnamon-rufous; the pileum dark greyish brown; the back, including scapulars and upper-tail coverts, plain light rufous-brown; the posterior under-parts closely barred with blackish brown.

[5] Although not seen by me, the male secured by Natterer at Villa Bella and regarded by Pelzeln (*Vögel Novara*, 1865, p. 10; *Zur. Ornith. Bras.* i. 1867, p. 7) as the adult of his *M. concentricus* [= *M. gilvicollis* (Vieill.)], no doubt represents the plumbeous phase of *M. ruficollis*. Cf. also Sclater & Salvin, *P.Z.S.* 1869, p. 367, e. n. *M. leucauchen*.

[6] *List Diurnal Birds of Prey*, 1884, p. 118.

the other examples mentioned by that naturalist may be—the two Bahia skins in the Salvin-Godman Collection, Nos. 1 and 2 of his list, are certainly specifically identical with *M. ruficollis*, representing merely the plumbeous phase of this bird. A series of ten skins from Bahia, including the two typical examples of Gurney's, wonderfully illustrates the intergradation between the two extremes which Ridgway[1] very appropriately termed the "rufous" and "plumbeous" phase. I am fully in agreement with this distinguished ornithologist in considering these differences to be stages of a single form, a conclusion also supported by geographic reasons.

Falco leucauchen Temminck[2] was unquestionably based upon the juvenile plumage of *M. ruficollis*. I have examined, in the Paris Museum, Auguste de Saint-Hilaire's Brazilian example mentioned by Temminck. A young male from Campos do Jordão, Minas, in the Museu Paulista, most distinctly exhibits the pale superciliary stripe and the whitish "half-crescent" on sides of neck as shown in Temminck's plate; otherwise it corresponds to Ridgway's description of "young: rufous phase."[3] Its bill is wholly yellow.

Another young bird from Piracicaba, S. Paulo, likewise in the Museu Paulista,[4] has a blackish bill and is much more deeply coloured. It generally agrees with the characters of Ridgway's "young: plumbeous phase," except in having the crown deep chocolate-brown like the back, and in possessing whitish superciliaries and a conspicuous half-crescent behind the ear coverts.

Altogether I have examined of *M. ruficollis* twenty specimens from Bahia, Rio, Minas, and S. Paulo.

Nisus striatus = Accipiter ventralis Scl. (?).[5]

Nisus striatus (nec Vieillot)[6]; L. & O., *Syn. Av.* i. p. 4 (Yuracarès, Bolivia); d'Orbigny, *Voyage*, Ois., p. 88 (Yuracarès).

Unfortunately, this specimen is no longer to be found in the Paris Museum. From the insufficient description: "Nisus supra fuscus, alis caudaque transversim striatis; gula ventreque sordide albis, jugulo pectoreque *dilute rufis*, rostro nigro," it is hardly possible to tell whether it should be referred to *A. ventralis* or *A. erythronemius* (Kaup), both of which occur in Bolivia, the former in the north-western, the latter in the eastern districts.

A. ventralis ranges from the western Yungas of La Paz (Tilotilo, Sandillani, Chulumani) through Peru and Ecuador north to Colombia, and possibly W. Venezuela (Andes of Merida). Besides numerous examples from Ecuador and Bogotá, I have examined two from Bolivia, an adult male secured by Kalinowski at Chulumani, near the sources of the Rio Beni, belonging to the Branicki Museum, and an adult female taken by G. Garlepp at Sandillani, in the Berlepsch Collection. I am unable to distinguish them from topotypical Bogotá skins. Chulumani, though higher up in the mountains, is not very far away from the dense forests of the Yuracarès plains where d'Orbigny met with his "*Nisus striatus*."

[1] *Proc. Acad. N. Sci. Philad.* 1875, p. 491.
[2] *Rec. Pl. col.*, livr. 52, pl. 306 (1824—"Brésil").
[3] *Proc. Acad. N. Sci. Philad.* 1875, p. 491.
[4] It is erroneously referred to *M. gilvicollis* by Jhering & Jhering in *Cat. Faun. Braz.* i. 1907, p. 86.
[5] *Proc. Zool. Soc. Lond.* 1866, p. 303 (1866—Bogotá).
[6] *Accipiter striatus* Vieillot, *Hist. Nat. Ois. Amér. sept.* i. p. 42, pl. 14 (1807—S. Domingue).

A. erythronemius (Kaup)[1] was originally described from an example obtained by Bridges " in Bolivia," probably in the department of Sucre or Santa Cruz ; and an immature female from the last-named locality, which I have compared in the Berlepsch Collection, is, indeed, referable to this species. The Grey-backed Sparrow Hawk has also been found in S.E. Bolivia (Caiza), N.W. Argentine (Salta, Tucumán), and Entrerios (on the banks of the Rio Gato, seven leagues north-west of Gualeguaychu),[2] and, besides, is sparingly distributed over S.E. Brazil, from Bahia and Minas Geraës to Rio Grande do Sul. I fail to discover any constant difference between four adults from Brazil (Lamarão, Bahia ; Victoria, S. Paulo ; Roça Nova, Serra do Mar, Paraná), and three others from Tucumán.[3]

Nisus poliogaster = Accipiter guttifer Hellm.[4]

Nisus poliogaster (nec Temminck)[5] ; L. & O., *Syn. Av.* i. p. 4 (Santa Cruz de la Sierra, Chiquitos : Bolivia) ; d'Orbigny, *Voyage*, p. 89 (Santa Cruz de la Sierra, Chiquitos).

Although I could not find any d'Orbignyan specimen in the Paris Museum, there can be hardly any doubt as to the proper identification of his *N. poliogaster*.

The short Latin diagnosis of the adult stage has been clearly drawn up from Temminck's plate 264, representing the type (and then only specimen) of *Astur poliogaster* ; for this species does not exist, even nowadays, in the French National Collection. The two examples obtained by Auguste de Saint-Hilaire in S.E. Brazil,[6] which d'Orbigny refers to *N. poliogaster*, prove on careful examination to be immature individuals of *Accipiter pileatus* (Temm.), well known as an inhabitant of that country.

We may, thus, safely conjecture that it was the taking of a similarly coloured bird that induced d'Orbigny to record " *N. poliogaster* " from Eastern Bolivia. The range of *A. pileatus*, however, does not extend so far west,[7] this species being replaced, in Bolivia and N.W. Argentine, by the allied though perfectly distinct *A. guttifer* Hellm., which, in juvenile plumage, is not easily recognisable. In fact, two young birds from Bolivia (Santa Cruz de la Sierra, and Torochito, prov.

[1] *Nisus vel Acc[ipiter] erythronemius* (G. R. Gray MS.) Kaup, *Contrib. to Ornith.* iii. 1850, p. 64 (1850—Bolivia, British Museum).—Kaup was the first to propose the name in valid form. *Accipiter erythronemia* Gray (*List Spec. Brit. Mus.* i. 1848, p. 70) is a pure nomen nudum. The spelling of the specific name is as given above ; afterwards it was arbitrarily altered to *erythrocnemis*.

[2] Lee, *Ibis*, 1873, p. 135.

[3] Baer's *Acc. ventralis* from Tapia (*Ornis*, 12, 1904, p. 229) is almost certainly referable to *A. erythronemius*.

[4] *Verhandl. Orn. Ges. Bayern*. 13, Heft 2, p. 200 (1917—Bolivia).

[5] *Falco poliogaster* Temminck, *Rec. Pl. col.*, livr. 45, pl. 264 (1824—" Brésil," coll. Natterer ; the type in the Leyden Museum is from Ypanema, S. Paulo ; cf. Pelzeln, *Zur Ornith. Bras.* i. 1867, p. 8, note 1).

[6] One (No. 511) was secured in August 1820 in Rio Grande do Sul, the other (No. 572) at S. Miguel, near S. João d'el Rei, W. Minas Geraës. Both wear the well-known juvenile plumage, having the under-parts buff, broadly spotted with blackish brown on throat, breast, and sides. The Minas specimen has the thighs pale rufous like the adults, but of a lighter tint ; while they are buff, spotted with blackish brown, in the southern bird.

[7] The records of *A. pileatus* from N. W. Argentine (Tucumán, Vipos) by Lillo (*Anal. Mus. Nac. B. Ayres*, 8, 1902, p. 203 ; *Revist. letr. y cienc. soc. Tucumán*, 3, 1905, p. 62) are most probably due to some mistake. The numerous Hawks I have seen from Tucumán, Salta, and Jujuy were all referable to *A. guttifer* Hellm. (= *A. guttatus* auct. nec Vieillot).

Mizque), and another from Tucumán (Los Vasquez), merely differ from the corresponding stage of *A. pileatus* in having the pileum less blackish and more conspicuously suffused with rufous-buff or whitish. I am, however, not sure whether this insignificant variation will hold good in a larger series.

A. guttifer Helbn. is confined to S. Bolivia (Santa Cruz, Mizque, Tatarenda) and the adjoining Argentine States of Jujuy, Salta, and Tucumán.[1]

Astur poliogaster (Temm.) is a very distinct species, not to be confounded in any way with either of the preceding. In addition to the different proportions of the toes its chief character consists of the total absence of rufous on the thighs, which are pale greyish like the remainder of the under-surface. For a long time the type in the Leyden Museum, an adult male procured by Natterer at Ypanema, near Sorocaba, in the Brazilian State of S. Paulo, remained the only known specimen of this rare Hawk.[2] Within the last ten years I have had the opportunity of examining two more, both marked as males. One was taken by A. de W. Bertoni on April 25, 1903, at Puerto Bertoni, Alto Paranà, S. Paraguay,[3] and belongs to the Museu Paulista ; while the other, preserved in the Museo Nacional of Buenos Ayres, had been shot by F. M. Rodriguez on August 21, 1912, at Santa Ana, Misiones, N.E. Argentine.[4] The three individuals show several differences, which may be tabulated as follows :

—	No. 1. ♂ ad. Ypanema, S. Paulo. Type of *F. poliogaster*.	No. 2. ♂ ad. Santa Ana, Misiones.	No. 3. ♂ ad. Puerto Bertoni, Alto Paraná, Paraguay.
Axillaries	—	light greyish	—
Under-wing coverts	plain white	white, sparingly spotted with black	broadly barred with black and white
Elongated feathers on sides of breast	—	unspotted light greyish	—
Under-parts	very pale (whitish) grey	very pale (whitish) grey	pale grey
Cheeks, auricular region, and ear coverts	sooty black, like pileum	pale greyish	light grey, passing to blackish slate on malar- and posterior auricular region
		Wing, 230 ; tail, 175 mm.	Wing, 235 ; tail, 191 mm.

With so few specimens in hand, it is, of course, impossible to explain the significance of the above variation. It should be noted, however, that Nos. 2 and 3 still exhibit some remains of immaturity, whereas the type appears to be completely adult. The juvenile plumage of *A. poliogaster* is yet unknown.

[1] The female secured by A. Ros on the Rio de Oro, Chaco Austral, and referred by Hartert (*Nov. Zool.* 16, 1909, p. 238) to *A. guttatus* auct., should be carefully re-examined.

[2] Whether the specimen in the Salvin-Godman Collection, said to be from the "Amazons Valley" (cf. Gurney, *Ibis*, 1881, p. 258), really belongs to *A. poliogaster* appears to me rather questionable.

[3] It is the specimen referred to as *Accipiter mirandollei* by Bertoni (*Anal. Cient. Parag.*, ser. 1, No. 3, 1904, p. 6), and again as *Astur poliogaster* by the same author (*Revista Instit. Parag.* 1907, p. 10).

[4] It is mentioned by Dabbene in *Bol. Soc. Physis*, i. 1914, p. 299.

Nisus pileatus = Accipiter pileatus (Temm.).

Nisus pileatus (Temm.)[1]; L. & O., *Syn. Av.* i. p. 4 (Corrientes); d'Orbigny, *Voyage*, p. 90 (Corrientes, 27° à 28° lat., "dans les bois qui bordent le Paraná, près du village d'*Itaty* et à *Iribucua*").

Although I have been unable to discover the specimen among the numerous Hawks in the skin collection at Paris, d'Orbigny's unmistakable description is certainly referable to the present species. It appears to have been based upon an immature bird, still retaining some rufous colour on the lower abdomen.

A. pileatus is confined to Eastern and Southern Brazil, Paraguay, and the adjacent Argentine State of Corrientes (Itaty, Iribucua). In Eastern Brazil it ranges from Piauhy and Bahia south to Rio Grande do Sul, west to Mattogrosso (Chapada). A breeding adult female from Sapucay, Paraguay, in the British Museum, is in every respect similar to Brazilian examples.[2] It is the only individual I have seen from that country, though this Hawk had already been recorded by Azara, s. No. 26, "*Esparvero azulejo.*"

Sparvius guttatus Vieillot,[3] based on Azara's No. 24, is *possibly* referable to the juvenile plumage of *A. pileatus*, as suggested by Bertoni.[4] But as there are several discrepancies in Azara's account which cannot well be reconciled with that bird, I do not advocate replacing Temminck's specific name, accompanied by an unmistakable description and figure, by Vieillot's rather obscure term. There is, however, not the slightest doubt that the latter had been quite erroneously employed for the Rufous-breasted Hawk of E. Bolivia and N.W. Argentine, which does not occur anywhere in the countries visited by Don Felix de Azara. I have, accordingly, provided for *Accipiter guttatus* auct. (nec Vieillot) the new term *Accipiter guttifer* Hellm.[5]

Astur magnirostris = { Rupornis magnirostris superciliaris (Vieill.).[6] / Rupornis magnirostris saturata (Sel. & Salv.).[7]

Astur magnirostris (nec Gmelin)[8]; L. & O., *Syn. Av.* i. p. 5 (Corrientes, Buenos Ayres, Yungas, Chiquitos, Moxos [Bolivia]); d'Orbigny, *Voyage*, p. 91 (Buenos Ayres, Santa Fé, Entrerios, Corrientes et Misiones; Bolivie (dans les montagnes et dans les plaines).

No. 1, ♀ ad. (skin): "d'Orbigny, juillet 1829, No. 56. Mâle. Buenos Ayres."—Wing, 280; tail, 190; bill, 23 mm. = *Rupornis m. superciliaris* (Vieill.).

No. 2, ♂ ad. (skin): "No. 79, Bolivie. d'Orbigny, 1834. D. 13."—Wing, 255; tail, 175; bill, 21½ mm. = *R. m. saturata* (Sel. & Salv.).

[1] *Falco pileatus* ("P. Max" MS.) Temminck, *Rec. Pl. col.*, livr. 35, pl. 205 (January 1823—"on doit la connaissance de cette espèce au prince de Neuwied qui l'a rapporté de ses voyages au Brésil"; the type in the Wied Collection is from the Rio Belmonte, South Bahia; cf. Wied, *Beitr. Naturg. Bras.* 3, i. 1830, p. 107; and Allen, *Bull. Amer. Mus. N.H.* ii. 1889, p. 267).

[2] Cf. also Chubb, *Ibis*, 1910, p. 71.

[3] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 10, p. 327 (1817—ex Azara, No. 24: Paraguay; = juv.).

[4] *Anal. Soc. Cient. Arg.* 75, 1913, p. 79, note 1; idem, *Fauna Parag.* 1914, p. 42, footnote.

[5] *Verhandl. Orn. Gesells. Bayern.* 13, Heft 2, 1917, p. 200.

[6] *Sparvius superciliaris* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 10, p. 328 (1817—ex Azara, No. 25: Paraguay; descr. ♂ juv.).—There can be no question as to the applicability of this name for the bird usually called *R. pucherani* (J. & E. Verr.) 1855. Azara most accurately describes the juvenile plumage, with buff superciliaries, striped throat, etc. The dimensions, together with what he says about the coloration of the upper-tail coverts and wings, render the identification absolutely certain.

[7] *Asturina saturata* Sclater & Salvin, *P.Z.S. Lond.* 1876, p. 357 (1876—Apollo & Tilotilo, Bolivia).

[8] *Falco magnirostris* Gmelin, *Syst. Nat.* 1, i. p. 282 (1788—ex Daubenton, *Pl. enl.* 464: Cayenne).

No. 3, ♀ juv. (mounted) : " Bolivie, Chiquitos, d'Orbigny, 1834, No. 8. *Ast. pucherani.* No. des galeries, 588."—Wing, 270 ; tail, 183 ; bill, 23 mm. = *R. m. saturata* (Scl. & Salv.).

The adult bird from Buenos Ayres is typical of the race we were accustomed to call *R. m. pucherani.* The under-parts, posterior to the blackish-brown throat, are light buff, with narrow, but fairly regular cross-bands of pale rufescent brown, becoming nearly evanescent on the tail coverts ; the basal portion of the wings is clear ochreous on primaries, more cinnamon-rufous on secondaries ; the tail light rufous, broadly banded with blackish.

The adult Bolivian example (No 2) differs from the preceding in distinctly rufous chest, much darker rufous-brown, as well as broader barring on lower breast and abdomen, and by the much brighter cinnamon-rufous colour of tail and basal portion of quills. This bird answers exactly to the description of *R. saturata.* An adult male from Torochito, prov. Mizque, in the Berlepsch Collection, is perfectly similar.

The male from the Chiquitos plains (No. 3) and another (unsexed) bird from Santa Cruz de la Sierra, E. Bolivia, are in the well-known juvenile plumage, viz. pileum and nape largely mixed with white, throat and chest whitish, longitudinally striped with blackish brown, etc. Both differ from *R. m. superciliaris* of Paraguay and Argentine, and *R. m. natterceri* of Southern Brazil, in corresponding plumage, by having the tail much more strongly suffused with rufous. I have little hesitation in assigning them to *R. m. saturata,* though, of course, adult birds from Eastern Bolivia should be examined.

The various races of this Hawk will be dealt with at length in another place.

Astur unicinctus = Parabuteo unicinctus unicinctus (Temm.).

Astur unicinctus (Temm.)[1]; L. & O., *Syn. Av.* i. p. 5 (Corrientes, rep. Argentina) ; d'Orbigny, *Voyage,* Ois., p. 93 (Corrientes ; Valle Grande, Bolivie).

No. 1, ♂ ad. (mounted) : " De Valle Grande, Bolivie, par d'Orbigny, 1834. Mâle."

This specimen agrees well with the type in the Paris Museum.

P. u. unicinctus is widely diffused throughout South America, ranging as far south as Chili and Buenos Ayres (Lomas de Zamora).

Astur nitidus = Asturina nitida pallida Todd.[2]

Astur nitidus (nec Latham)[3] ; L. & O., *Syn. Av.* i. p. 5 (Chiquitos, Bolivia) ; d'Orbigny, *Voyage,* Ois., p. 95 (Chiquitos).

No. 1, ♀ ad. (mounted) : " de la Bolivie (Chiquitos), 1834, par d'Orbigny. Femelle."

A second example, adult male, secured by G. Garlepp at Santa Cruz de la Sierra, on June 8, 1889, I have examined in the Berlepsch Collection. Both differ from Guianan, Venezuelan, and Brazilian specimens in having the upper parts a shade lighter, purer bluish grey, and the dark barring very slightly narrower. Todd has established a new subspecies upon an example from the

[1] *Falco unicinctus* Temminck, *Rec. Pl. col.,* livr. 53, pl. 313 (1824—Boa-Vista, south of the Rio Paranahyba, west Minas Geraës ; A. de Saint-Hilaire coll., Paris Museum).

[2] *Proc. Biol. Soc. Wash.* 28, p. 170 (1915—Rio Surutu, E. Bolivia).

[3] *Falco nitidus* Latham, *Ind. Orn.* i. p. 41 (1790—Cayenne).

same district; yet the small divergencies, which are very trifling indeed, should be confirmed by a good series until the claims of *A. n. pallida* to recognition can be regarded as satisfactory.

Macagua cachinnans = Herpetotheres cachinnans cachinnans (L.).

Macagua cachinnans (L.)[1]; L. & O., *Syn. Av.* i. p. 5 (rep. Boliviana); d'Orbigny, *Voyage*, Ois., p. 96 (Santa Cruz de la Sierra, Moxos, Chiquitos).

No d'Orbignyan skin in the Paris Museum, nor any other from Bolivia seen by me. As, however, birds from Western Mattogrosso agree well with others from Cayenne, it is hardly doubtful that those found in E. Bolivia also belong to *H. c. cachinnans*, and *not* to the small form with more richly coloured under-parts, which has lately been separated as *H. cachinnans fulvescens* Chapm.[2]

Milvus leucurus = Elanus leucurus (Vieill.).

Milvus leucurus Vieill.[3]; L. & O., *Syn. Av.* i. p. 5 (Buenos Ayres, rep. Chiliana); d'Orbigny, *Voyage*, p. 98 (Buenos Ayres et au Chili).

No d'Orbignyan specimen of the White-tailed Kite in the Paris Museum.

Milvus furcatus = Elanoides forficatus (Linn.).[4]

Milvus furcatus (Linn.)[5]; L. & O., *Syn. Av.* i. p. 5 (Chiquitos, Moxos, E. Bolivia); d'Orbigny, p. 100 (Moxos et Chiquitos).

I could not discover any example of d'Orbigny's in the Museum.

Ictinia plumbea (Gm.).

Ictinia plumbea ("Vieill.")[6]; L. & O., *Syn. Av.* i. p. 6 (Moxos, Chiquitos); d'Orbigny, p. 101 (same localities).

No. 1, adult (mounted): "de Chiquitos, Bolivie, 1834, par d'Orbigny."

Buteo busarellus = Busarellus nigricollis (Lath.).[7]

Buteo busarellus ("Shaw")[8]; L. & O., *Syn. Av.* i. p. 6 (Corrientes, rep. Argentina; Moxos, Chiquitos, Bolivia); d'Orbigny, p. 103 (same localities).

No specimen of d'Orbigny's preserved in the Paris Museum.

Buteo rutilans = Heterospizias meridionalis (Lath.).[9]

Buteo rutilans "Licht."[10]; L. & O., *Syn. Av.* i. p. 6 (Corrientes, Buenos Ayres, Chiquitos, Moxos); d'Orbigny, p. 104 (distribution in general).

I have not succeeded in tracing any of d'Orbigny's examples in the Parisian Collection.

[1] *Falco cachinnans* Linnaeus, *Syst. Nat.* 10, i. p. 90 (1758—ex Rolander: "America méridionalis," hab. subst. Surinam, auct. Berlepsch, *Nov. Zool.* 15, 1908, p. 290).

[2] *Bull. Amer. Mus. N.H.* 34, p. 638 (1915—Alto Bonito, Antioquia, Colombia).

[3] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 20, p. 563 [errore 556] (1818—ex Azara, No. 36: near San Ignazio, Santa Rosa, and Bobi, also on the banks of the Paraguay between Neembucu and Remolinos, etc.).

[4] *Falco forficatus* Linnaeus, *Syst. Nat.* 10, i. p. 89 (1758—ex Catesby: Carolina).

[5] *Falco furcatus* Linnaeus, *Syst. Nat.* 12, i. p. 129 (1766—ex Catesby: Carolina).

[6] *Falco plumbeus* Gmelin, *Syst. Nat.* 1, i. p. 283 (1788—ex Latham: Cayenne).

[7] *Falco nigricollis* Latham, *Ind. Orn.* i. p. 35 (1790—"Cayana").

[8] *Falco busarellus* Daudin, *Traité d'Orn.* 2, p. 168 (1800—ex Levaillant, *Ois. d'Afr.* i. p. 84, pl. 20: Cayenne).

[9] *Falco meridionalis* Latham, *Ind. Orn.* i. p. 36 (1790—"Cayana").

[10] *Buteo rutilans* Temminck, *Rec. Pl. col.*, livr. 5, pl. 25 (1820—"Brésil et Guyane").

Buteo tricolor Lafr. & Orb. = **Buteo erythronotus** (King).[1]

Buteo tricolor Lafresnaye & d'Orbigny,[2] *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 6 (1837—Patagonia [rep. Chiliana]; prov. Pazenci [rep. Boliviana]; descr. orig. ♂♀ ad., juv.); d'Orbigny, *Voyage*, Ois., p. 106. pl. 3 (♂♀) (Patagonie, près du Rio Nègro), au delà du 40ᵉ degré lat. sud; Santiago du Chili; près de La Paz, à 4,000 m.).

No. 1, "♂" ad. (mounted): "♂ ad. d'Orbigny, février 1831, No. 35 Patagonie. *Buteo tricolor* d'Orb. *Type.*"

No. 2, "♀" ad. (mounted): "Patagonie. d'Orbigny, 1831. *B. tricolor* d'Orb. *Type.*"

Nos. 3, 4, juv. (mounted): "Patagonie, février 1831. d'Orbigny."

The first-named specimen is an adult male, exactly like figure 1 of plate 3 in d'Orbigny's work. No. 2 is the original to figure 2, with rufous nape and upper back. The two remaining examples are in the well-known varied juvenile plumage as correctly described by Ridgway.[3] As type locality of *B. tricolor* we have, accordingly, to consider the *Rio Negro*, Patagonia, where the adults of the species were obtained.

Besides the above, the Paris Museum possesses a fifth mounted specimen, labelled "Bolivie, La Paz, d'Orbigny, 1834, (76), No. 192," with the back and under-parts strongly rufescent. It is apparently the bird described by d'Orbigny (p. 107) in the passage "dans les premières années . . ." Compared with No. 1 to 4, it has a much shorter tail and relatively longer wings, which extend considerably beyond the tips of the rectrices. Notwithstanding its very rufous coloration, I am inclined to refer it to *B. albicaudatus albicaudatus* Vieill.,[4] although the occurrence of this Buzzard at the altitude of La Paz seems rather strange. At all events the examination of adult examples from this locality is extremely desirable.

Buteo unicolor Lafr. & Orb. = **Buteo erythronotus** (King).

Buteo unicolor Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 7 (1837—prov. Ayupayacensi, rep. Boliviana; descr. orig.); d'Orbigny, *Voyage*, Ois., p. 109 (une seule fois près de Palca, prov. Ayupaya, dept. Cochabamba).

No. 1, juv. (mounted): "Bolivia, Chiquitos, d'Orbigny, 1834, No. 78. *Buteo unicolor* d'Orb. *Type.* No. 200."

This bird is of a uniform blackish-brown colour; the rectrices show indistinct cross-bands of a paler brown, and the inner web of the remiges is barred with whitish. In spite of Gurney's contrary opinion,[5] I am convinced that it is merely a melanistic young bird of *B. erythronotus*, with which it precisely agrees in structure and proportions.[6] A similar melanistic phase is not unfrequently met with in the allied *B. swainsoni* Bonap. of North America. The locality "Chiquitos" on the label is evidently a pen-slip.

[1] *Haliaeetus erythronotus* King, *Zool. Journ.* 3, No. 11, p. 424 (1827—Straits of Magellan; descr. ♀ ad.).

[2] The authors quote "d'Orb., *Voyage*, Oiseaux, pl. 3," which, thus, was probably published earlier.

[3] *Proc. Ac. N. Sci. Philad.* for 1875, p. 97.

[4] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 4, p. 477 (1816—"l'Amérique méridionale").

[5] *Ibis*, 1876, p. 69, 242.

[6] What Salvin's *B. unicolor* from British Guiana (*Ibis*, 1886, p. 72) may be I cannot imagine.

Circus cinereus Vieill.

Circus cinereus Vieill.[1]; L. & O., *Syn. Av.* i. p. 7 (prov. Corrientes, Buenos Ayres et Patagonia [rep. Argentina; "rep. Boliviana"—*errore* !]); d'Orbigny, *Voyage*, Ois., p. 110 (Corrientes, Buenos Ayres, "en Patagonie jusqu' au 52e degré lat. sud"; Chili).

No. 1, ♂ ad. (mounted): "de Buenos Ayres, par d'Orbigny, 1829."

This Harrier ranges over the south-western portion of the South American continent, from the central and southern districts of Peru, and from Eastern Bolivia to the Straits of Magellan and the Falkland Islands. I do not find any reliable records of its having ever been obtained on Brazilian territory.

Circus macropterus = Circus buffoni (Gm.).[2]

Circus macropterus Vieill.[3]; L. & O., *Syn. Av.* i. p. 7 (Buenos Ayres, prov. Chiquitos, rep. Boliviana).
Buteo macropterus d'Orbigny, *Voyage*, p. 112 ("à la frontière du Paraguay," Buenos Ayres, et Chiquitos).

No longer in the Parisian collections.

Falco femoralis = Falco fusco-coerulescens fusco-coerulescens Vieill.[4]

Falco femoralis Temm.[5]; L. & O., *Syn. Av.* i. p. 7 (Paraguay, Corrientes, Buenos Ayres, Patagonia [rep. Argentina]; Chuquisaca, Chiquitos, Moxos, rep. Boliviana); d'Orbigny, *Voyage*, p. 116 (Buenos Ayres, Corrientes, Moxos, Chiquitos, Chuquisaca).

No. 1, (♂) ad. (skin): "d'Orbigny, juillet 1829. No. 64. Buenos-Ayres. femelle. No. 15."—Wing, 246; tail, 160; bill — mm.

No. 2, juv. (skin): "d'Orbigny, juillet 1829. No. 62. Corrientes, No. 246. Jeune."—Wing, 228; tail, 150; bill, 16 mm.

Besides, there are two mounted specimens labelled "d'Orbigny, 1834, de Bolivie."

The first-named is an adult bird agreeing in every particular with a male from Paraguay (Villa Concepcion), in the collection of the Munich Museum. This plumage is well depicted on plate 343 of Temminck's *Planches coloriées*.

The second is a young individual and, except for its much smaller size, corresponds exactly to a female from Western Minas Geraës (Pocos de Caldas). This difference is no doubt sexual, d'Orbigny's bird being evidently a young male. The juvenile plumage of this Hawk has been well described and figured by Temminck.

F. f. fusco-coerulescens is widely diffused in tropical America, ranging southwards as far as Patagonia and Tierra del Fuego.

[1] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 4, p. 454 (1816—ex Azara, No. 32: Paraguay and Rio de La Plata).

[2] *Falco Buffoni* Gmelin, *Syst. Nat.* 1, i. p. 277 (1788—ex Latham: Cayenne).—Vieillot's generally accepted term *C. maculosus* is long antedated by Gmelin's *F. buffoni*, as pointed out by the late Count Berlepsch (*Nov. Zool.* 15, 1908, p. 290).

[3] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 4, p. 458 (1816—ex Azara, No. 31: Paraguay et La Plata).

[4] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 90 (1817—ex Azara, No. 40: Paraguay).

[5] *Rec. Pl. col.*, livr. 21, pl. 121 (1822—"le Brésil," coll. Natterer, sc. prov. São Paulo; = juv.)

Falco sparverius = Falco sparverius subsp.

Falco sparverius (nec Linnaeus)[1]; L. & O., *Syn. Av.* i. p. 8 (Corrientes, Patagonia, rep. Argentina; La Paz, Chuquisaca, Chiquitos, rep. Boliviana); d'Orbigny, *Voyage*, p. 119 (Corrientes, Entrerios, Sta Fé, Buenos Ayres, Patagonia (jusqu' au 42 degré lat. sud); Chiquitos, Chuquisaca [12,000 ft.], Chili . . . et une partie du Pérou").

No Sparrow Hawks from d'Orbigny's travels in the Paris Museum.

The birds occurring in the north-eastern provinces of Argentine (from the Rio Negro up to the frontiers of Paraguay) I am unable to separate from *F. sparverius australis* (Ridgw.),[2] of Brazil.

Those found in Chili pertain to *F. sparverius cinnamominus* Swains.,[3] a fairly well-marked race.

Bolivian skins I have not seen; but according to a note supplied by the late Count Berlepsch they would appear to be very close to the Chilian form; while Cory[4] refers a single male from Yungas, N.W. Bolivia, to his *C. sparveria peruviana*, a form not recognised, however, by Chapman.[5] The geographic races of the American Sparrow Hawk are much in need of careful revision, although Chapman's recent study[6] has enlightened us on various points. On the other hand, I feel somewhat doubtful whether Cory[7] has improved matters by creating an additional number of more or less unstable local forms.

Diodon bidentatus = Harpagus bidentatus (Lath.).

Diodon bidentatus (Lath.)[8]; L. & O., *Syn. Av.* i. p. 8 (prov. Chiquitos, rep. Boliviana); d'Orbigny p. 122 ("non loin de la mission de *Santo-Corazón*," prov. Chiquitos, E. Bolivia).

No. 1, ♂ ad. (mounted): "de Chiquitos, Bolivie, par d'Orbigny, 1834. Mâle."

This Guianan species ranges as far south as Western Mattogrosso (Dourado, not far from the Rio Guaporé) and E. Bolivia (Santo Corazon de Chiquitos). Besides d'Orbigny's there is no other Bolivian record as far as I am aware.

Noctua torquata = Pulsatrix p. perspicillata (Lath.).[9]

Noctua torquata (Daud.)[10]; L. & O., *Syn. Av.* i. p. 8 (Santa Cruz de la Sierra, rep. Boliviana); d'Orbigny, *Voyage*, p. 126 ("Santa Cruz . . .; nous l'avons vue dans la province de Moxos").

No longer in the Parisian collections. An adult from Santa Cruz in the British Museum and others from the upper stretches of the Rio Madeira agree perfectly with Guianan skins.

[1] *Syst. Nat.* 10, i. p. 90 (1758—ex Catesby: Carolina).

[2] *Tinnunculus sparverius* var. *australis* Ridgway, *Proc. Ac. N. Sci. Philad.* December 1870, p. 149 (1871—new name for *F. gracilis* Swainson (nec Lesson), *Anim. in Menag.* 1838, p. 281: [prov. Bahia, E. Brazil]).

[3] *Falco cinnamominus* Swainson, *Anim. Menag.* p. 281 (1838—Chili).

[4] *Field Mus. Nat. Hist.*, Publ. 183, 1915, p. 320.

[5] *Bull. Amer. Mus. N.H.* 34, 1915, p. 380.

[6] *L. cit.* 34, 1915, pp. 372–382.

[7] *Field Mus. Nat. Hist.*, Publ. 183, 1915, pp. 311–335.

[8] *Falco bidentatus* Latham, *Ind. Orn.* i. p. 38 (1790—"Cayana").

[9] *Strix perspicillata* Latham, *Ind. Orn.* i. p. 58 (1790—ex Latham, *Gen. Syn. Birds*, Suppl. p. 50, pl. cvii.: Cayenne; = juv.).

[10] *Strix torquata* Daudin, *Traité élem. d'Orn.* ii. p. 193 (1800—ex Levaillant, *Ois. d'Afr.* i p. 169, pl. 42: Surinam).

The typical race of the Spectacled Owl ranges from the Isthmus of Panamá to the Amazons and its tributaries, as far south as the head-waters of the Rio Madeira and the eastern slopes of the Bolivian Andes, in the vicinity of Santa Cruz de la Sierra.

In Eastern Brazil (from Bahia to Rio Grande do Sul) it is represented by the larger, paler *P. perspicillata pulsatrix* (Wied),[1] whose distinguishing characters have been clearly set forth by the late Count Berlepsch.[2]

P. melanota melanota (Tsch.) and *P. melanota sharpei* Berl., treated by Ridgway [3] as subspecies of the Spectacled Owl, are, of course, specifically distinct, being immediately recognisable by their bare toes and several other features. The Brazilian form (*P. m. sharpei*) occurs in the same districts where *P. p. pulsatrix* is met with.

Noctua ferox = { **Glaucidium brasilianum brasilianum** (Gm.).[4] / **Glaucidium nanum** (King).[5] }

Noctua ferox ("Vieill.")[6]; L. & O., *Syn. Av.* i. p. 8 (Patagonia; prov. Chiquitos, rep. Boliviana); d'Orbigny, *Voyage*, p. 127 ("mission de San-Xavier, prov. Chiquitos; prov. Moxos, en Patagonie, jusqu' au 41e degré lat. sud").

Although I have not succeeded in discovering any d'Orbignyan specimen in the collection of the Paris Museum, there can be hardly any doubt as to the proper identification of his *Noctua ferox*.

Birds from Eastern Bolivia (vicinity of Santa Cruz de la Sierra) which I have examined do not differ in any respect from others taken in Eastern Brazil and are unquestionably referable to *G. b. brasilianum*.

The little Owls met with in Patagonia most certainly belonged to *G. nanum* (King),[7] which was obtained by Hudson in the very same district, viz. on the banks of the Rio Negro. The Munich Museum, more recently, received an adult male from Neuquen, through Emil Weiske. The identity of the Patagonian birds with this species is also suggested by the following passage in d'Orbigny's work: "nous avons eu plusieurs individus qui paraissaient femelles, différant de ceux figurés par Temminck, en ce qu'ils n'avaient pas quatre rangs de taches blanches espacées dessinant des bandes étroites sur la queue; ils portaient au contraire, huit ou neuf lignes rousses. . . ." The rufous-banded tail is just one of the essential characteristics of *G. nanum*, whose range is confined to the southern portion of South America, from Chili, W. Argentine (Cordova, Tucumán),[8] and the Patagonian Rio Negro, down to the Straits of Magellan and Tierra del Fuego.

[1] *Strix pulsatrix* Wied, *Reise Brasil.* i., ed. in 4°, p. 366 (ed. in 8°, p. 362) (1820—"Ilha do Chave im Rio Belmonte," S. Bahia, E. Brazil).

[2] *Bull. B.O.C.* 12, 1901, pp. 4–5.

[3] *Bull. U.S. Mus.* No. 50, Part 6, 1914, p. 755.

[4] *Strix brasiliana* Gmelin, *Syst. Nat.* 1, i. p. 289 (1788—ex Brisson: ex Maregravo: E. Brazil).

[5] *Strix nana* King, *Zool. Journ.* iii. No. 11, p. 427 (1827—Port Famine, Straits of Magellan).

[6] *Strix ferox* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 7, p. 22 (1817—ex Azara, No. 49, Paraguay).—Azara's "Caburé" is hardly identifiable. The description might, with an equal degree of certainty, be referred to either *G. minutissimum* (Wied), or *G. b. brasilianum* (Gm.), though the dimensions point rather to the latter species.

[7] According to Schlegel (*Mus. Pays-Bas, Striges*, p. 31), the Leyden Museum possesses an adult from d'Orbigny's voyage obtained in Chili, a locality not mentioned, however, by that traveller.

[8] According to Lillo (*Revist. letr. y cienc. soc. Tuc.* 3, 1905, p. 61). No Tucumán example seen by me.

It may be merely a geographical race of *G. b. brasilianum*; but our present knowledge of the neotropical Pygmy Owls is not sufficiently advanced to allow the solution of that intricate question.

Noctua cunicularia = { **Speotyto cunicularia cunicularia** (Mol.).[1] / **Speotyto cunicularia grallaria** (Temm.).[2] }

Noctua cunicularia (Mol.)[3]; L. & O., *Syn. Av.* i. p. 8 (prov. Buenos Ayres, Patagonia, rep. Argentina; rep. Chiliana); d'Orbigny, *Voyage*, p. 128 (Banda Oriental; prov. Corrientes, Entrerios, Santa Fé, Buenos Ayres, Patagonia; Chili; Chiquitos).

No. 1, "♀" ad. (mounted): "de Chiquitos, par d'Orbigny, 1834."

No. 2, adult (skin): "d'Orbigny, juillet 1829. Misiones. No. 67."—Wing, 175; tail, 82 mm.

Under the name *N. cunicularia*, several geographic races were included by the authors of the *Synopsis*, as well as by d'Orbigny himself in the ornithological portion of his work.

The Chilian bird, characterised by its very dark coloration and blackish-brown barring of under-parts, is typical *S. c. cunicularia* (Mol.).

The skin from Misiones, as well as specimens from Bahia Blanca, Buenos Ayres, Neuquen, and the Argentine Chaco (Rio de Oro), in the Munich Museum, I am unable to separate from the S. Brazilian form of the Burrowing Owl which I have shown[3] to be entitled to the name *S. c. grallaria* (Temm.). I admit that single examples are not readily distinguishable from the typical race; but as a rule the Brazilian form may be recognised by the lighter, more brownish colour above and much paler, rufous-brown (instead of blackish-brown) markings underneath. *S. c. grallaria* has recently been redescribed by Cory[4] as *Speotyto cunicularia beckeri*. Although not expressly stated so in the original description, there can be little doubt that *S. grallaria* Temm. was based upon one of Natterer's specimens from S.W. S. Paulo or E. Paraná. Birds from Joazeiro, Bahia, are precisely similar to two Nattererian skins from Faz. do Rio Verde (near Faxina, S. Paulo), and Curytiba in the Munich Museum. Consequently Cory's name becomes a pure synonym of *S. c. grallaria*. In the forest-covered Pará district, which Cory suggests as type locality of *S. grallaria*,[5] the Burrowing Owl—peculiar to the open campos—is not found at all. Specimens from the Rio Branco, as well as others from British Guiana and Venezuela, appear to me indistinguishable from *S. cunicularia brachyptera* Richm., from Margarita Island.

D'Orbigny's remark that "les individus, que nous avons tués en Patagonie, sont beaucoup plus blancs que ceux de Buenos Ayres," evidently refers to young birds which have, indeed, much less dusky spotting below than the adults.

Having seen but a single adult from Valle Grande, I am rather dubious as to which form the Bolivian Burrowing Owl should be referred. In coloration it seems nearest to *S. c. grallaria*, but is much larger than any other specimen

[1] *Strix Cunicularia* Molina, *Saggio Stor. Nat. Chili*, pp. 263, 343 (1782—Chili).

[2] *Strix grallaria* Temminck, *Rec. Pl. col.*, livr. 25, pl. 146 (1822—"Brésil; Musées des Pays-Bas, de Vienne, et de Londres"; the type was no doubt one of the specimens obtained by Natterer in south-west *São Paulo* or eastern *Paraná*, while travelling from Faxina to Curytiba).

[3] *Abhandl. Bayer. Ak. Wiss.* ii. cl., vol. 22, No. 3, 1906, p. 574.

[4] *Field Mus. Nat. Hist.*, Publ. No. 182, p. 299 (1915—São Marcello, Rio Preto, Bahia).

[5] Spix (*Av. Bras.* i. 1824, p. 21) mentions as localities of *S. grallaria* the campos of Minas Geraẽs and Pará; but the latter is doubtless a pen-slip for *Bahia*.

examined by me, the wing measuring 193, the tail 91½ mm. Unfortunately I am not acquainted with any of the several Peruvian races recognised by authors.

A monographic study of the local variation of this species would be a very useful piece of work.

Scops choliba = Otus choliba choliba (Vieill.).

Scops choliba (Vieill.)[1]; L. & O. *Syn. Av.* i. p. 8 (Corrientes, rep. Argentina; Chiquitos, rep. Boliviana); d'Orbigny, *Voyage*, p. 132 (Corrientes, jusqu' au 30 degré lat. sud; Chiquitos).

No. 1, adult (skin): "Chiquitos, No. 828. D'Orbigny, 1834. *S. choliba.*"

A very worn specimen in the greyish phase.

About the nomenclature and geographic variation of this Owl see Berlepsch, *Bull. B.O.C.* 12, 1901, pp. 8–10.

Otus brachyotos = Asio flammeus flammeus (Pont.).[2]

Otus brachyotos "Linn."[3]; L. & O., *Syn. Av.* i. p. 9 (Patagonia, rep. Chiliana et Boliviana); d'Orbigny, p. 134 ("sur les côtes maritimes de la Patagonie; vers le 42° degré de lat. sud, au-delà du Rio Nègro; . . . Chili, sur les montagnes; au sommet des Andes, près de Tacora, dans la république du Pérou, et sur tout le plateau élevé de la Bolivie").

No d'Orbignyan examples in Paris Museum. In agreement with American ornithologists, I am unable to separate the Short-eared Owl of the new world from the European bird.

Strix perlata = Tyto alba perlata (Licht.).

Strix perlata Licht.[4]; L. & O., *Syn. Av.* i. p. 9 (tota America meridionali); d'Orbigny, p. 135 ("Rio de Janeiro au Brésil; Montevideo, Maldonado, sur les rives de La Plata, à Buenos Ayres, sur les bords du Rio Négro, en Patagonie, dans les provinces riveraines du Paraná, celles de Santa Fé, d'Entrerios, de Corrientes, au Paraguay, . . . dans toute la république de Bolivie, sur les versants des Andes, . . . au sein des provinces Santa Cruz de la Sierra, de Chiquitos, et de Moxos . . .").

I have not found any specimen of d'Orbigny's in the Parisian Collections.

Bubo magellanicus = Bubo virginianus nacurutu (Vieill.).[5]

Bubo magellanicus Gm.[6]; L. & O., *Syn. Av.* i. p. 9 (Corrientes, rep. Chiliana, Boliviana et Peruviana; Patagonia); d'Orbigny, p. 137 ("à la frontière du Paraguay, sur les rives du Paraná, jusqu' à Buenos Ayres, et encore bien plus au sud, en Patagonie, sur les rives du Rio Nègro, au 41° degré de latitude sud; puis . . . dans la république de Bolivie, dans les provinces de Chiquitos et de Moxos, jusqu' au 12° degré sud").

No d'Orbignyan example in the Paris Museum. The localities "Chili and Peru," neither of which is mentioned in the ornithological portion of the *Voyage*,

[1] *Strix choliba* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 7, p. 39 (1817—ex Azara, No. 48: Paraguay).

[2] *Strix flammea* Pontoppidan, *Danske Atlas*, i. p. 617, pl. 25 (1763—Sweden).

[3] *Strix brachyotus* J. R. Forster, *Philos. Trans.* 62, p. 384 (1772—Severn River, Hudson's Bay).

[4] *Strix perlata* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 59 (1823—Brazil).

[5] *Strix nacurutu* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 7, p. 44 (1817—ex Azara No. 42: Paraguay).—If we reject the term *Bubo magellanicus* Gmelin on the ground of its having been merely proposed as a varietal name under *Bubo bubo* (see Oberholser, *Sci. Bull. Mus. Brooklyn Inst.* i. No. 14, 1908, p. 373), it cannot be quoted from Daudin (*Traité élem. d'Ornith.* ii. 1800, p. 210) either, for this author also includes it as "Variété F." of the "Grand Duc," under his *Strix bubo.*

[6] *Syst. Nat.* 1, i. p. 286 (1788—ex Daubenton, *Pl. enl.* 385: "Terres Magellaniques").—See footnote 1.

were no doubt due to a *lapsus calami*. Our knowledge of the South American races of the Horned Owl is far from satisfactory ; but the scanty material existing in museums does not admit an attempt towards the solution of that intricate problem.

Laniagra guyanensis = { **Cyclarhis**[1] **ochrocephala** Tsch.[2]
C. gujanensis cearensis Baird.[3]
C. gujanensis viridis (Vieill.).[4]

Laniagra guyanensis (errore !) ; L. & O., *Syn.* i. p. 9 (Corrientes, rep. Argentina, et rep. Boliviana) ; d'Orbigny, *Voyage*, p. 160 (Corrientes ; Chiquitos, Yungas, Ayupaya, Rio Grande ; Bolivia).

No. 1, adult (mounted) : " No. 9546, Corrientes (Argentine). D'Orbigny. 1829. No. 88. *Cychloris viridis* V."—al. 77 ; c. 69 ; r. 17 mm. = *Cyclarhis ochrocephala* Tsch.

No. 2, adult (skin) : " D. 234, de Chiquitos (Bolivie). No. 98, D'Orbigny. 1834. *Laniagra guyanensis* d'O."—al. 75½ ; c. 62 ; r. 16¾ m. = *C. gujanensis cearensis* Baird.

No. 3, adult (skin) : " D. 234, par d'Orbigny, 1834. No. 98."—al. 75, c. 61 + x ; r. 17 mm. = *C. gujanensis cearensis* Baird.

No. 4, adult (mounted) : " No. 9544. Bolivie, Yungas. D'Orbigny, 1834. No. 234. *C. viridis*."—al. 86 ; c. 77 ; r. 18 mm. = *C. gujanensis viridis* (Vieill.).

No. 5, adult (mounted) : " No. 9545. Bolivie, Yungas. D'Orbigny, 1834. No. 98. *C. viridis*."—al. 81 ; c. 73 ; r. 17⅓ mm. = *C. gujanensis viridis* (Vieill.)

No. 1 is a typical *ochrocephala*, having the bill uniform pale brown (without blackish spot at base of lower mandible), the whole pileum strongly washed with ochreous brown, and the deep ferruginous superciliary stripe terminating above the posterior border of the eye. It agrees perfectly with specimens from Southern Brazil (São Paulo, Rio Grande do Sul) and others obtained in the Eastern Argentine provinces (Entrerios, Buenos Ayres).

The specimen from Chiquitos (plains of Eastern Bolivia) and No. 3, which, according to the registers of the Paris Museum, is from the same district, are referable to the small-billed, short-tailed race which inhabits the dry, elevated plateau of Brazil (from Bahia to Mattogrosso), and the correct name of which we have shown to be *C. gujanensis cearensis*. The two Bolivian skins do not differ in the least from the Brazilian ones.

The two examples, Nos. 4, 5, secured in the highlands of Central Bolivia. (Yungas), represent the larger, stout-billed form *C. gujanensis viridis* which ranges through the western Andean provinces of Argentine as far south as Paraguay, Santa Fé, and Cordoba. There are no specimens from Ayupaya and Rio Grande in the Paris Museums, but others obtained in the same general region

[1] *Cyclarhis* is the spelling of the name, when first introduced into literature by Swainson (*Zool. Journ.* i. No. 3, October 1824, p. 294). In subsequent publications Swainson variously spelt it *Cyclorhis* (*Zool. Journ.* iii. 1827, p. 162), *Cyclaris* (*Classif. Birds*, ii. 1837, p. 14), and *Cyclarhis* (*Ornith. Draw.* Part 5, 1840, pl. 58).

[2] *Cyclarhis ochrocephala* Tschudi, *Arch. f. Naturg.* 11, i. p. 362 (1845—descr. and hab. part : " Brasilia merid. et Bonae Aeres ").

[3] *Cyclorhis cearensis* Baird, *Review Amer. Birds*, i. p. 391 (1866—Ceará, N.E. Brazil).

[4] *Saltator viridis* Vieillot, *Tabl. enc. méth.* ii. p. 793 (1822—ex Azara, No. 89 : Paraguay).

(Samaipata, Santa Cruz de la Sierra) by G. Garlepp, which I have examined in the Berlepsch Collection, agree well with those from Argentine localities.

The ranges and characters of *C. g. cearensis* and *C. g. viridis* I have discussed at length in another connection,[1] and need not dwell further on this subject.

C. ochrocephala, which, on account of its uniform brownish bill, short superciliaries, and other characters, I regard—at least provisionally—as specifically distinct, inhabits S.E. Brazil and the adjoining Argentine provinces Misiones, Entrerios, Corrientes, and Buenos Ayres. The most northerly localities from which I have seen specimens are Victoria, State Espirito Santo, Vargem Alegre (near Marianna), and S. Francisco, in the Serra d'Espinhaço, State Minas Geraës. From there it ranges through Rio de Janeiro, São Paulo, and Paraná, to Misiones, Uruguay, and the vicinity of Buenos Ayres. It has also been met with in Entrerios (La Soledad; C. B. Brittain coll., Tring Museum), and Corrientes (d'Orbigny; Santo Tomé, E. White coll., Tring Museum), on the left bank of the Paraná; but does not appear to cross to the right side of that stream, where its place is evidently taken by *C. gujanensis viridis*, which we have from Ocampo and Mocovi, prov. Santa Fé, coll. Venturi.

It is seen from the preceding that D'Orbigny's examples are referable to three different forms. The true *C. gujanensis gujanensis* (Gm.),[2] however, is very distinct, with its restricted, greenish-yellow chest, greyish belly, etc. It occurs in the Guianas and in Amazonia, from Pará to Northern Peru.

Vireo virescens = Vireo chivi chivi (Vieill.).[3]

Vireo virescens (errore !); L. & O. *Syn. Av.* i. p. 9 (Corrientes, rep. Argentina; rep. Boliviana).
Vireo olivaceus (errore !); d'Orbigny, *Voyage*, p. 162 (Corrientes; Moxos, Chiquitos, Yungas, Yuracarès: Bolivia).

No. 1, ♀ ad. (skin): "D. 437, Mojos (Bolivie). D'Orbigny, 1834. No. 206."—al. 69; c. 51; r. 13½ mm.

No. 2, ad. (skin): "d'Orbigny, juillet 1829. No. 90. Corrientes. *Vireo virescens* Vieill."—al. 70½; c. 55; r. 14 mm.

The dimensions of these specimens fall well within the average of a series from Paraguay, Argentine (Buenos Ayres), and Southern Brazil. In coloration, too, they are entirely typical. The Corrientes bird has a rather large bill, but is matched in that respect by some Brazilian skins. The geographic variation of this species will be fully dealt with by Hellmayr and Seilern in their paper on the "Ornithology of Trinidad and Tobago."

Both of d'Orbigny's examples have, of course, no relation to the North American *V. virescens* Vieill.,[4] which is a pure synonym of *V. olivaceus* auct.

[1] *Nov. Zool.* xv. 1908, pp. 22–24.

[2] *Tanagra gujanensis* Gmelin, *Syst. Nat.* 1, ii. p. 893 (1789—ex Buffon's "Verderoux": Guyane, sc. Cayenne).

[3] *Vireo chivi* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 174 (1817—ex Azara, No. 152: Paraguay).

[4] *Vireo virescens* Vieillot, *Hist. Nat.Ois. Amér. sept.* i. p. 84, pl. 53 ("1807"—Pennsylvania (?); = *Vireo olivaceus* auct.

Thamnophilus major = { **Taraba major major** (Vieill.).[1] / **Taraba major virgultorum** Cherrie.[2]

Tamnophilus (sic) *major* Vieill.; L. & O., *Syn. Av.* i. p. 10 (Corrientes, rep. Boliviana).
Thamnophilus major d'Orbigny, *Voyage*, p. 166 (Corrientes, même jusques au 32° degré sur les rives du Riacho de Coronda, près Santa Fé, sur le Paraná; Yungas, Cochabamba, Santa Cruz, Chiquitos).

No. 1, ♂ ad. (skin): "Chiquitos, Bolivie, d'Orbigny, 1834." = *T. m. major* Vieill.

No. 2, ♂ ad. (mounted): "Santa Fé, Argentine, d'Orbigny, 1829." = *T. m. major* Vieill.

No. 3, ♀ ad. (mounted): "Yungas, Bolivie, d'Orbigny, 1834." = *T. m. virgultorum* Cherrie.

The adult male from Santa Fé agrees in every respect with a large series from Paraguay, Mattogrosso (Cuyabá), and Goyaz. Four males from E. Bolivia (Sara, Chiquitos, Santa Cruz), and four others from N.W. Argentine (Tucumán, San Lorenzo, Jujuy) are not distinguishable either; but four females[3] have the pileum, rectrices, and upper-tail coverts of a lighter rufous, the ear coverts much paler, varying from greyish olive to light russet-brown (instead of deep rufous-brown), the back much less rufous and more olivaceous, and the foreneck tinged with buff. The birds of E. Bolivia and N.W. Argentine very likely constitute a distinct race, but in the absence of topotypical females from Paraguay it is impossible to decide to which of the two forms the name *T. m. major* is properly referable.

The female from the Bolivian Yungas should belong to *T. m. virgultorum*, based upon a couple from the Rio Chaparé. A single female obtained by G. Garlepp at San Mateo, in the same general district, while quite distinct from *T. m. major* ♀, of E. Bolivia, hardly differs from *T. m. melanura* (Sel.), which we received from the northern parts of the adjoining Peruvian Dept. Puno. Additional material is required to establish the claims of this rather obscure race.

Thamnophilus doliatus = **Thamnophilus doliatus radiatus** Vieill.

Tamnophilus (sic) *doliatus* (errore!), L. & O., *Syn.*, i. p. 10 (rep. Boliviana).
Thamnophilus doliatus, d'Orbigny, *Voyage*, p. 168 (Chulumani et Irupana, Yungas; Santa Cruz de la Sierra, Chiquitos, Moxos; descr. ♂ ad., ♂ juv., ♀).

No. 1, ♂ ad. (mounted): "*T. doliatus* Vieill., de Yungas, Bolivie, par d'Orbigny, 1834. Nos. 92–246."—al. 76; c. 67; r. 17 mm.

No. 2, ♀ ad. (mounted): "*T. radiatus* Vieill., Chiquitos, d'Orbigny, 1834."—al. 74; c. 68; r. 18 mm.

The adult male, a bird in perfect plumage, is by no means *T. d. variegaticeps*, but an extreme example of *T. d. radiatus*, having the whole middle of the abdomen, together with the anal region, unbarred plain white. The under-tail coverts show but a few, faint transverse spots of blackish, while the black bars on foreneck, breast, and flanks are very narrow, being only about half as wide as in

[1] *Thamnophilus major* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 3, p. 313 (1816—Azara No. 211: Paraguay).
[2] *Bull. Amer. Mus. N.H.* 35, p. 391 (June 1916—Todos Santos, Rio Chaparé, Bolivia).
[3] One Tucumán, two Sara, one Santa Cruz.

T. d. subradiatus, of Eastern Peru. In all these respects, the Yungas bird is exactly similar to Paraguayan and Mattogrosso skins. The elongated occipital feathers are distinctly white at their base, though to a much lesser degree than in *T. d. doliatus*, of the Guianas.

The female is practically identical with others from Mattogrosso.

[The Barred Antshrikes of South America are divisible into a number of more or less defined geographical races. The earliest specific name applying to some member of this group is *Lanius doliatus* Linn.,[1] to which all others are no doubt subspecifically related. South of the Equator, I can recognise the following :

(1) *Thamnophilus doliatus radiatus* Vieill.[2]

Paraguay (Lambaré, Colonia Risso, Paraguari, Villa Concepcion, Asuncion, Sapucay, etc.) ; Bolivia (Yungas, Santa Cruz, Chiquitos, Moxos) ; Mattogrosso (Cuyabá, Arica, Estiva, Chapada, Corumbá, Urucúm), and northern districts of São Paulo (Jaboticabal,[3] Avanhandava).[4]

Examined : 5 ♂♂, 1 ♀ Paraguay ; 14 ♂♂, 3 ♀♀ Mattogrosso ; 2 ♂♂ São Paulo ; ♂ ♀ Bolivia.

(2) *Thamnophilus doliatus variegaticeps* Berl. & Stolzm.[5]

Central Peru ; Chanchamayo district (Chanchamayo, La Merced, Amable Maria).

Examined : 4 ♂♂, 1 ♀ Chanchamayo.

(3) *Thamnophilus doliatus subradiatus* Berl.[6]

Eastern Peru (Pebas, Nauta, Iquitos, Samiria, Ucayali) ; Central East Peru (Santa Ana) ; South-East Peru (Maranura, Huiro) ; Western Brazil (Rio Purús, Juruá, east to the R. Madeira,[7] north to Teffé, R. Solimoens).

Examined : 1 ♂ Iquitos (type), 1 ♂ Samiria, 2 ♂♂ Pebas, ♂ ♀ Santa Ana, 1 ♂ Maranura, 1 ♂ Rio Juruá, 3 ♂ ♂, 2 ♀ ♀ Rio Madeira, ♂ ♀ Teffé.

(4) *Thamnophilus doliatus difficilis* Hellm.[8]

Central Brazil, State Goyaz : Rio Araguaya and Rio Claro.

Examined : 10 ♂♂, 7 ♀♀ Rio Araguaya ; ♂ ♀ R. Claro (types).

[1] *Lanius doliatus* Linnaeus, *Mus. Ad. Frid.* ii. Prodromus, p. 12 (1764—hab. ign. ; subst. typ. loc. *Surinam*, auct. Berlepsch & Hartert, *Nov. Zool.* 9, 1902, p. 70, footnote).

[2] *Thamnophilus radiatus* Vieillot, *Nouv. Dict.*, nouv. éd. iii. p. 315 (1816—ex Azara, No. 212 : Paraguay ; descr. ♂).

[3] The two ♂♂, one young, from Avanhandava and Jaboticabal, recorded by Jhering, s. n. *Th. doliatus* (*Faun. Brazil.* i. 1907, p. 199), and *Th. nigricristatus* (ibidem, p. 200 ; *Rev. Mus. Paul.* v. 1902, p. 274), on re-examination prove to belong to *T. d. radiatus*, as was to be expected from zoogeographical reasons.

[4] The specimens from the Parnahyba, Piauhy, determined by Reiser (*Denkschr. Akad. Wiss. Wien*, 76, 1910, p. 65) as *T. radiatus* should be re-examined.

[5] *Thamnophilus variegaticeps* Berlepsch & Stolzmann, *Proc. Zool. Soc. Lond.* 1896, p. 379 (1896—La Merced, Chanchamayo, C. Peru).

[6] *Thamnophilus subradiatus* Berlepsch, *Journ. f. Ornith.* 35, p. 17 (1887—Upper Amazonia ; the type in Mus. Berlepsch is from Iquitos, N.E. Peru).

[7] The birds occurring on the Tapajóz (Santarem), which I have not seen, may likewise belong here.

[8] *Thamnophilus nigricristatus difficilis* Hellmayr, *Verhandl. Zool. Bot. Ges. Wien*, 53, p. 216 (1903—Rio Claro, Goyaz, C. Brazil).

(5) *Thamnophilus doliatus capistratus* Less.[1]

Eastern Brazil : State Bahia (San Salvador, Lamarão), and Southern Piauhy (Lake of Parnaguá).

Examined : 74 ♂♂ Bahia (native skins) ; 2 ♂♂, 2 ♀♀ Lamarão, Bahia.[2]

In the near future I hope to give more details about the characters of the various races. With the present synopsis of their geographical range I merely intended to show that our knowledge of these difficult birds is rather more advanced than certain authors imagine.]

Thamnophilus schistaceus = Dysithamnus schistaceus schistaceus (d'Orb.).

Tamnophilus fuliginosus Lafresnaye & d'Orbigny, *Syn. Av.* i. p. 10 (1837—no locality ; nom. nud.).[3]
Thamnophilus schistaceus d'Orbigny, *Voyage*, Ois., p. 170, pl. v. fig. 1 [4] (1838—Yuracarès ; descr. orig. ♂ ad.).
Dysithamnus schistaceus Ménégaux & Hellmayr, *Bull. Soc. Phil. Paris* (9) viii. 1906. p. 28 (crit.).

No. 1, ♂ ad. (mounted) : " d'Yuracarès (Bolivie), par M. d'Orbigny. *Th. schistaceus* d'Orb. (type). *Th. fuliginosus* d'Orb. 1834."—al. 63 ; c. 55 ; grad. of tail, 10 ; r. 18 mm.

This bird and two other males from Northern Bolivia (San Mateo) in Count Berlepsch's Collection agree perfectly with a large series from the Rio Madeira. The outermost rectrix shows a distinct, though narrow, white apical margin, which is also present in several of the Brazilian examples.

D. s. schistaceus ranges from the Amazonian slopes of the Andes in Bolivia (San Mateo, Yuracarès) and S.E. Peru (Marcapata [5]), through Western Brazil (Rivers Purús and Madeira), to the Tapajóz (left bank). Whether *Thamnophilus inornatus* Ridgw.,[6] from the right bank of the Tapajóz, and *Dysithamnus capitalis*(!) *squamosus* Snethl.,[7] from the Tocantins, are really separable as races, I do not venture to decide from the few specimens I have seen. (Cf. my remarks in *Novitates Zoologicae*, xvii. 1910, pp. 342–3.)

A review of the distinguishable forms I have given in *Novitates Zoologicae*, xiv. 1907, pp. 62–3. The status of *D. schistaceus* subsp., from North Peru,[8] and *D. dubius* Berl. & Stolzm. is still unsettled, as no new material of either of these races has come to hand since.

Thamnophilus naevius = Thamnophilus heterocercus Berl.[9]

Tamnophilus naevius (errore !) ; L. & O., *Syn.* i. p. 10 (Chiquitos, Bolivia) ; d'Orbigny, *Voyage*, p. 170 (Chiquitos : " aux environs des missions de San-Miguel, de Conception, et de Santa Ana " ; ♂ ♀ descr.).

No. 1, ♂ ad. (skin) : " D. 340. Chiquitos, Bolivie. D'Orbigny " (without original label).—al. 70 ; c. 53 ; r. 16½ mm.

[1] *Thamnophilus capistratus* Lesson, *Rev. Zool.* iii. p. 226 (1840—Brazil).

[2] Collected by Alphonse Robert in January and May 1903, Tring Museum.

[3] The authors quote, however, " d'Orbigny, *Voyage*, Ois., pl. v. fig. 1 " (*T. fuliginosus*), where a recognisable figure of the male is to be found. If this plate was really issued in 1837 or earlier, the species would have to stand as *Dysithamnus fuliginosus* (d'Orb.), since *Thamnophilus fuliginosus* Gould (*P.Z.S.* 5, " 1837," p. 80 : Demerara) was not published until February 1838.

[4] Inscribed *T. fuliginosus*.

[5] The Munich Museum received a series from Yahuarmayo, north of Macuzani, secured by the brothers Watkins.

[6] *Proc. U.S. Mus.* 10, " 1887," p. 522 (1888—Diamantina, near Santarem, R. Tapajóz).

[7] *Ornith. Monatsber.* 15, p. 162 (October 1907—Alcobaça, Rio Tocantins).

[8] Since writing the above lines it has been named *D. s. hellmayri* Cory (*Field Mus. N.H.*, Publ. No. 190, August 1916, p. 338).

[9] *Ornis*, 14, p. 367 (February 1907—Santa Cruz [de la Sierra], E. Bolivia).

No. 2, ♀ ad. (skin) : " *T. naevius.* D'Orbigny, 1834, p. 96.—D. 340, de Chiquitos."—al. 68 ; c. — ; r. 16 mm.

The specimens I have compared and found identical with the types of the species kindly lent by the late Count Berlepsch. As correctly pointed out by its describer, *T. heterocercus* belongs to the group comprising *T. punctatus* (Shaw) [1] (= *T. naevius* auct.),[2] and *T. ambiguus,* being most nearly related to the western form of the last-named, *T. ambiguus sticturus* Pelz., of the interior provinces of Brazil, whose characters I have discussed at length in the account of the birds collected by Mons. G. A. Baer in the State of Goyaz.[3] The Bolivian bird shares with *T. a. sticturus* the clear grey back and the whitish grey lower parts, but differs at a glance by the pattern of the rectrices. In *T. heterocercus* the *three outer* tail-feathers (of each side) only have a white marginal spot in the middle of the *outer* web, while the three inner ones, except for the white tip, are uniform black. In *T. ambiguus sticturus,* on the other hand, all the rectrices show a distinct white spot on the outer, and in most cases a corresponding one on the inner, web. *T. heterocercus* is thus seen to form the passage to the northern *T. p. punctatus,* of Guiana and Venezuela, in which the white marginal stripe is present only on the outer web of the outermost rectrix. The female of *T. heterocercus* may be distinguished from that of *T. a. sticturus* by somewhat paler, less rufous-brown back, lighter fulvous chest and sides, more extensive white abdominal area, and by the possession of a white marginal spot on the outer web of the *penultimate* as well as the outermost rectrix.

T. heterocercus is apparently confined to the lower districts of Eastern Bolivia. San Miguel, Concepcion, and Santa Ana are all situated in the hilly country south of the Cerro Mercedes, not far from the Brazilian frontier, while Gustav Garlepp's specimens were obtained at Santa Cruz de la Sierra, somewhat farther to the south-west. Besides, I have examined an adult male, secured by José Steinbach on January 7, 1909, near Puerto Suarez, in the collection of the Carnegie Museum, Pittsburgh.

Thamnophilus aspersiventer Lafr. & Orb.

Tamnophilus aspersiventer Lafresnaye & d'Orbigny,[4] *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 10 (1837—Yungas, Bolivia ; descr. ♂♀).

Thamnophilus aspersiventer, d'Orbigny, *Voyage,* Ois., p. 171. pl. iv. fig. 1 (♂), 2 (♀)[5] (provinces of Yungas, Sicasica, Ayupaya).

No. 1, ♂ ad. (skin) : " Bolivie, d'Orbigny."—al. 72 ; c. 66 ; r. 15½ mm.

No. 2, ♂ ad. (mounted) : " Bolivie, d'Orbigny. ♂."—al. 71 ; c. 67 ; r. 16½ mm.

No. 3, ♂ ad. (mounted) : " Yungas, Bolivie, par d'Orbigny. ♂."—al. 71 ; c. 65 ; r. 16 mm.

No. 4, ♀ ad. (mounted) : "♀ Sicasica, Bolivie, par d'Orbigny."—al. 72 ; c. 64 ; r. 16½ mm.

[1] *Lanius punctatus* Shaw, *Gen. Zool.* 7, ii. p. 327 (1809—ex " Le Tachet," Levaillant, *Ois. d'Afr.* ii. p. 113, pl. 77, fig. 1 (♂) : Cayenne).

[2] *Lanius naevius* Gmelin, *Syst. Nat.* 1, i. p. 308 (1788—ex " Spotted Shrike," Latham, *Gen. Syn. Birds,* 1, i. p. 190 : Cayenne), is preoccupied by *Lanius naevius* Gmelin, l.c. p. 304 !

[3] *Nov. Zool.* xv. 1908, pp. 66–68.

[4] The species should probably be credited to d'Orbigny alone, since plate iv., quoted by Lafresnaye & d'Orbigny, appears to have been issued previously.

[5] Erroneously inscribed *T. schistaceus* !

There is very little difference observable among the males. The throat and chest are plain black, while the remainder of the under-surface is broadly barred with black and greyish white. The outermost rectrix only has a distinct marginal stripe of white on the outer web.

This fine species inhabits the Western Yungas of Bolivia (Sicasica, Ayupaya, La Paz). In the eastern Yungas (of Cochabamba) it is apparently replaced by the very distinct *T. connectens* Berl.,[1] which forms a connecting link to the *T. caerulescens* group with plain (i.e. unbarred) under-parts.

Thamnophilus atropileus Lafr. & Orb. = **Thamnophilus torquatus** Sw.[2]

Tamnophilus atropileus Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 11 (1837—Guarayos, Bolivia; descr. orig. ♂).

Thamnophilus atropileus d'Orbigny, *Voyage*, Ois., p. 173 ("au nord-ouest de la province de Chiquitos").[3]

No. 1, "♂" ad. (mounted): "de Guarayos, province de Chiquitos, par M. d'Orbigny, 1834. No. 92.—D. 434. ♂. Type de *T. atropileus* Lafr. & Orb." —al. 67; c. 65; r. 17 mm.

This bird agrees with others from Bahia, West Minas Geraës (Bagagem), and Northern S. Paulo (S. Jeronymo, Avanhandava, Rio Tieté). Like some Brazilian examples, it has a pale rufescent band across the upper back. Bahia skins are, as a rule, somewhat smaller (al. 60–63, c. 57–62 mm.), while those from São Paulo are fully as large (al. 65½–66, c. 65–67 mm.) as the type of *T. atropileus*.

This black-capped *Thamnophilus* inhabits the campos districts of Eastern and Central Brazil, extending westwards just into the north-eastern corner of Bolivia (Guarayos). I have examined specimens from Pernambuco, Bahia, Goyaz (Rio Thesouras), Mattogrosso (Cuyabá), Western Minas (Agua Suja, near Bagagem), and Northern São Paulo (Avanhandava, Rio Tieté).

Thamnophilus maculatus Lafr. & Orb. = **Thamnophilus caerulescens gilvigaster** Pelz.[4]

Thamnophilus maculatus Lafresnaye & d'Orbigny (nec Such),[5] *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 11 (1837—Corrientes; descr. orig. ♂♀).

Thamnophilus maculatus d'Orbigny, *Voyage*, Ois., p. 172 (October 1838—Corrientes, près du village d'*Itaty*).

Thamnophilus gilvigaster (Temminck MS.) Pelzeln, *Zur Orn. Bras.* ii. p. 76, in text (1868—Curytiba, Paraná, S.E. Brazil).

No. 1, "♂" ad. (mounted): "*T. caerulescens* V., *T. maculatus* Lafr. et d'Orb. Type. par M. d'Orbigny. Corrientes, juillet 1829. No. 94. ♂."—al. 76; c. 72; r. (damaged) mm.

No. 2, "♀" ad. (mounted): "*T. caerulescens* V., *T. maculatus* Lafr. et d'Orb. Type. par d'Orbigny, Corrientes, 1829. ♀."—al. 71; c. 67; r. 16 mm.

[1] *Ornis*, 14, p. 369 (February 1907—Samaipata, E. Bolivia).

[2] *Thamnophilus torquatus* Swainson, *Zool. Journ.* ii. No. 5, p. 89 (April 1825—Urupé, Bahia, E. Brazil; descr. orig. ♂).

[3] See also *Bull. Soc. Philom. Paris* (9) viii. 1906, p. 28.

[4] [*Thamnophilus*] *gilvigaster* Pelzeln, *Zur. Orn. Bras.* ii. p. 76, note 4 (1868—Curytiba, prov. Paraná, S.E. Brazil).

[5] *Thomnophilus maculatus* Such, *Zool. Journ.* i. No. 4, p. 557, tab. vi. Suppl. (January 1825—Minas Geraës); = *Th. guttatus* Vieill.

These specimens belong to the ochreous-bellied southern form of the *T. caerulescens* group, so well characterised by Count Berlepsch in his account of the birds of Rio Grande do Sul.[1] The types of *T. maculatus* Lafr. & Orb. agree perfectly with examples obtained by E. White[2] at Concepcion,[3] San Javier,[4] S. Tomé (= Santo Tomás),[5] and others from Santa Ana (Misiones), and the left (Entrerios) side of the Paraná in the Museo Nacional of Buenos Ayres. In all the adult males from Corrientes, Entrerios, and Misiones the throat and breast are light cinereous, passing into greyish white on middle of abdomen, while the flanks, anal region, and crissum are clear ochreous or pale fulvous. Birds from South-Eastern Brazil (Rio Grande do Sul, Santa Catharina, Paraná, and Itararé, South-West São Paulo), as a rule, have the ochreous of the belly rather deeper in tint and extended farther up the breast, but a good many examples are not distinguishable from the Argentine ones. A single adult ♂ from Santo Tomás, Rio Uruguay, Corrientes, taken on the same day (May 15, 1881) as an extremely typical female of *T. c. gilvigaster*, lacks the fulvous abdomen and can hardly be told from *T. s. caerulescens* of Paraguay, thus proving the near relations of the two forms.

A third ally is *T. caerulescens dinellii* Berl.,[6] which differs from *T. c. gilvigaster* by paler, nearly whitish throat, bright buff (instead of cinereous) breast, and creamy (not whitish) middle of abdomen. Moreover, the lores and superciliaries are decidedly lighter, whitish instead of ashy grey.

The distribution of the three races is highly interesting, as it furnishes another instance of rivers separating the ranges of species endowed with limited power of flight.

T. caerulescens caerulescens Vieill.[7] is known to inhabit the central parts of Paraguay (Sapucay, Villa Rica, etc.), whence it ranges (apparently through the yet unexplored western division of the Brazilian State of Paraná) to the northern and eastern districts of São Paulo,[8] and the western portion of Minas Geraës (S. Francisco, Bagagem). This form does not occur anywhere on Argentine territory, and in Paraguay the southern limit of its range is formed by the Paraná. As far as we can see, there is no difference between Paraguayan and Brazilian examples. We have examined the following: 5 ♂♂, 2 ♀♀ Sapucay, Paraguay; 2 ♂♂, 2 ♀♀ Botocatú (Victoria); 6 ♂♂, 2 ♀♀ Ypanema; 2 ♂♂ Itatiba; 1 ♂ Cachoeira, all places in São Paulo; 1 ♂ S. Francisco; 4 ♂♂, 3 ♀♀ Agua Suja, near Bagagem, Minas Geraës.

T. caerulescens gilvigaster Pelz. has a more southern distribution, which

[1] *Zeitschr. ges. Ornith.* ii. 1885, p. 148.

[2] White's specimens were at first erroneously determined as *T. caerulescens*, both by White himself (*P.Z.S. Lond.* 1882, p. 614) and Sclater (*Cat. B. Brit. Mus.* 15, p. 200), but Count Berlepsch (*Zeits. f. ges. Ornith.* ii. p. 148) recognised them as belonging to *T. c. gilvigaster*.

[3] A couple from June 21, 1881, in the British Museum examined.

[4] Two adult males secured June 2, resp. 6, 1881, in the Tring Museum.

[5] An adult female, May 15, 1881, in the Tring Museum.

[6] *Thamnophilus dinellii* Berlepsch, *Bull. B.O.C.* 16, p. 99 (May 1906—Sierra de Santiago, Tucumán, N.W. Argentine).

[7] *Thamnophilus caerulescens* Vieillot, *Nouv. Dict.* 3, p. 311 (1816—ex Azara, No. 213 : Paraguay ; = ♂ ad.) ;—*T. auratus* Vieillot, l.c. p. 312 (1816—ex Azara, No. 214 : Paraguay ; = ♀) ;—*T. ventralis* Sclater, *New Philos. Journ. Edinburgh* (n. ser.), i. p. 244 (1855—"South Brazil" ; = ♂ ad., type examined) ;—*T. ochrus* Oberholser, *Proc. Biol. Soc. Wash.* 14, p. 188 (1901—Sapucay, C. Paraguay ; = ♀).

[8] The species has been taken at Itatiba, Ypiranga, Ypanema, Tieté, Botocatú, Baurú, Rio Feio, São Carlos, Cachoeira, etc.

extends from S. Pedro de Itararé (in the south-western portion of the State São Paulo, close to the frontier of Paraná), through the eastern parts of Paraná (Curytiba, Roça Nova in the Serra do Mar), Santa Catharina (Laguna), and Rio Grande do Sul (Taquara do Mundo Novo, Arroio Grande) to Uruguay, and through Misiones to Corrientes and Entrerios, this latter area being, in the north and west, bounded by the Rio Paraná.

In addition to twenty Brazilian examples (1 ♂ Itararé ; 2 ♂♂, 2 ♀♀ Curytiba ; 2 ♂♂, 2 ♀♀ Roça Nova, Paraná ; 1 ♂ Laguna, Sta Catharina ; 6 ♂♂, 3 ♀♀ Rio Grande do Sul), and an adult male from Uruguay (Soriano, Sta Elena, Aplin coll., Brit. Mus.), we have examined the following skins from Argentine : 1 ♂, 1 ♀ Itati, south bank of the Rio Paraná, prov. Corrientes ; 1 ♂ ad. vicinity of city of Paraná, *left* bank of the river, prov. Entrerios ;[1] 1 ♂, 1 ♀ Santo Tomás (Corrientes) ; 1 ♂ ad. Concepcion (Misiones), 2 ♂♂ S. Javier (Misiones), settlements situated on the Rio Uruguay ; 1 ♀ Santa Ana, south bank of the Rio Paraná, Misiones.[2]

For further information about the characters of *caerulescens* and *gilvigaster* cf. *Abhandl. Bayer. Akad. Wiss.*, ii. kl. 22, iii. 1906, pp. 660–661.

T. caerulescens dinellii is the western representative of the group, ranging from the *right* bank of the Rio Paraná (prov. Santa Fé) to Cordóba, Tucumán, Salta, Jujuy, and the southern border of Bolivia (Aguairenda, near Caiza), where it was taken by Borelli.[3]

We have examined a series of both sexes from Ocampo and Mocovi, prov. Santa Fé, right bank of the Rio Paraná, Rodriguez and Venturi coll. ; 4 ♂♂, 3 ♀♀ Tucumán (Sierra de Santiago, Tapia, Santa Ana), Baer and Dinelli coll. ; ♂♀ Salta, Durnford coll.,[4] Brit. Museum.

As is to be seen from what precedes, the ranges of *T. c. dinellii* and *T. c. gilvigaster* are divided by the Paraná River, the former being found on the right, the latter on the left side of that stream.

For the sake of completeness it may be added that another member of this group dwells in the extreme northern districts of Paraguay (San Salvador, Colonia Risso, Rio Apa). This is *T. caerulescens paraguayensis* Hellm.,[5] which differs from the typical race by having the lower parts white instead of cinereous. In the mountain chains on the confines of the Brazilian States S. Paulo, Rio de Janeiro, and Minas Geraës (Serra da Mantiqueira, Itatiaya, Cantagallo, Novo Friburgo, etc.) another near ally, *T. caerulescens albonotatus* Spix, is met with, whose characters I have discussed at some length in *Abhandl. Bayer. Akad. Wiss.*, ii. kl. 22, iii. 1906, pp. 658–659.

I cannot see any advantage in the recognition of the genus *Erionotus*, unless it be restricted to the *Th. caerulescens* group. This, however, would necessitate the creation of a number of additional, more or less ill-defined, sections.

[1] This specimen, obtained by Burmeister, was kindly submitted to my inspection by Dr. Dabbene, of the Museo Nacional, Buenos Ayres.

[2] It should be mentioned that, according to Bertoni (*Seg. Contrib. ornit. Parag.* in *Revista Instituto Parag., Asunçion*, 1907, p. 6), *T. c. gilvigaster* is also to be met with in the eastern parts of Paraguay. This statement requires corroboration.

[3] *T. maculatus* (nec Lafr. & Orb.) Salvadori, *Boll. Mus. Zool. Torino*, xii. No. 292, 1897, p. 22.

[4] *T. caerulescens* (nec Vieillot) Salvin, *Ibis*, 1880, p. 360.

[5] *T. paraguayensis* Hellmayr, *Bull. B.O.C.* 14, p. 53 (February 1904—Colonia Risso, Rio Apa, N. Paraguay) ; Ménégaux & Hellmayr, *Bull. Soc. Philom. Paris* (9) viii. 1906, p. 26 (S. Salvador)—*T. caerulescens* (nec Vieillot) Salvadori, *Boll. Mus. Zool. Torino*, x. No. 208, 1895, p. 13 (Colonia Risso).

Thamnophilus palliatus (Licht.).

Lanius palliatus Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 46 (1823—Bahia).
Tamnophilus palliatus, L. & O., *Syn. Av.* i. p. 11 (Chiquitos).
Thamnophilus palliatus, d'Orbigny, *Voyage*, p. 174 (Guarayos, au nord de la province de Chiquitos ; ♂♀).

No. 1, ♂ ad. (mounted) : "*T. palliatus* Wied. ♂. Mojos, par d'Orbigny, 1833. D. 370."—al. 72 ; c. 64 ; r. 19¾ mm.

No. 2, ♀ ad. (mounted) : "*T. palliatus* Wied. ♀. Guarayos, par d'Orbigny, 1834. No. 93.—D. 370."—al. 70 ; c. 62 ; r. 19 mm.

On comparing the two examples with numerous skins from Eastern Brazil (Bahia, Espirito Santo, and Rio de Janeiro), I am unable to find any character by which they might be distinguished. The male is in every respect a typical *palliatus*, having the pileum very sparingly spotted with white here and there, and no rufescent tinge on the flanks. The white cross-bars on the lower parts are, if anything, slightly broader than in the majority of Bahia skins. Therefore I must regard the inhabitants of the North Bolivian plains as true *T. palliatus*.

The possibility of discriminating a western form which was to be limited to the mountainous parts of N.W. Bolivia (Consati, Tilotilo) and Peru (Chanchamayo district) appears highly improbable. Berlepsch and Stolzmann [1] have already shown that none of the characters claimed by Sclater for his *T. puncticeps* [2] hold good in specimens from Garita del Sol, Peru. A topotypical male from Tilotilo, coll. Paris Museum, and an adult male procured by C. O. Schunke at Chanchamayo, coll. Munich Museum, which I have before me, are rather different *inter se*. The Bolivian bird, indeed, has the cap more spotted with white than any other example, but the male from Chanchamayo does not diverge in that respect from the Brazilian average. Contrary to Sclater's statement, the white bars below are neither wider nor more distinct, while the rufescent wash on the flanks is hardly more developed than in several Bahia skins. Under these circumstances, I am not disposed to admit *T. palliatus puncticeps* as a valid form.

Thamnophilus domicella = ♀ }
Thamnophilus aterrimus = ♂ } **Pyriglena leuconota maura** (Ménétr.).[3]

Tamnophilus domicella (nec Lichtenstein),[4] L. & d'O., *Syn. Av.* i. p. 11 (Chiquitos).
Formicivora domicella d'Orbigny, *Voyage*, p. 178 (Mission de Santa Ana, Chiquitos ; part. descr. ♀).
Tamnophilus aterrimus Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 11 (1837—[Yungas], Chiquitos, Bolivie ; descr. orig. ♂).
Formicivora atra (nec Swainson),[5] d'Orbigny, *Voyage*, p. 179, pl. v. fig. 2 ([Rio du Chajro, prov. Yungas, 5,000 à 6,000 pieds—" rare "], Chiquitos et Guarayos—" commune ").

No. 1, ♂ ad. (skin) : "*Tamnophilus* (*Formicivora*) *atra* Swains. No. 99. D'Orbigny, 1834.—D. 240, Chiquitos. Type de *T. aterrimus* d'Orb."—al. 78 ; c. 73½ ; r. 17 mm.

[1] *Proc. Zool. Soc. Lond.* 1896, p. 380.
[2] *Cat. Birds Brit. Mus.* 15, p. 212 (1890—Tilotilo, Consati, Bolivia ; Sarayaçu, East Ecuador).
[3] *Formicivora maura* Ménétriès, *Mém. Acad. Sci. St. Pétersb.* (6), *Sci. math., phys. et nat.* iii. 2, p. 506, pl. 7, fig. *a* (1835—" Minas Geraës," errore !, coll. Langsdorff ; the type more probably came from *Mattogrosso*).
[4] *Lanius domicella* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 47 (1823—Bahia).
[5] *Drymophila atra* Swainson, *Zool. Journ.* ii. No. 6, p. 153 (July 1825—Pitangua, Bahia).

No. 2. ♀ ad. (skin): "*Tamnophilus* (*Formicivora*) *domicella*, fœm. No. 111 *bis*, par d'Orbigny, 1834.—D. 433, Chiquitos."—al. 75; c. 71; r. 17⅓ mm.

D'Orbigny, in the *Voyage*, describes both sexes of what he believes to be *T. domicella* = *Pyriglena leucoptera* (Vieill.),[1] giving as locality the "mission de Santa Ana," in the hills of Eastern Bolivia, not far from the Brazilian frontier. The species, however, only inhabits the eastern provinces of Brazil, from Bahia to Santa Catharina, the most westerly locality whence I have seen it being Rio Jordão, near Araguary, in South-West Minas Geraës.[2] The Paris Museum does not possess Bolivian skins of *P. leucoptera*, nor could I find any mention of such in the registers relating to d'Orbigny's collections. Although his description of the male refers without doubt to the bird in question, I feel sure it was not based upon a Bolivian, but rather on a Brazilian example in the Museum, or might have been copied from Ménétriès' *Monographie des Myiotherinae*, of which d'Orbigny freely made use in other cases of deficiency of his proper materials. In this assumption I am strengthened by the fact that the alleged female of "*F. domicella*" from Chiquitos turns out to belong to the allied, though perfectly distinct, *P. leuconota maura* (Ménétr.), well known as a denizen of Mattogrosso. The type of *T. aterrimus* Lafr. & d'Orb., afterwards synonymised with *F. atra* by d'Orbigny, is likewise from Chiquitos, and represents the male sex of *P. l. maura*.

After a cursory examination about twelve years ago I somewhat hastily concluded that the two examples of d'Orbigny's were referable to the same form as found in the mountain forests of Western Bolivia and Peru, and in my revision of the genus *Pyriglena*,[3] I have accordingly replaced the subspecific term *picea* Cab.[4] by the earlier *aterrima* Lafr. & d'Orb.

A renewed comparison with more ample material, however, shows this identification to have been erroneous. The Chiquitos skins agree, in dimensions, shape of bill, and coloration of female, so excellently with a series of undoubted *P. l. maura*, from Western Mattogrosso (Rio Guaporé), that there can be no question whatever as to their subspecific identity, which is also supported by geographical reasons, as a glance at the map will show.

Birds from N.W. Bolivia (Songo, Yungas)[5] and S.E. Peru (Rio San Gaban, Marcapata)[6] are on average larger, and the females—which are of first-rate importance in the discrimination of the various *Pyriglena* races—may be distinguished from those taken in Chiquitos and Mattogrosso by darker, less rufous upper-parts, more strongly pronounced, deeper black loral spot, rufous-brown (instead of buff or fulvous) ear coverts, and somewhat darker abdomen. These differences are quite obvious when series are compared.

[1] *Turdus leucopterus* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 20, p. 272 (1818—"Brésil," coll. Delalande fils, sc. Rio de Janeiro; types in Paris Museum examined; = ♂ ad.).

[2] There is an adult male, obtained by A. Robert on May 21, 1901, in the Tring Museum. It is practically identical with specimens from Bahia, S. Paulo, etc. More recently this species has also been discovered in Paraguay and Misiones (Iguazú).

[3] *Abhandl. Bayer Akad. Wiss.*, ii. kl. 22, iii. 1906, p. 623.

[4] *Pyriglena picea* Cabanis, *Archiv f. Naturg.* 13, i. p. 212 (1847—based on *Formicivora atra* Tschudi (nec Swainson), *Faun. Peru.*, *Aves*, p. 175: Central Peru).

[5] *Pyriglena leuconota hellmayri* Stolzmann & Domaniewski, *Compt. Rend. Soc. Sci. Varsovie* 11, fasc. 2, p. 184 (1918—Chulumani, Yungas, N. Bolivia).

[6] *Pyriglena leuconota marcapatensis* Stolzmann & Domaniewski, l.c. p. 185 (1918—Huaynapata, Marcapata, S.E. Peru).

It is true the describers mention, among the localities of their *T. aterrimus*, the Rio du Chajro, prov. Yungas, where only *P. l. hellmayri* can occur, but since no specimens from this place are extant I think we are justified in restricting the term *aterrimus* to the East Bolivian form, to which the two skins of the Paris Museum unquestionably belong.

T. aterrimus Lafr. & d'Orb. thus becomes a synonym of *P. leuconota maura* (Ménétr.), 1835.

The range of *P. leuconota maura* covers Western Mattogrosso (Rio das Flechas; Engenho do Gama, Rio Guaporé; Urucúm) and the adjoining parts of Eastern Bolivia (Chiquitos).

P. leuconota hellmayri Stolzm. & Doman. replaces it in the forest districts (Yungas) of N.W. Bolivia.

P. leucoptera (= *domicella* Licht.) is altogether to be eliminated from the Bolivian Ornis.

Thamnophilus axillaris = ♂ } **Myrmotherula axillaris axillaris** (Vieill.).[1]
Thamnophilus lafresnayanus d'Orb. = ♀ }

Tamnophilus axillaris, L. & O., *Syn. Av.* i. p. 12 (Yuracarès, Bolivia).
Myrmothera axillaris d'Orbigny, *Voyage*, p. 183 (Yuracarès; descr. ♂ ♀).
Tamnophilus Lafresnayanus "d'Orb.," Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 13 (1837—Yuracarès; descr. ♀).
Formicivora Lafresnayana d'Orbigny, *Voyage*, Ois., p. 182, pl. vi. fig. 1 (October 1838 [2]—Yuracarès).

No. 1, ♂ ad. (skin): "116 *bis*, *Myrmothera axillaris* Vieill. Mâle. D'Orbigny, 1834.—No. 415."—al. 51; c. 37; r. 14½ mm.

No. 2, ♀ ad. (mounted): "♀. Yuracarès, d'Orbigny, 1834. 112 *bis*.—D. No. 420. *M. axillaris* Bp. Type de *T. lafresnayanus* d'Orb."—al. 51; c. 36; r. 14½ mm.

The type of *T. lafresnayanus* proves to be a female of the well-known *M. a. axillaris*, as I have already stated in other communications,[3] and agrees perfectly with a female from San Mateo, N. Bolivia, August 7, 1891, coll. G. Garlepp, in the Berlepsch Collection. It shows all the characteristics of the species, viz. rufescent edges to the upper-wing coverts and remiges, brownish-olive back, ochreous under-parts with silky white flanks, etc. It is thus seen to be widely different from *M. menetriesii* (d'Orb.), to the female of which I for some time thought [4] *T. lafresnayanus* might possibly be referable.

No. 1 is also a typical *axillaris*, with the flanks extensively white. So far as I can see, there appears to be no difference between specimens from N.E. Bolivia and S.E. Peru,[5] and others from Guiana, Pará, Trinidad, and E. Venezuela (Caura district).

It is curious to note that d'Orbigny did not recognise the identity of his *T. lafresnayanus* with *M. axillaris* ♀, whose diagnosis, as given in the *Voyage*,

[1] *Myrmothera axillaris* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., xii. p. 113 (1817—"La Guyane," sc. Cayenne).

[2] The plate was probably issued earlier than 1837.

[3] *Abhandl. Bayer. Akad. Wiss. München*, ii. kl. 22, iii. 1906, p. 665; *Bull. Soc. Philom. Paris* (9), viii. 1906, pp. 49–50.

[4] *Verhandl. Zool. Bot. Gesells. Wien*, 53, 1903, p. 210.

[5] We have a series from Marcapata (Yahuarmayo), collected by H. & C. Watkins, in the Munich Museum.

is evidently copied from Ménétriès' account,[1] since the Paris Museum has no Bolivian female of *axillaris* besides the type of *T. lafresnayanus*.

Thamnophilus rufater Lafr. & d'Orb. = **Microrhopias rufa** (Wied).[2]

Tamnophilus rufater Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 12 (1837—prov. Chiquitos, Moxos; descr. ♂♀).
Formicivora rufatra d'Orbigny, *Voyage*, Ois., p. 180 (Chiquitos, Moxos, Bolivia).

No. 1, ♂ ad. (skin): "*Tamnophilus rufater* d'O. Type. Mâle. 107, d'Orbigny, 1834.—D. 335, de Chiquitos."—al. 54; c. 58; r. 15 mm.

No. 2, (♀) ad. (skin), no original label, but labelled by Pucheran as follows: "*Formicivora rufa* Ménétr., Chiquitos. D. 335-107, d'Orbigny, 1834."—al. 52; c. 56; r. 14 mm.

Ménégaux and Hellmayr[3] declared *T. rufater* to be identical with *Microrhopias rufa* (Wied), of Eastern Brazil, while Berlepsch and Stolzmann[4] employed that name for the larger western form found in N.W. Bolivia and C.E. Peru (Santa Ana valley). With a view to settling the point, I have once more borrowed the types from the Paris Museum, and compared with some thirty specimens from various localities. As result of my studies I can positively state that the birds of the Bolivian plains, in size and coloration, are absolutely indistinguishable from Brazilian skins, and consequently *T. rufater* Lafr. & d'Orb. must be sunk as a synonym of *M. rufa*. On the other hand, examples from N.W. Bolivia (Rio San Mateo, district Yuracarès) and Central Eastern Peru (Santa Ana), in the Berlepsch Collection, are decidedly larger in the wings, and may be separated subspecifically if additional material should confirm the constancy of that character. These facts will be more clearly demonstrated by the subjoined figures:

Bahia	7 ♂♂	Wing.	50–53½	Tail,	53–57½ mm.
	1 ♀	,,	50½	,,	55 ,,
Goyaz	2 ♂♂	,,	52	,,	58, 60 ,,
	4 ♀♀	,,	50–52	,,	57–62 ,,
Rio Madeira (Humaytha) .	3 ♂♂	,,	51–54	,,	53–57 ,,
	2 ♀♀	,,	51	,,	53, 54 ,,
São Paulo (Itapurá, Rio Tieté) . . .	1 ♀	,,	52	,,	62 ,,
Chiquitos (E. Bolivia) .	1 ♂	,,	54	,,	58 ,,
	1 ♀	,,	52	,,	56 ,,
Paraguay (Asunción) .	1 ♀	,,	53	,,	60 ,,
N.W. Bolivia (S. Mateo) .	1 ♂ jun.	,,	56½	,,	62 ,,
C.E. Peru (Sta Ana) . .	2 ♂♂	,,	57–58	,,	60–61 ,,
	1 ♀	,,	56½	,,	64 ,,

M. rufa is widely distributed in Brazil, ranging from the Lower Amazons (Rio Acará, Santarem, Monte Alegre, Serra de Ereré) south to Western Minas

[1] *Mém. Acad. Sci. St. Pétersbg.* (6), *Sci. math., phys. et nat.* iii. 2, 1835, p. 478.
[2] *Myiothera rufa* Wied, *Beitr. Naturg. Bras.* 3, ii. p. 1095 (1831—interior of Bahia, E. Brazil; descr. ♀); Allen, *Bull. Amer. Mus. N.H.* ii. 1889, p. 253 (crit.).
[3] *Bull. Soc. Philom. Paris* (9), viii. 1906, p. 37.
[4] *Ornis*, 13, Part 2, September 1906, p. 94.

(Lagoa Santo) and northern São Paulo (Rio Tieté, Rio Grande, Jaboticabal), west to the Rio Madeira (Humaytha) and the Chiquitos hills of East Bolivia. I have also examined a couple obtained at Bernalcué, east of Asunción, Paraguay, by Prof. Ternetz. This bird is strictly confined to the dry "campos" districts, and never occurs in the "Vargem" or tropical forests. The Santa Ana valley in C.E. Peru, where the supposed larger form is met with, is also described as possessing considerable stretches of campos.

Thamnophilus pileatus = ♂ } **Herpsilochmus pileatus atricapillus**
Thamnophilus affinis Lafr. & d'Orb. = ♀ } Pelz.[1]

Tamnophilus pileata (sic) (nec Lichtenstein),[2] L. & d'O., *Syn. Av.* i. p. 12 (Chiquitos).
Thamnophilus pileatus d'Orbigny, *Voyage*, Ois., p. 175 (Mission de San José, Chiquitos ; = ♂ ad.).
Thamnophilus affinis Lafresnaye & d'Orbigny (nec Spix),[3] *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 12 (Chiquitos, Bolivia ; descr. orig. ♀).
Thamnophilus affinis d'Orbigny, *Voyage*, Ois., p. 175 (Santa Ana de Chiquitos : "un seul spécimen").

No. 1, ♂ ad. (skin) : "No. 156. D'Orbigny, 1834. *Tamnophilus pileatus* d'O.—D. 436, de Chiquitos."—al. 52 ; c. 53 (worn) ; r. 15 mm.

This specimen is, as I have stated elsewhere,[4] absolutely identical with the type of *H. atricapillus* and other skins procured by Mons. G. A. Baer in the State of Goyaz.

Although the type of *T. affinis* does not any longer exist in the Paris Museum, I think there can be no doubt that it is also referable to *H. atricapillus*, since the description agrees exactly with the female of that species. Moreover, it was obtained in the same district, viz. the hill country of Chiquitos, where d'Orbigny also procured a typical male of *H. atricapillus*. Fortunately we need not trouble about the name *T. affinis*, which is preoccupied by Spix.

The distinguishing characters of *H. pileatus* and its allies have been discussed in the account of the birds collected by Mons. G. A. Baer in the State of Goyaz,[5] so I need not further enter into that subject. It may be convenient, however, to correct a few errors, and to record some new facts regarding distribution that have come to light since.

The careful re-examination of the adult male, said to be from Novo Friburgo, prov. Rio de Janeiro, in the Halle Museum,[6] and once determined by me as *H. pileatus*, shows it to belong to *H. p. atricapillus*, with which it agrees in all essential points.[7] Two adult males and a female, received by the Munich Museum from Western Minas (Agua Suja, near Bagagem), render it certain that Reinhardt's record of *Formicivora pileata*,[8] from Lagoa Santa, is likewise referable to *H. p. atricapillus*. The same form has also been taken in various new localities : at Cafetal and Rio San Francisco, prov. Jujuy, N.W. Argentine[9] by Dinelli ; at

[1] *Herpsilochmus atricapillus* Pelzeln, *Zur. Ornith. Bras.* ii. p. 150 (1868—Porto do Rio Paraná, N. São Paulo ; Goyaz).

[2] *Myiothera pileata* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 44 (1823—Bahia).

[3] *Av. Bras.* ii. p. 26, pl. xxxiv. fig. 2 (1825—"in sylvis Parae").

[4] *Nov. Zool.* xv. 1908, p. 70.

[5] *Nov. Zool.* xv. 1908, pp. 69–71.

[6] *Formicivora pileata*, Burmeister, *Syst. Uebers. Th. Bras.* ii. 1856, p. 78.

[7] My former misidentification is due to the circumstance that, when examining the bird in the Halle Museum in January 1905, I had neither *pileatus* nor *atricapillus* for comparison, and judged merely from memory.

[8] *Videnskab. Meddel. naturhist. Foren. Kjöb.* 1870, p. 365.

[9] Two ♂♂ ad. in the Munich, 1 ♂ ad., 1 ♀ imm. in the Tring Museum.

Porto de Pedra, Rio Preto, in the north-western corner of the State of Bahia, and in the southern part of Piauhy (Lake of Missão, near Parnaguá, Lagoa do Passão, S. Gonçalinho on the Rio Parnahyba) by Reiser.[1]

The range of the two Brazilian races is, thus, as follows:

(*a*) *H. pileatus pileatus* (Licht.).

Coast district of the State of Bahia. The only ascertained locality is Lamarão, near San Salvador, whence there is an adult male, secured by A. Robert, in the Tring Museum.

(*b*) *H. pileatus atricapillus* Pelz.

N.E. Brazil: Pernambuco (Macuca; W. A. Forbes coll.); Piauhy (Lake of Missão, Lagoa do Passão, Rio Parnahyba; N.W. Bahia: Porto de Pedra, Rio Preto.

C. Brazil: Goyaz (city of Goyaz, Faz. Esperança, Rio Thesouras, R. Araguaya). Minas Geraës (Lagoa Santa, Agua Suja, near Bagagem); northern São Paulo (Porto do Rio Paraná; Itapurá, Bebedouro).[2] Eastern Bolivia: San José, Santa Ana, Chiquitos; Santa Cruz de la Sierra.

N.B.—The locality "Novo Friburgo" I consider as questionable. Burmeister's example is more likely to have come from Minas (Lagoa Santa).

Thamnophilus minutus Lafr. & d'Orb. = Myrmotherula brachyura (Herm.).[3]

Tamnophilus minutus Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 12 (1837—ex Daubenton, *Pl. enl.* 831, fig. 2: Cayenne; as hab. mentioned Yuracarès, Bolivia).
Myrmothera minuta, d'Orbigny, *Voyage*, Ois., p. 184 (Yuracarès; descr. ♀).

This example is no longer in the Paris Museum, but I have examined a female procured at San Mateo, Yuracarès, N. Bolivia, by G. Garlepp, in Count Berlepsch's Collection. This, as well as other Upper Amazonian skins, do not differ from topotypical Cayenne birds.

Myrmotherula menetriesii menetriesii (d'Orb.).

Myrmothera Menetriesii d'Orbigny, *Voyage dans l'Amér. mérid.*, Oiseaux, p. 184 (October 1838—Yuracarès, Bolivia; descr. ♂).
Myrmotherula boliviana Berlepsch, *Journ. f. Ornith.* xlix. p. 96 (1901—San Mateo, Yuracarés, N. Bolivia; descr. ♂♀).

No. 1, ♂ ad. (skin): "Yuracarès, d'Orbigny, 1834. *Myrmothera menetriesii* d'Orb. Type. No. D. 415."—al. 51; c. 28; r. 14 mm.

The identity of *M. boliviana* and *M. menetriesii* first suggested by me[4] from perusal of the descriptions has been afterwards confirmed, through actual comparison of the respective type specimens, by Ménégaux and Hellmayr.[5] In the same paper[2] I have demonstrated the *M. menetriesii* of authors to be totally different from d'Orbigny's species, a near ally of *M. cinereiventris*, while the former, entitled to the name *M. schisticolor* (Lawr.), is much more closely related to *M. axillaris*. In fact, according to Ridgway's[6] arrangement *M.*

[1] *Denkschr. math.-naturw. Kl. Akad. Wiss. Wien*, 76, 1910, p. 66 (specimens examined by me).
[2] Jhering & Jhering, *Cat. Faun. Braz.* i. 1907, p. 209.
[3] *Muscicapa brachyura* Hermann, *Tabl. Aff. Anim.* p. 229, note (1783—ex "Le petit Gobemouche tacheté, de Cayenne" of Buffon, *Hist. Nat. Ois.* iv. p. 554, and Daubenton, *Pl. enl.* 831, fig. 2).—This name antedates *Muscicapa pygmaea* Gmelin, 1789.
[4] *Verhandl. Zool. Bot. Gesells. Wien*, 53, 1903, p. 210.
[5] *Bull. Soc. Philom. Paris* (9), viii. 1906, p. 51.
[6] *Bull. U.S. Mus.* No. 50, Part 5, 1911, pp. 60, 65.

menetriesii falls into the genus *Myrmotherula*, whereas *M. schisticolor* has to be placed in his new group *Myrmopagis* ![1]

The characters of *M. menetriesii* are discussed at length in *Novitates Zoologicae*, xiv. 1907, pp. 69–70. Its synonymy and range I have given in *Novitates Zoologicae*, xvii. 1910, p. 351. Since that time the Munich Museum has received specimens from Yahuarmayo, Marcapata, S.E. Peru, obtained by H. and C. Watkins.

In the *Synopsis Avium*, published in *Magasin de Zoologie* for 1837, the authors did not distinguish *M. menetriesii* from *M. a. axillaris*, which was found in the same country.

Thamnophilus mentalis = Dysithamnus mentalis olivaceus (Tsch.).[2]

Tamnophilus mentalis (not of Temminck)[3]; L. & d'O., *Syn. Av.* i. p. 12 (Yungas, Bolivia); d'Orbigny, *Voyage*, p. 177 (Yungas; descr. ♂ ad.).

The specimen is no longer preserved in the Paris Museum. In Count Berlepsch's Collection I have, however, examined a number of adult males from the same district (San Mateo, Yuntas, Eastern Yungas of Cochabamba) which agree in every particular with Peruvian examples. Therefore there can be hardly any doubt that d'Orbigny's bird was also referable to *D. mentalis olivaceus* (Tsch.), a name which antedates by many years Sclater's term *semicinereus*, as has been shown by Berlepsch and Hellmayr.

Thamnophilus striato-thorax = Hypocnemis cantator peruvianus Tacz.[4]

Tamnophilus striato-thorax (nec *Myothera strictothorax* Temm.)[5]; L. & O., *Syn. Av.* i. p. 12 (Bolivia). *Thamnophilus striato-thorax* d'Orbigny, *Voyage*, p. 176 (Yuracarès; descr. ♂ ad.).[6]

No. 1, (♂) ad. (skin): "D. 418. Yuracarès, *Tamnophilus striato-thorax* d'Orb. 164. D'Orbigny, 1834."—al. 55; c. 40½; r. 15 mm.

This is an adult male, having the pileum deep black spotted with pure white, and agrees particularly well with specimens from Mattogrosso (Villa Maria, Rio Paraguay; Engenho do Gama, Rio Guaporé), which as a rule have the flanks of a paler ochraceous colour than birds from N. Peru, Rio Madeira (Calama, Maroins), Teffé, and Tapajóz (Itaitúba). See also my remarks in *Novitates Zoologicae*, xvii. 1910, pp. 353–354, where a sketch of the geographic range of *H. c. peruvianus* will be found.

[1] Mr. Ridgway does not appear to be acquainted with the true *M. menetriesii*. The bird from the Rio Napo, East Ecuador, described under this name (*Bull. U.S. Mus.* 50, Part v. pp. 67, 70 [footnote *a*], 72 [footnote *a*]) is most certainly not that species, but perhaps *M. longipennis* Pelz.! The "Ecuadorian and Peruvian references" (pp. 72–73) are a mixture of references relating partly to *M. longipennis*, partly to *M. schisticolor* (Ecuadorian and Peruvian localities), partly to the recently separated *M. schisticolor interior* Chapm. (*Bull. Amer. Mus. N.H.* 33, 1914, p. 614).

[2] *Thamnophilus olivaceus* Tschudi, *Arch. f. Naturg.* 10, i. p. 275 (1844—Peru; descr. orig. ♂ juv.); cf. Berlepsch & Hellmayr, *Journ. f. Ornith.* 53, 1905, p. 14.

[3] *Myothera mentalis* Temminck, *Rec. Pl. col.*, livr. 30, pl. 179, fig. 3 (1823—"Brésil"; the type is from Curytiba, Paraná, S.E. Brazil, coll. Vienna Museum).

[4] *Hypocnemis cantator, peruvianus* Taczanowski, *Ornith. Pérou*, ii. p. 61 (1884—Yurimaguas, N. Peru).

[5] *Rec. Pl. col.*, livr. 30, pl. 179, figs. 1, 2 (1823—"Brésil," sc. Bahia; cf. Hellmayr, *Verhandl. Orn. Ges. Bay.* 12, Heft 2, February 1915, p. 147).

[6] D'Orbigny quotes Temminck's *Pl. col.* 179, f. 1, 2, which, however, bears the inscription *Myothera strictothorax*, corrected to *stictothorax* in the *Tableau méthodique*, p. 18. The discrepancy is clearly due to carelessness, and d'Orbigny had no intention to bestow a new name on his Bolivian bird,

Although the last word has not yet been said about the local races of this Formicarian, the existence of three recognisable forms at least is ascertained.

The typical *H. c. cantator* is common in French Guiana and Surinam, ranging southward to the north side of the Amazons (Obidos; Rio Jamundá, Faro; Barra do Rio Negro = Manáos). In the male of this form the upper back is cinereous, with a few indistinct dusky dots, and a very small, concealed white dorsal spot; in the female uniform pale olive-brownish.

H. c. peruvianus replaces the preceding south of the Amazons; in the western part of its range, however, it crosses the river-belt and extends as far up as the sources of the Rio Napo, E. Ecuador. The eastern limit of its breeding area is apparently formed by the Tocantins. The male may be recognised by having a large white dorsal patch, and the interscapular feathers coarsely spotted with black and edged with white; while the female shows faint blackish spots and a few buff longitudinal streaks on the anterior part of the back, not to be seen in the typical race.

A third form, *H. c. notaea* Hellm., inhabits British Guiana (Bartica Grove, Merumé Mts.). See *Anzeiger Orn. Gesells. Bay.*, No. 3, Oct. 1920, p. 19.

Thamnophilus affinis Lafr. & d'Orb. See p. 205.

Thamnophilus lafresnayanus d'Orb. See p. 203.

Thamnophilus guttata = Myrmeciza hemimelaena hemimelaena Scl.[1]

Tamnophilus guttata [sic] (nec Vieillot)[2]; L. & d'O., *Syn. Av.* i. p. 13 (no locality).
Thamnophilus guttatus d'Orbigny, *Voyage*, p. 177 (Yuracarès; descr. ♂).

No. 1, ♂ ad. (skin): "No. 109. *Tamnophilus guttatus.* D. 417. Yuracarès d'Orbigny, 1834."—al. 57; c. 38½; r. 15½ mm.

This is a perfectly adult male, with deep slaty pileum, black throat and chest, etc., fully agreeing with other specimens from N. Bolivia (Yungas) and S.E. Peru (Marcapata).

Needless to say, it has nothing whatever in common with *Myrmotherula guttata* (Vieill.), to which it had been referred by Lafresnaye and d'Orbigny.

The races of this species are reviewed in *Novitates Zoologicae*, xvii. 1910, pp. 364–365. Its exact systematic position remains to be investigated; it is certainly not a typical *Myrmeciza* (sens. strict.).

Conopophaga naevia = Hypocnemis naevia theresae (Des Murs).[3]

Conopophaga naevia (not of Gmelin)[4]; L. & d'O., *Syn. Av.* i. p. 13 (Yuracarès, Bolivia); d'Orbigny, *Voyage*, p. 186 (Yuracarès; part. descr. ♂ ad.).

No. 1, ♂ nearly ad. (skin): "♂. No. D. 414. Yuracarès, d'Orbigny, 1834."—al. 64; c. 42; r. 15 mm.

This example, a nearly adult male (spots on greater upper-wing coverts

[1] *Myrmeciza hemimelaena* Sclater, *Proc. Zool. Soc. Lond.* 25, 1857, p. 48 (1857—Bolivia).

[2] *Myrmothera guttata* Vieillot, *Galerie des Ois.* 1, ii. p. 251, pl. 155 (1824—Cayenne).

[3] *Conopophaga Theresae* Des Murs in Castelnau's *Voyage dans l'Amér. équin., Oiseaux*, p. 51, pl. xvi. fig. 2 (1856—Rio Javarri, E. Peru; descr. orig. ♀).

[4] *Pipra naevia* Gmelin, *Syn. Nat.* 1, ii. p. 1003 (1789—ex Daubenton, *Pl. enl.* 823, fig. 2: Cayenne; = ♂ ad.).

and tertials slightly shaded with buff, pileum somewhat mixed with brown), agrees in every respect with Peruvian specimens of corresponding age. An adult female from N. Bolivia (San Mateo) in the Berlepsch Collection is also similar to typical birds.

Variation, characters, and range of the two (then known) geographic races of *H. naevia* have been fully dealt with by me in *Novitates Zoologicae*, xvii. 1910, pp. 354–357.

An additional, very interesting form, discovered by Miss Snethlage, has lately been described by Count Berlepsch as *H. naevia ochracea*.[1] The male resembles *H. n. theresae* in having the top of the head slate grey, the edges to the outer primaries and the rectrices olive-greyish, the latter with a broad black subterminal and white apical band, but may be distinguished by the black, white-spotted area above being confined to a limited space of the interscapular region, and by the bright ochraceous colour of the flanks and under-tail coverts, exactly as in *H. n. naevia*. The female of *H. n. ochracea* differs from both of its allies in the deeper ochraceous ground colour of the under-parts, and by lacking the black spots on the foreneck. This race ranges from the right bank of the Tapajóz (Jamauchim) to the left side of the Tocantins (Cameta, Arumatheua).[2]

The above-mentioned ♂ is the only specimen of this species in the Paris Museum from d'Orbigny's expedition. The alleged female described by d'Orbigny (p. 186) is no longer to be found in the collection. As far as I can make out from the description, it must have belonged to some totally different species. In fact, the description suggests the female of *Hypocnemis myotherina melanolaema* Scl.,[3] which occurs in Northern Bolivia.

Conopophaga ardesiaca ardesiaca Lafr. & Orb.

Conopophaga ardesiaca Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 13 (1837—Yungas, Bolivia; descr. ♂); d'Orbigny, *Voyage*, Ois., p. 188 (Yungas, dep. La Paz, principalement aux environs du Rio Meguilla et du village de Carcuata"; = ♂).

No. 1, (♂) ad. (mounted): "No. 109 *bis*.—D. 267. *Conopophaga ardesiaca* Lafr. et d'Orb. Type. Yungas, par d'Orbigny, 1834."—al. 77½; c. 50; r. 14 mm.

Agreeing with two adult males obtained by G. Garlepp in the Yungas of Cochabamba (Quebrada onda), in Count Berlepsch's collection. The same collector secured additional examples at Sandillani and Songo, N.W. Bolivia.

Typical *C. ardesiaca* is evidently confined to the forests of the Bolivian Andes.[4] In South-Eastern Peru (Marcapata) it is replaced by *C. ardesiaca saturata* Berl. & Stolzm.,[5] which differs in the male sex (the female being unknown) by much darker, deep rufous-brown upper-parts, more sooty sides of head, throat, and breast, as also by more rufescent under-tail coverts.

[1] *Ornith. Monatsber.* 20, p. 20 (1912—Tucunaré, Rio Jamauchim, eastern affluent of the Tapajóz, Lower Amazonia).

[2] Miss Snethlage (*Bol. Mus. Goeldi*, viii. 1914, p. 302) refers two males from Villa Braga (left bank of Tapajóz) to *H. n. ochracea*, but on careful examination I have found them to belong unquestionably to *H. n. theresae*.

[3] Cf. *Nov. Zool.* xiv. 1907, p. 21.

[4] The female from the Rio Napo, mentioned by Sclater (*Cat. Birds Brit. Mus.* xv. p. 332), most certainly belongs to some other species.

[5] *Ornis*, 13, Part 2, p. 119 (September 1906—Huaynapata, Marcapata, S.E. Peru).

Conopophaga nigro-cincta Lafr. & Orb. = Corythopis calcarata (Wied).[1]

Conopophaga nigro-cincta Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 13 (1837—Chiquitos); d'Orbigny, *Voyage*, Ois., p. 187, pl. vi. fig. 2 (Santa Ana de Chiquitos).

No. 1, adult (skin): "No. 357, de Chiquitos, Bolivie, par d'Orbigny, 1834. *Conopophaga nigrocincta*—No. 6. Type."—al. 64; c. 50; r. 15 mm.

As already stated in another connection,[2] this species is synonymous with *C. calcarata* (Wied).[3] The type agrees with Brazilian examples (Rio, Bahia, Mattogrosso), having the upper-parts light greenish olive-brown and the bill pale horn brown; it is very different from *C. torquata torquata* Tsch.,[4] which occurs in the forest-region of N.W. Bolivia (San Mateo, Yungas of Cochabamba). This latter form is much larger (wing, 71½–76; tail, 57–64 mm.), has the upper mandible blackish, the back dusky brown, the sides of the head dark slate grey, etc.

The range of the three recognised members of the genus *Corythopis* may be briefly summarised:

(*a*) *C. calcarata* (Wied).—Eastern Brazil, from Bahia through Rio de Janeiro and Minas Geraës (Lagoa Santa, Paracatú; Agua Suja, near Bagagem) to São Paulo (Ypanema, Itapurá, Rio Feio) and Paraguay (Tebicuari, Sapucay), west to Mattogrosso (Chapada; Villa Maria (= San Luis de Caceres), Rio Paraguay) and the adjoining portion of Eastern Bolivia (Santa Ana de Chiquitos).

(*b*) *C. torquata torquata* Tsch.—N.W. Bolivia (Rio San Mateo, Yungas of Cochabamba) and Peru (La Gloria, Monterico, Chanchamayo district; Chuchurras, prov. Huánuco; Guayabamba, N. Peru).

(*c*) *C. torquata anthoides* (Pich.).—Cayenne; Surinam; Brit. Guiana; North Brazil (Pará district; Rio Negro; Rio Madeira up to Humaytha and Calama, on the junction of the Rio Machados); Venezuela (Caura and Orinoco district); East Ecuador (Rio Napo); S.E. Colombia (Rio Putumayo).

N.B.—It is probable that (*c*) may be divisible into two races: one with slaty pileum inhabiting the Guianas and the Pará district; and another with nearly uniform dark-brown upper-parts, ranging from the eastern slopes of the Colombian Andes and Venezuela south to the Rio Madeira.[5] My material is not large enough for definite conclusion.

Merularis ater = Merulaxis rhynolopha (Wied).[6]

Merularis ater L. & d'O., *Syn. Av.* i. p. 14 (no locality).

Not mentioned in the *Voyage*. Although no locality is given, the bird was doubtless obtained near Rio de Janeiro, where d'Orbigny made a short stay before proceeding on to Maldonado and Argentine.

[1] *Myiothera calcarata* Wied, *Beitr. Naturg. Bras.* 3, ii. p. 1101 (1831—S.E. Brazil).

[2] Ménégaux et Hellmayr, *Bull. Mus. d'Hist. Nat. Paris*, xi. 1906, pp. 377–378.

[3] An earlier name is probably *Muscicapa Delalandi* Less. (*Traité d'Orn.*, livr. 5, p. 392; no locality given, the types in the Paris Museum are from Rio de Janeiro, coll. Delalande fils), which was published either late in 1830 or in January 1831. Until its exact date of publication has been ascertained, it would be unwise, however, to use it in place of the generally accepted term *calcarata*.

[4] *Corythopis torquata* Tschudi, *Arch. f. Naturg.* 10, i. p. 279 (1844—Peru); Berlepsch & Hellmayr, *Journ. f. Ornith.* 53, 1905, p. 16 (crit.).

[5] Since distinguished as *C. t. sarayacuensis* Chubb (*Bull. B.O.C.* 38, March 1918, p. 48: Sarayacu, E. Ecuador).

[6] *Myiothera rhynolopha* Wied, *Beitr. Naturg. Bras.* 3, ii. p. 1051 (1831—Rio Belmonte [= R. Jaquetinhonha], South Bahia, S.E. Brazil).

Formicarius analis analis (Lafr. & d'Orb.).

Myothera analis Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 14 (1837—Yuracarès et Chiquitos, Bolivia); d'Orbigny, *Voyage*, Ois., p. 191, pl. vi. *bis*, fig, 1 (Chiquitos et Yuracarès; descr. ♂♀).

I have not been able to discover the types of this species in the Paris Museum.[1] Specimens from Northern Bolivia in Count Berlepsch's Collection, however, agree perfectly with others from Western Brazil (Rio Madeira, Teffé) and Eastern Peru (R. Ucayali). The ranges of *F. a. analis* and its nearest ally, *F. a. crissalis* (Cab.), are summarised in *Novitates Zoologicae*, xiv. 1907, pp. 391–392.

D'Orbigny's description of the supposed female, "sans noir sous la gorge," must have been based upon a young individual, since there is no sexual difference in the adults of this species, both males and female having the throat black.

Phlegopsis nigromaculata nigromaculata (Lafr. & d'Orb.).

Myothera nigromaculata Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 14 (1837—Guarayos, Bolivia); d'Orbigny, *Voyage*, Ois., p. 190, pl. vi. *bis*, fig. 2 (Yuracarès).
Phlogopsis notata Allen, *Bull. Amer. Mus. N. Hist.* ii. p. 97 (1889—Lower Beni River, N.W. Bolivia).

No. 1, adult (mounted): "*Myothera nigromaculata* d'Orb. & Lafr. (type), de Guarayos, par M. d'Orbigny, 1834."—al. 90½; c. 68; r. 20 mm.

This bird corresponds exactly to the original description, and is, no doubt, the *real* type of the species. The ground colour of the upper parts is a pale almost greyish olive, the back being marked with large, oval-shaped black spots, surrounded at the tip by an extremely narrow olive margin; on the upper-wing coverts these markings have the form of broad longitudinal stripes, running nearly to the base of the feathers; there is no trace of white or black spotting on the nape; upper-tail coverts chestnut, the longer ones with a broad black shaft-streak on the apical portion; rectrices also chestnut, the lateral with a narrow, irregular, blackish cross-band, the median pair with a small sagittate spot near the tip.[2] Specimens from San Mateo (north of Cochabamba, Bolivia) and Eastern Peru (Ucayali) agree with the type in all essential characters, while others from Western Brazil (Teffé; Humaytha, left bank of Rio Madeira) are slightly more brownish above.

It will be seen that the preceding description coincides exactly with the characters of *Phlogopsis notata* Allen, based upon a specimen from the same district, viz. N. Bolivia, where the type of *P. nigromaculata* had been secured, and I have not the slightest doubt as to their absolute identity. On the other hand, the peculiarities attributed by Allen to the latter species clearly prove that the alleged "types" in the Lafresnaye Collection, Nos. 5045–6 (now in the Boston Society of Natural History), on which he based his conclusions, do not even belong to *P. nigromaculata*! In fact, the passage relating to the black markings of the back, which are described as "being small, drop-shaped spots at the tips of the feathers," suggests *P. paraensis* Hellm.,[3] and we must assume

[1] In the *Catalogue des Oiseaux de la Collection du Baron de Lafresnaye à Falaise*, p. 153, two specimens, Nos. 5052, 5053, are mentioned as "types" of *Formicarius analis*. However, much reliance cannot be attached to this statement of Verreaux', for reasons explained in the preface of the present paper.

[2] The development of the black markings in the tail, being subject to individual variation, cannot be used as a reliable character for systematic purposes.

[3] *Ornith. Monatsber.* 12, p. 53 (1904—Pará, N.E. Brazil).

that the specimens in the Lafresnaye Collection, as in so many other cases, have been quite incorrectly labelled as "types" by Verreaux, whose objectionable practice thus misled Dr. Allen to redescribe the true *P. nigromaculata* as a new species.

Since my writing about the geographical races of *P. nigromaculata*,[1] our knowledge of their distribution has been considerably augmented, chiefly through the exertions of the indefatigable Miss Emilia Snethlage.

P. n. nigromaculata ranges from N. Bolivia (head-waters of the Rio Madeira: Lower Beni, San Mateo, Guarayos) and Eastern Peru (Ucayali), through Western Brazil north to Teffé, Rio Solimoëns, and east to the *left* bank of the Rio Madeira (Humaytha).

P. nigromaculata bowmani Ridgw. ranges from the *right* bank of the Rio Madeira (Borba, Manicoré, Allianca, Calama (São Francisco); Maroins (Rio Machados) to the *left* bank of the Xingú (Rio Curuá, a tributary of the Iriri).

P. nigromaculata paraensis Hellm., the last representative of the group, ranges from the Tocantins (Cametá) eastwards, the most easterly locality yet known being Ourèm on the Rio Guamá, Pará district.

Myothera alapi = Myrmeciza atrothorax melanura (Ménétr.).[2]

Myothera alapi (not of Gmelin)[3]; L. & d'O., *Syn. Av.* i. p. 14 (no locality).
Formicivora alapi d'Orbigny, *Voyage*, p. 181 (Yuracarès et Guarayos, Bolivie; descr. ♂).

No. 1, (♂) ad. (skin): "No. 108. *Tamnophilus alapi*, d'Orbigny, 1834, de Guarayos, No. 381."—al. 60; c. —; r. 17 mm.

This bird agrees well with specimens from Mattogrosso, which I have shown[4] to be somewhat different from typical *M. atrothorax atrothorax* (Bodd.), of Guiana, Venezuela, Rio Negro, and Eastern Colombia (Bogotá). Additional material examined since that time tends to lessen the characters claimed for the southern form, although it may be generally distinguished by the lighter, more rufescent upper-parts and shorter bill.

Rhinocrypta lanceolata (I. Geoffr.-St. Hil.).

Rhinomya lanceolata ("Is. Geoffr. et d'Orb."); I. Geoffroy-Saint-Hilaire, *Mag. Zool.* ii. cl. ii. pl. 3; (1832—"en Patagonie, sur les bords du Rio-Nègro"); L. & d'O., *Syn. Av.* i. p. 15 (Patagonia), d'Orbigny, *Voyage*, p. 194, pl. 7, fig. 1 (Patagonie).

No. 1, (♂) ad. (mounted): "de Patagonie, février 1831, par d'Orbigny. *Rhinomya lanceolata* Is. Geoffr. et d'Orb. Type."

No. 2, juv. (mounted): same date and locality.

In the *Voyage* d'Orbigny has the following note about this singular bird: "On ne la trouve point à l'embouchure du Rio Nègro; elle est rare près du *Carmen* et devient commune en remontant ce fleuve, près de la *Salina d'Andres Paz*."

[1] *Nov. Zool.* xiv. 1907, pp. 388–389.

[2] *Formicivora melanura* Ménétriès, *Mém. Acad. Sci. St. Pétersb.* (6), *Sci. math. phys. et nat.*, iii. 2, p. 508, pl. viii. fig. 1, 2 (♂♀) (1835—"non loin de la ville de Queluz," prov. Minas Geraës; Cuyabá, Mattogrosso).

[3] *Turdus Alapi* Gmelin, *Syst. Nat.* 1, ii. p. 826 (1789—based on Daubenton, *Pl. enl.* 701, fig. 2; "L'Alapi, de Cayenne"); = *Formicarius attothorax* (err. typogr.) Boddaert, *Tabl. Pl. enl.* p. 44 (1783—based on the same).

[4] *Verhandl. Zool. Bot. Gesells. Wien*, 53, 1903, pp. 213–214.

The species is widely distributed in Argentine, its range extending from the Rio Negro (Patagonia) west to Neuquen, Mendoza, Cordóba, Catamarca, and Tucumán.

Megalonyx rufus = **Hylactes megapodius** (Kittl.).[1]

Megalonyx rufus Less.[2]; L. & d'O., *Syn. Av.* i. p. 15 (Chili).
Leptonyx macropus Swains.[3]; d'Orbigny, *Voyage*, p. 197 (Valparaiso, Chili).

No longer in the collection of the Paris Museum.

Megalonyx ruficeps Lafr. & Orb. = **Hylactes tarnii** King.[4]

Megalonyx ruficeps Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 15 (1837—Valdivia, S. Chili).
Leptonyx Tarnii, d'Orbigny, *Voyage*, p. 198, pl. 8, fig. 1 (Valdivia, sud du Chili).

I have not been able to discover the type of *M. ruficeps* in the collection; but both description and locality leave no doubt as to its being a mere synonym of *H. tarnii* King.

The brown-throated *Hylactes* is a citizen of Southern Chili, ranging from Concepcion and Arauco (Corral, Rio Bueno) as far south as Messier Channel, where a specimen was obtained by Cunningham at Halt Bay, and is particularly common on the Island of Chiloë. It has also been found by G. F. Gerling on the Lago del General Paz, Western Chubut, near the Chilian frontier.

Megalonyx albicollis = **Pteroptochos albicollis** Kittl.[5]

Megalonyx albicollis Kittl.; L. & d'O., *Syn. Av.* i. p. 15 (Chili).
Leptonyx albicollis d'Orbigny, *Voyage*, p. 196, pl. 8, fig. 2 (Concepcion, Valdivia, Chili).

No d'Orbignyan specimens in the Paris Museum. There may be some mistake regarding the localities, as d'Orbigny did not himself obtain the species, but got his specimens from a M. Fontaine, of Valdivia.

Megalonyx rubecula = **Pteroptochos rubecula** Kittl.[6]

Lepalonyx rubecula Kittl.; L. & d'O. *Syn. Av.* i. p. 16 (Chili).
Leptonyx rubecula, d'Orbigny, *Voyage*, p. 196, pl. 7, fig. 3 ["*Megalonyx rufogularis*" d'Orb.] ("Valdivia, au sud du Chili").

No. 1, adult (mounted): "par d'Orbigny, du Chili. Type de *M. rufogularis* d'Orb."

[1] *Pteroptochos megapodius* Kittlitz, *Mém. Acad. Sci. St. Pétersbg.* (sav. étr.), i. p. 182, pl. iv. (1831—Valparaiso, Chili).
[2] *Centurie Zool.* p. 200, pl. 66 (May 1832—"le sud du Chili, dans le pays des Araucans et des Puelches").
[3] *Zoolog. Illustr.* (2nd ser.), iii. pl. 117 (1832–1833—Chili).
[4] *Proc. Comm. Sci. & Corresp. Zool. Soc. Lond.* i. p. 15 (January 1831—Isl. of Chiloë, and Port Otway, Gulf of Peñas, S. Chili).
[5] *Mém. Acad. Sci. St. Pétersbg.* (sav. étr.), i. p. 180, pl. iii. (1831—Valparaiso, Chili).
[6] Loc. cit. p. 179, pl. ii. (1831—La Concepcion, Chili).

(*To be continued.*)

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By LORD ROTHSCHILD, F.R.S., Ph.D.

(*Continued from p.* 170.)

GEOMETRIDAE.

HEMITHEINAE.

129. **Metacineta aggravaria** (Guen.).

Racheospila aggravaria Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* ix. Uran. and Phal. vol. i. p. 373. no. 597. (1857) (Cayenne ?).

1 ♂ Bande, S. Damagarim, September 16, 1920; 1 ♀ Makochia, Damagarim, September 15, 1920; 1 ♂ Songo, Damagarim, September 17, 1920.

The Songo ♂ has female coloration and pattern.

130. **Rhodesia alboviridata** (Saalm.).

Phorodesma alboviridata Saalmüller, *Lepid. Madag.* part ii. p. 495. no. 843. pl. xi. 4. f. 271. (1891) (Nossi-Bé).

1 ♂ Bande, S. Damagarim, September 16, 1921.

131. **Microloxia ruficornis** Warr.

Microloxia ruficornis Warren, *Novit. Zool.* vol. iv. p. 42. no. 87. (1897) (Weenen, Natal).

1 ♂ Mts. of Baguezan, Asben, May 13, 1920.

132. **Hemidromodes robusta** (Prout).

Heirochthonia robusta Prout, *Novit. Zool.* vol. xx. p. 435. no. 99. (1913) (Port Sudan).

1 ♂ Mts. of Baguezan, Asben, June 1, 1920; 4 ♂♂ Azzal, N. of Agades, July 13–15, 1920.

133. **Mixocera albistrigata** (Pagenst.).

Eucrostis albistrigata Pagenstecher, *Mitt. Naturh. Mus.* p. 46, aus *Jahrb. Hamb. Wiss. Anst.* vol. x. (1). p. 252 (1893) (Angola).

1 ♂ Zinder, Damagarim, September 11, 1920.

134. **Acidaliastis micra dissimilis** (Warr.).

Euchloris dissimilis Warren, *Novit. Zool.* vol. xii. p. 26. no. 36. pl. iv. f. 27. (1905) (Nakheila, R. Atbara).

2 ♂♂ Azzal, N. of Agades, July 14–16, 1920; 1 ♂ Mts. of Baguezan, Asben, May 12, 1920.

The Baguezan ♂ has the whole of the forewings greyish chocolate-brown with a median subterminal band and the fringe white; this I propose to call ab. *saturata* ab. nov.

STERRINAE.

135. **Traminda rufistrigata marcida** (Warr.).

Cosymbia marcida Warren, *Novit. Zool.* vol. xii. p. 27. no. 39 (1905) (Nakheila, R. Atbara).

1 ♂ Mts. of Baguezan, Asben, May 12, 1920.

136. **Scopula nepheloperas** (Prout).

Acidalia nepheloperas Prout, *Proc. Zool. Soc. Lond.* 1916. p. 150 (Mandera, Somaliland).

1 ♂ Mts. of Baguezan, Asben, May 17, 1920.

137. **Scopula** sp. ?

These two specimens are too bad to describe, but the species is nearest to *Sc. fimbrilineata* Warr.

2 ♂♂ Farniso near Kano, December 22–25, 1919.

138. **Scopula** sp. ?

This specimen is rather poor and I do not venture to describe it. It is near *internataria* Walk.

1 ♂ Makochia, Damagarim, September 15, 1920.

139. **Sterrha fylloidaria** (Swinh.).

Ptychopoda fylloidaria Swinhoe, *Trans. Entom. Soc. Lond.* 1904. p. 559 (Nairowa).

1 ♀ Makochia, Damagarim, September 15, 1920.

LARENTIINAE.

140. **Rhodometra sacraria** (Linn.).

Phalaena sacraria Linnaeus, *Syst. Nat. Edit.* xii. vol. i. part ii. p. 863. no. 220 (1767) (Barbaria).

1 ♀ Kano, N. Nigeria, December 8, 1919.

GEOMETRINAE.

141. **Peridela sudanata** Warr.

Peridela sudanata Warren, *Novit. Zool.* vol. xii. p. 28. no. 46. pl. iv. f. 26 (1905) (Nakheila, R. Atbara).

1 ♂, 1 ♀ Zinder, Damagarim, February 14, 18, 1920; 1 ♂ Makochia, Damagarim, September 15, 1920; 1 ♂ Takoukout, Damagarim, March 26, 1920.

The Zinder ♂ and the Takoukout ♂ have ♀ coloration.

142. **Tephrina cinerascens** (Butl.).

Acidalia cinerascens Butler, *Ann. Mag. Nat. Hist.* (4) xvi. p. 418. no. 130 (1875) (Natal).

1 ♀ Zinder, Damagarim, September 11, 1920; 2 ♀♀ Tanout, Damergou, September 6, 1920.

143. **Tephrina disputaria** (Guen.).

Embolia ? disputaria Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* x. Uran. and Phal. ii. p. 489, no. 1,710 (1857) (Egypt).

3 ♂♂♀ Mts. of Baguezan, Asben, May 12, July, 1920; 1 ♀ Azzal N. of Agades, July, 1920; 7 ♂♂ Takoukout, Damergou, March 11–26, 1920; 2 ♂♂, 2 ♀♀ Zinder, Damagarim, February 15–20, 1920; 1 ♂ Farniso near Kano, December 25, 1919.

The Farniso ♂ and 1 Takoukout ♂ have ♀ coloration and pattern.

144. **Tephrina quadriplaga** sp. nov.

♂ Antennae sooty black; head and thorax cream-white; abdomen pale greyish buff. Forewing dirty cream-white irrorated and clouded with olive-brown densest in outer three-fifths of wing; an olive-brown spot under costa and one on inner margin before centre, and the clouding near tornus almost condensed to a patch. Hindwing dirty cream-white with a central band of outer one-third of wing covered with olive-brown clouding.

Expanse: 17·5–20 mm. Length of forewing: 7·5–8·5 mm.

2 ♂♂ Takoukout, Damergou, March 13–26, 1920. (Type, March 26.)

Mr. Prout suggests this insect may be an extreme modification of a well-known species, but I prefer to keep it separate at present.

145. **Osteodes latimarginaria** Rebel.

Osteodes latimarginaria Rebel, *Lepid. Südarab. u. Sokótra*, p. 70. aus *Denks. Math. Kl. d. K. Akad. Wissensch.* vol. lxxi (2) 100 (1907) (Red Sea).

24 ♂♂, 8 ♀♀ Mts. of Baguezan, Asben, May 7—June 5, 1920.

146. **Zamarada secutaria** (Guen.).

Stegania secutaria Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* x. Uran. and Phal. ii. p. 45. no. 969 (1857) (Abyssinia).

1 ♂, 1 ♀ Takoukout, Damergou, March 12–26, 1920.

147. **Zamarada nasuta** Warr.

Zamarada nasuta Warren, *Novit. Zool.* vol. iv. p. 122. no. 292 (1897) (Lokoja, R. Niger).

1 ♂ Bande, S. Damagarim, September 16, 1920.

148. **Heterostegania indularia** (Guen.).

Stegania indularia Guenée, *Hist. Nat. Ins. Spec. Gén. Lépid.* x. Uran. and Phal. ii. p. 46. no. 970 (1857) (Abyssinia).

1 ♂ Mts. of Baguezan, Asben, May 24, 1920.

BOMBYCIDAE.

149. **Trilocha ficicola** Westw. and Orm.

Trilocha ficicola Westwood and Ormerod, *Injur. Ins. S. Africa*, p. 40. f. 20 (1889) (Port Elizabeth).

1 ♀ Kano, N. Nigeria, September 24, 1920.

SATURNIDAE (ATTACIDAE).

150. **Epiphora schultzei** Auriv.

Epiphora schultzei Aurivillius, *Ark. f. Zool.* vol. ii. no. 12. p. 30. no. 257 (1905) (Central Bornu ; Lake Chad).

5 ♀♀ Baban Tubki, S. of Zinder. September 13, 1920.

COSSIDAE.

151. **Hypopta reibelli** Oberth.

Hypopta reibelli Oberthur, *Etud. Entom.* livr. i. p. 40. t. 4. f. 1 (1876) (Biskra).

The ♀ sent is very large and fine. Expanse : 28 mm.
1 ♀ Zinder, Damagarim, February 20, 1920.

152. **Paropta buchanani** sp. nov.

This insect is allied to *henleyi*, *niloticus*, and *l. nigrum*, but abundantly distinct ; there is a specimen in the British Museum labelled *henleyi*.

♂. At once distinguished from its three nearest allies by the yellow head and patagia and its very short truncated forewings. Antennae shaft greyish white, pectinations dark sooty grey ; head frons dark grey, vertex buffish orange ; thorax patagia buffish orange, rest dark brownish grey ; abdomen pale mouse-grey.

Forewing ash-grey, basal two-thirds above median slate-grey, below median saturated with buff, a large sooty patch above vein 1 inside median line, whole wing with a number of strigillate streaks ; postmedian line evenly convexly curved, not angled as in *henleyi* ; postdiscal line curved in towards postmedian and ending on vein 3. Hindwing greyish white with very faint streaks.

Expanse : 25 mm. Length of forewing : 9·5 mm.

2 ♂♂ Mts. of Baguezan, Asben, May 12–13, 1920. (Type, May 12.)

LASIOCAMPIDAE.

153. **Anadiasa sahariensis** sp. nov.

♂. Antennae golden amber-brown ; head and thorax wood-brown ; abdomen yellowish cinnamon-grey. Forewing pale greyish cinnamon ; basal half strongly suffused with brown hiding colour except an antemedian band, from which runs a broad streak below vein and leaving below it a dark-brown spot ; a submarginal sinuate dark-grey toothed band ; terminal hairline brown. Hindwings greyish cinnamon. ♀. Larger. Antennae golden amber-brown ; rest of insect pale cinnamon-grey ; in basal half of forewings an antemedian and median line and some less distinct intermediate lines darker cinnamon ; in outer half a submarginal and other lines indistinct and somewhat darker than ground colour.

Expanse: ♂ 22·5 mm., ♀ 30 mm. Length of forewing: ♂ 9·5 mm., ♀ 13 mm.

9 ♂♂, 3 ♀♀ Mts. of Bagnezan, Asben, May 12–13, 1920; 9 ♂♂, 2 ♀♀ Agades, S. of Asben, July 8–10, 1920.

154. **Chilena senegalensis** Oberth.

Chilena senegalensis Oberthur, *Etud. Lepid. Comp.* Fasc. xii. p. 341. no. 4 (1916) (Kaolack, Senegal).

Several of the tropical African *Chilenas* are dimorphic, i.e. have either the ground colour snow-white or dirty mouse-grey. In this species the hitherto undescribed ♂ has the ground colour pure white. The lines on the forewing are the same as in the ♀.

1 ♂ Azzal, N. of Agades, July 13, 1920.

155. **Chilena virgo** Oberth.

Chilena virgo Oberthur, *Etud. Lepid. Comp.* Fasc. xii. p. 340. no. 2. (1916) (El Outaya).

The hitherto undescribed ♂ is much purer, more snow-white than the ♀, which latter agrees exactly with Mr. Oberthur's figure, Fasc. xiii. pl. cdxxvii. f. 3626.

1 ♂ Bande, S. Damagarim, September 16, 1920; 1 ♀ Aderbissinat, N. of Damergou, August 18, 1920.

156. **Pachypasa concolor** sp. nov.

♀ Antennae greyish yellow; head and patagia yellowish grey; rest of thorax dark sooty grey; abdomen sooty greyish brown. Forewing sooty blackish grey, a little yellowish on basal half of costa and in cell; a few blackish streaks on nervures in outer half of wing; fringe and submarginal row of dots on ends of nervures blackish interspersed with yellowish hairs. Hindwings pale yellowish grey, nervures and fringe suffused with yellow. A second ♀ has the head and patagia greyish buff and a little more admixture of yellow on wings.

Expanse: 68–80 mm. Length of forewing: 60–70 mm.

2 ♀♀ Aderbissinat, N. of Damergou, September 20–26, 1920. (Type, September 26.)

HETEROGENEIDAE (LIMACODIDAE auct.).

157. **Miresa coccinea intensior** subsp. nov.

♂ Differs from *c. coccinea* Hmpsn. in being larger; the forewing is purer crimson lake, **not** yellowish crimson, and the antemedian leaden-coloured band extends only from inner margin to median vein, **not**, as in *c. coccinea* to the costa, and it is much narrower. Hindwing pure pinkish crimson. Thorax and abdomen pure crimson lake with no yellowish tinge.

1 ♂ Bande, September 16, 2 ♂♂ Songo, S. Damagarim, September 17, 1920. (Type, Songo.)

PYRALIDAE.

GALLERIINAE.

158. **Pempelia jordanis** (Hamps.)

Lamonia jordanis Hampson, in Ragonot's *Mon. Phyc. and Gall.* vol. ii. in *Mém. Lépid.* vol. viii. p. 435. no. 16. pl. xlvi. f. 5 (1901) (Jordan Valley).

2 ♀♀ Zinder, Damagarim, February 18 and September 11, 1920.

These two specimens are of medium size, but agree with many other specimens both from Palaearctic and Tropical Africa. The species is very variable.

CRAMBINAE.

159. **Ommatopteryx ocellea** (Haw.)

Palparia (*Amplissima*) *ocellea* Haworth, *Lepid. Brit.* p. 486. no. 21 (1803–1828 [1812]) (nr. London).

5 ♂♂, 10 ♀♀ Zinder, Damagarim, February 14–20, 1920.

This is at once distinguishable from all the other Old-World species by the silver line dividing the yellow transverse postmedian band down the centre.

160. **Ommatopteryx hampsoni** sp. nov.

This is the insect Sir George Hampson has identified in his Revision of the *Crambinae*, P.Z.S. London, 1895, with the *Eromene pulverosa* Chr. (Rom. recte) described in *Mem. Lepid.* iii. p. 47. pl. ii. f. 14. Sir George quite overlooked three points in the very exact description: first, that in the Latin diagnosis it is distinctly stated, "Long alae ant 9–11 mm.," i.e. length of forewings 9–11 mm., and **not Expanse**; then secondly, the ground colour is given as dark grey, **not** rufous grey; and thirdly, the species is quoted as follows: "Elle égale en grandeur les plus grandes *E. ocellea*, mais ses ailes sont bien plus larges," i.e. "It equals in expanse the largest *E. ocellea*, but its wings are much broader." This is not the case with the present insect, which is less than half the size of large *E. ocellea* and has proportionately narrower hindwings.

♂♀. Antennae pale greyish brown; head, thorax, and abdomen pale whitish grey washed with brown-grey. Forewing rusty grey, being a greyish-white ground densely freckled with dark-brown scales, a dull-yellow median band edged with closely packed strigilated dark-grey hairlines and joined basad to a crenulated white band, the yellow band also basad crenulate; in the apex is an oblique narrow grey line followed by a narrow white and a broader yellow band after which follow a grey and a white wedge-shaped spot; marginal band brown on which are six metallic spots, the lower four broadly surrounded with irregular black markings. Hindwings opalescent whitish grey.

Length of forewing: 5 mm. Expanse: 12 mm.

1 ♂ Azzal, N. of Agades, July 13, 1920 (Type); 1 ♀ Aouderas, Asben, July 23, 1920.

161. **Ommatopteryx asbenicola** sp. nov.

♀. Differs from *hampsoni* Rothsch. in the more uniform brown-grey of head, thorax, and abdomen; in the much darker brown-grey of the ground colour of the forewings; in the non-strigilate concrete dark-grey lines edging the yellow

median band ; in there being only two metallic and black marginal spots situated between veins 2 and 4 ; and in the apical oblique yellow band being continued penthouse-shaped to inner margin at tornus, the above-mentioned two metallic and black spots being on this yellow line. The hindwings are greyer and not opalescent and with a distinct yellowish marginal line.

Length of forewing : 5 mm. Expanse : 12 mm.

1 ♀ Aouderas, Asben, July 26, 1921.

162. **Diatraea castifusalis** Hmpsn.

Diatraea castifusalis Hampson, *Ann. Mag. N.H.* (9) iv. p. 55 (1919) (Mlanje, Nyasaland).

Most of the series have the forewings deeper rufous than the type, but not all.

7 ♀♀ Tanout, Damergou, September 3–6, 1920 ; 3 ♂♂, 4 ♀♀ Makochia, Damagarim, September 15, 1920 ; 2 ♂♂, 3 ♀♀ Songo, S. Damagarim, September 17, 1920 ; 1 ♂ Bande, S. Damagarim, September 16, 1920 ; 4 ♀♀ Barbara, N. Nigeria, September, 18, 1920 ; 4 ♀♀ Jigawa, N. Nigeria, September 19, 1920.

163. **Surattha albostigmata** sp. nov.

♂. Antennae dark grey, shaft whiter, very heavily pectinated ; palpi and head buff ; thorax pale cinnamon-grey, tegulae whitish. Abdomen cinnamon-grey, first segment whitish. Forewing basal three-quarters with ground colour cinnamon-buff, an antemedian indistinct cinnamon-brown band, a large irregular medio-postmedian wedge-shaped patch of greyish cinnamon-brown edged with rusty orange-brown and suffused with blackish reaches from costa to inner margin, and inside which beyond cell is a clear white stigma ; outer quarter of wing dirty white slightly freckled with dark scales, a marginal band from apex to vein 1 olivaceous rusty-brown with black dots ; fringe olive and white.

Hindwing white. ♀ larger and medio-postmedian patch greyer and more band-like. Very variable in tone of colour and intensity of markings, some ♂♂ and ♀♀ much more sandy.

Length of forewing : ♂ 8–10 mm., ♀ 7–12 mm. Expanse : ♂ 18–22 mm., ♀ 16–27 mm.

3 ♂♂, 6 ♀♀ Azzal, N. of Agades, July 13–16, 1920 ; 3 ♂♂, 9 ♀♀ Aouderas, Asben, July 23, 1920.

164. **Adelpherupa flavescens** Hmpsn.

Adelpherupa flavescens Hampson, *Ann. Mag. N.H.* (9) iii. p. 541 (1919) (Shambe, E. Africa).

1 ♂, 1 ♀ Zinder, Damagarim, September 1920.

ANERASTIINAE.

165. **Heterographis medioalba** sp. nov.

♀. Differs from all the allied species by the conspicuous white scaling between the two transverse bands.

Antennae white above, brown below ; head and thorax white closely blotched with cinnamon-rufous ; abdomen dirty grey, second segment tinged with rufous. Forewings cinnamon-rufous, an oblique antemedian and a less oblique postmedian band white, the space in between with irregular white scaling. Hindwings silky greyish buff, margin brownish.

Expanse : 13 mm.

1 ♀ Takoukout, Damergou, March 1920.

166. **Heterographis aïrensis** sp. nov.

♀. Antennae pale amber-brown: head and thorax dirty white blotched and shaded with pale yellowish cinnamon. Forewing yellowish cinnamon; basal four-fifths streaked longitudinally with broad smears of crimson, outer one-fifth with broad crimson transverse line, an oblique broad antemedian band and a vertical postdiscal one white. Hindwings silky whitish grey, margin brownish.

Expanse: 13 mm.

1 ♀ Mts. of Baguezan, Asben, May 1920.

167. **Heterographis eximia** sp. nov.

♀. Antennae whitish brown; palpi long rose-colour; frons white with orange-yellow central band; thorax dull rosy carmine; abdomen dirty whitish mouse-grey. Forewing rosy carmine, a subbasal oblique V mark dark amber-brown, a broad upright V with base on vein 1 dark amber-brown edged outwardly on each arm with white, the basad arm forming the median band, a double marginal hair-line deep carmine and white, fringe rosy carmine. Hindwings silky creamy opalescent white, marginal area more or less rosy carmine, apical area stained brownish.

Expanse: 18 mm.

1 ♀ Azzal, N. of Agades, July 1920.

168. **Heterographis sahariensis** sp. nov.

♀. Antennae deep brown; frons and vertex white, latter almost covered by a triangular brown patch; thorax wood-grey brown with a few black freckles and slightly tinged with mauve; abdomen yellowish wood-grey. Forewing olivaceous amber-brown; some scattered white and black freckling in basal one-third, an oblique curved antemedian white band from which is emitted a long horizontal white streak freckled with black along median vein at the end of which is an oblique pure white wedge. The disk is freckled freely with white and black and the nervures are picked out in black; a thin postdiscal and a broad marginal band white, a thin marginal sooty-black hairline; fringe white densely freckled with black. Hindwing silky cream-colour tinged with brownish grey, stronger towards the margins. Type ♀, Makochia.

Expanse: 17–20 mm.

1 ♀ Makochia, Damagarim, September 1920 (Type); 3 ♀♀ Agades S. of Asben, July–August 1920.

169. **Heterographis pyrethrella** (Herr.-Sch.).

Acrobasis pyrethrella Herrich-Schäffer, *Neue Schmett.* p. 12. no. 56. f. 80 (1857–1860) (Sarepta).

The marking of the single ♀ is less sharp and the pale costal area more in evidence than in the original figure.

1 ♀ Agades, S. of Asben, August 1920.

170. **Heterographis carnea** (Warr.).

Myelois carnea Warren, *Proc. Zool. Soc. Lond.* 1888. p. 336 (Campbellpur).

2 ♂♂, 2 ♀♀ Agades, S. of Asben, July–August 1920.

171. **Heterographis samaritanella** (Zell.).

Euzophora samaritanella Zeller, *Entom. Zeit. Stettin.* vol. 28. p. 379. no. 18 (1867) (Jordan Valley).

1 ♀ Zinder, Damagarim, February 1920.

172. **Heterographis cretaceogrisea** sp. nov.

♂♀. Antennae amber-brown ; head, thorax, and abdomen buffish cretaceous grey. Forewing creamy greyish buff freckled with minute black scales, denser in the ♀ especially along the nervures. Hindwings semivitreous greyish cream, white shaded greyer along the margin.

Expanse : ♂ 19–20 mm. ; ♀ 17–21 mm. (Type ♂, Zinder.)

1 ♂ Zinder, Damagarim, February 1920 ; 1 ♀ Tanout, Damergou, September, 1920 ; 1 ♂, 2 ♀♀ Mts. of Baguezan, Asben, May 1920 ; 1 ♀ Aouderas, Asben, July 1920.

173. **Syria limoniella** Chrétien.

Syria limoniella Chrétien, *Bull. Soc. Ent. France*, p. 34 (1911) (Biskra).

2 ♀♀ Agades, S. of Asben, July 1920 ; 1 ♂ Azzal, N. of Agades, July 1920.

174. **Homaeosoma botydella** Rag.

Homaeosoma botydella Ragonot, *Nouv. Gen. et Esp. Phyc. et Gall.* p. 35 (1888) (Natal).

2 ♂♂ Zinder, Damagarim, February 1920.

175. **Homaeosoma straminea** sp. nov.

♀. Antennae brown ; head and thorax stramineous yellow slightly tinged with olive and washed with rufous on hind half of thorax ; abdomen yellowish grey. Forewing basal one-sixth obliquely rufous mauve, rest of wing except marginal area stramineous yellow slightly washed with olive ; marginal area brownish, a double marginal line white and mauve, fringe pale mauve. Hindwing silky cream-colour strongly opalescent, margin brownish.

Expanse : 21 mm.

1 ♀ Zinder, Damagarim, February 1920.

176. **Homaeosoma basalis** sp. nov.

♂. Antennae black, head and patagia dull mauve freckled with black, rest of thorax dull mauve ; abdomen yellowish grey. Forewing basal one-third obliquely cinnamon-rufous tinged with mauve, freckled with black and edged with white ; rest of wing pale rufous-mauve freckled with black on costal area, a postdiscal sinuate black and mauve band, marginal hairline black, fringe pale mauve and black. Hindwing silky cream-colour opalescent, margin brownish.

Expanse : 16 mm.

2 ♂♂ Mts. of Baguezan, Asben, May 1920.

177. **Homaeosoma asbenicola** sp. nov.

♂. Antennae brown with black sensory organ ; head and thorax yellowish grey freckled with black ; abdomen pale yellowish brown. Forewing yellowish

grey freckled with black. Hindwing silky cream-white, margin brownish. ♀ purer grey.

Expanse: ♂ 19 mm. ♀ 17–23 mm.

1 ♂, 3 ♀♀ Baguezan Mts., Asben, May–June 1920.

178. **Brephia inconspicua** sp. nov.

♂♀. Antennae whitish brown; head, thorax, and abdomen whitish cream-colour. Forewing whitish cream-grey densely freckled with black scales, an angled sooty postdiscal line, a sooty marginal hairline. Hindwings semi-vitreous opalescent white with brownish margin. The Azzal ♂ and Aouderas ♀ are more creamy less grey than the type, but this is due to sparser black freckling probably owing to abrasion.

Expanse: ♂ 21 mm.; ♀ 19 mm. Type ♀, Mts. of Baguezan.

1 ♀ Mts. of Baguezan, Asben, May 1920; 1 ♀ Aouderas, Asben, July 1920; 1 ♂ Azzal, N. of Agades, July 1920.

179. **Brephia gracilis** sp. nov. (Hmpsn. in litt.).

♂. Antennae amber-brown, sensory organ white shell-like; head and thorax milk-white, tegulae with slight sooty-grey freckling; abdomen buff above, white freckled with black scales below, a patch of thick modified black scales on each side of anal segment. Forewing grey-white freckled with black; median three-fifths of costal area rusty buff, a median sinuate black line broadly bordered basad with buff, a sinuate postdiscal band black bordered distad with buff, a black postcellular stigma with pure white patch distad; marginal hairline black. Hindwings semivitreous opalescent white, marginal hairline brown.

Expanse: 19 mm.

1 ♂ Mts. of Baguezan, Asben, June 1920.

180. **Crocidomera intensifasciata** sp. nov.

♂. Antennae brown; palpi black; frons brownish cinnamon; thorax pale wood-brown; abdomen yellowish wood-grey. Forewing cinnamon mauve-grey, basal one-half on and below vein 1 rusty brown; a very broad median band occupying almost the median one-third of wing black-tinged edged and clouded in places with dark rufous-brown; nervures tipped with black. Hindwing sericeous milk-white, margin pale brown.

Expanse: 23 mm.

1 ♂ Mts. of Baguezan, Asben, May 1920.

181. **Illithyia interniplagella** (Rag.).

Salebria interniplagella Ragonot, *Monogr. Physit. and Gall.* in Romanoff, *Mém. Lépid.* vol. vii. p. 370. no. 397. pl. xv. f. 10 (1893) (Gambia).

1 ♀ Baban Tubki, S. of Zinder, September 1920; 1 ♀ Zinder, Damagarim, September 1920.

182. **Pogononeura buchanani** sp. nov.

This fine species is much larger than the sole representative of the genus hitherto known, *hirsuticostella* Rag. Sir George Hampson places *Pogononeura* as

a section of the genus *Illithyia*; but, although the hairy costa is confined to the ♂ and I do not think secondary sexual characters should be considered of generic importance, I consider there are so many other differences that *Pogononeura* should be accorded generic rank.

♂♀. Antennae basal one-half black with black shell-like sensory organ, apical half brown; head and thorax buffish clay-colour; abdomen grey-buff. Forewing greyish cinnamon-buff closely freckled with black scales; on costal area, median vein, and veins 1, 2, 3, 4 these scales are so dense as to form longitudinal streaks and patches. Hindwing sericeous cream-white, margin brown.

Expanse: ♂ 19–22 mm.; ♀ 19–21 mm.

Two of the ♀♀ show a much greater extent and density of black freckling than the others.

5 ♂♂, 6 ♀♀ Mts. of Baguezan, May 1920.

183. **Anerastia aurantiaca** sp. nov.

♀. Antennae white above, brown below; head and thorax pale whitish cinnamon; abdomen cinnamon-buff. Forewing rusty orange, a rufous-brown spot below median vein about one-third from base, a postdiscal zigzag band black edged distad with white; margin black-brown, fringe sooty brown-grey. Hindwing semivitreous cream-colour opalescent, margin brown.

Expanse: 14 mm.

2 ♀♀ Agades, S. of Asben, July–August 1920.

184. **Pterothrix damergouensis** sp. nov.

♂. Antennae amber-brown; head and thorax purplish grey; abdomen silvery mauve-grey, anal segment and tuft dull buff. Forewing orange cinnamon-brown; costal area densely freckled white and black; a large postmedian wedge-shaped patch, enclosing a black stigma, grey freckled with darker grey; margin and fringe dark grey. Hindwing sericeous cream-white, margin slightly brownish.

Expanse: 17 mm.

1 ♂ Takoukout, Damergou, March 1920.

PYRALINAE.

185. **Crocalia africana** sp. nov.

♂♀. Antennae cinnamon-brown; head and thorax cinnamon minutely freckled with cinnamon-brown; abdomen pale cinnamon freckled with dark reddish cinnamon, much more densely in the central half so as to form an irregular somewhat ill-defined band outlined by antemedian and postdiscal sinuate lines of denser scaling; a blackish discal stigma. Hindwings silky greyish buff.

Expanse: 10–14 mm. Type ♀, Takoukout.

2 ♂♂, 1 ♀ Mts. of Baguezan, Asben, May 1920; 4 ♀♀ Takoukout, Damergou, March 1920 (Type).

186. **Aglossa pinguinalis** (Linn.)

Phalaena Pyralis pinguinalis Linnaeus, *Syst. Nat.* edit x. p. 533. no. 232 (1758) (Sweden).

1 ♀ Mts. of Baguezan, Asben, July 1920.

187. **Pyralis soudanensis** sp. nov.

♂♀. Antennae dark brown ringed with dirty white; head, thorax, and abdomen whitish grey freckled with sooty grey, last segment of abdomen more or less buff. Forewing whitish grey freckled with sooty grey, costal area densely so; outer one-third and basal one-third below median washed with reddish cinnamon, deepest near apex of wing and above tornus; an antemedian line and a much-angled and zigzag postmedian line blackish, the antemedian followed by a white space. Hindwing semivitreous dirty white, a marginal hairline brown, marginal area clouded with grey.

1 ♂, 2 ♀♀ from Kaleloua and 1 ♀ Tanout are so densely freckled with sooty grey that they look entirely different; I propose to call this ab. *sordida* ab. nov.

Expanse: 16–19 mm. Type ♂, Kaleloua.

2 ♂♂, 4 ♀♀ Kaleloua, N. Damagarim, September 1920; (Type) 1 ♀ Tanout, Damergou, September 1920; 2 ♀♀ Azzal, N. of Agades, July 1920; 2 ♂♂ Aouderas, Asben, July 1920.

188. **Tyndis umbrosus** sp. nov.

♂. Antennae dark rusty brown, finely pectinated with fine hair-like pectinations; head, thorax, and abdomen cinnamon wood-grey freckled with sooty brown, closest on first 6 abdominal segments, last 2 segments dirty white sparsely speckled with sooty grey. Forewing basal one-third and terminal one-fifth cinnamon grey-brown freckled with sooty-grey, rest of wing deeper, greyer, and much more densely freckled with black so as to appear like a dark sooty-grey central band, distad edged with buffish line and basad by a sharply angled black line. Hindwing yellowish grey, an indistinct dentate postmedian dark-grey postmedian band; a brown marginal hairline and fringe blotched with brown.

Expanse: 22 mm.

1 ♂ Aonderas, Asben, July 1920.

189. **Bostra asbenicola** sp. nov.

♂. Antennae cinnamon-brown; head pale cinnamon; thorax and abdomen pale cinnamon finely and somewhat closely freckled with brownish cinnamon. Forewing pale cinnamon densely and closely freckled with cinnamon-brown; a postmedian sinuate buff line; basal two-thirds of costa cinnamon-buff with five dark-brown spots. Hindwing cinnamon-brown, fringe paler.

♀. Antennae black-brown; head pale cinnamon; thorax and abdomen pale greyish wood-brown freckled with dark brown. Forewings sooty chocolate-brown, a very indistinct antemedian and a distinct postmedian sinuate line buff. Hindwing dusky brown-grey somewhat paler basad.

Expanse: ♂ 12·5 mm.; ♀ 15–18·5 mm. Type ♂.

1 ♂, 2 ♀♀ Aouderas, Asben, July 1920 (Type ♂); 2 ♀♀ Azzal, N. of Agades, July 1920.

190. **Dattinia buchanani** sp. nov.

This is a most interesting species and quite the smallest of the genus. It varies much in size, however, the smallest ♀ having an expanse of 11 mm. and the largest 16 mm.

♂. Antennae dark amber-brown; head, thorax, and abdomen cream-buff freckled very sparsely with black scales. Forewing cream-white suffused with buff freckled with black; this freckling forms three transverse bands, a subbasal, median, and postmedian, by being condensed closely. Hindwing greyish white, more greyish along margin. ♀ similar. The Aouderas ♀ is the largest and has much more creamy buff forewings and the black freckling much reduced; the next largest ♀ and the largest ♂ from Azzal are much more silvery grey owing to the absence of buff.

Expanse: ♂ 11–13 mm.; ♀ 11–16 mm. Type ♂.

3 ♂♂, 3 ♀♀ Azzal, N. of Agades, July 1920; 1 ♀ Aouderas, Asben, July 1920.

191. **Dattinia dubiosa** sp. nov.

♀. Nearest to *leonalis* Oberth. and *syrticolalis* Rag. (which Sir George Hampson treats as synonyms, but which I am inclined to consider different).

Head, thorax, and abdomen whitish cream-colour very faintly sprinkled with rusty cinnamon. Forewing whitish cream-colour sprinkled with cinnamon-rufous. Hindwings milk-white, margin tinged with cinnamon-rufous.

Expanse: 18·5 mm.

1 ♀ Aouderas, Asben, July 1920.

AGROTERINAE.

192. **Hymenia fascialis** (Cram.).

Phalaena Pyralis fascialis Cramer, *Pap. Exot.* vol. iv. part. xxxiv. p. 236. pl. cccxcviii. f. O (1782) (Japan).

1 ♂, 1 ♀ Aderbissinat, N. Damergou, August 1920.

193. **Marasmia hampsoni** sp. nov.

This insect and other forms have all been included by Sir George Hampson under *Marasmia venilialis* Walk.

♂. Differs from *venilialis* in the much narrower border to both pairs of wings, in the much more pointed hindwings, and in the longer and narrower androconial pouch in the costal area of the forewings.

Expanse: 13 mm.

1 ♂ Jigawa, N. Nigeria, September 1920.

194. **Lamprosema indicata** (Fabr.).

Phalaena indicata Fabricius, *Entom. Syst.* vol. iii. part 2. p. 218. no. 330 (1794) (S. America).

1 ♂ Jigawa, N. Nigeria, September 1920.

195. **Sylepta balteata** (Fabr.)

Phalaena balteata Fabricius, *Suppl. Entom. Syst.* p. 457. no. 300–1 (1798) (East India).

1 ♂ Bande, S. Damagarim, September 1920; 1 ♀ Jigawa, N. Nigeria, September 1920.

196. **Nomophila noctuella** (Schiff. and Den.).

Phalaena Tinea Directipalpus noctuella Schiffermüller and Denis, *Ank. System. Verz. Schmett. Wien*, p. 130. no. 35. (1775) (Vienna).

1 ♂ Aderbissinat, N. Damergou, August 1920; 1 ♂ Agades, S. of Asben, July 1920; 1 ♀ Mts. of Baguezan, Asben, May 1920.

197. **Psara bipunctalis** (Fabr.).

Phalaena 2 punctalis Fabricius, *Entom. Syst.* vol. iii. part 2. p. 232. no. 386 (1794) (American Islands).

1 ♀ Makochia, Damagarim, September 1920.

198. **Loxostege nudalis** (Hübn.).

Pyralis nudalis Hübner, *Samml. Europ. Schmett. Lepid.* vi. Pyral. iii. no. 90 (Europe).

1 ♂, 2 ♀♀ Takoukout, Damergou, March 1920; 1 ♀ Aderbissinat, N. Damergou, August 1920; 1 ♀ Kaleloua, N. Damagarim, September 1920.

199. **Loxostege damergouensis** sp. nov.

♀. Very similar to *nudalis* but ground colour more cinnamon, less yellow; on forewing an antemedian darker line, a darker discoidal stigma from which proceeds a median line to inner margin, a postmedian darker line reaches to vein 3, where it bends backwards at a sharp angle and reaches the discoidal stigma.

Expanse: 17 mm.

1 ♀ Takoukout, Damergou, March 1920.

200. **Cybolomia azzalana** sp. nov.

Sir George Hampson has lumped the present insect as well as the following with *C. pentadalis* (Led.).

♂♀. Antennae white above, sooty below; head, thorax, and abdomen greyish buff, more grey. Forewing pale greyish straw-colour, veins strongly protruding; internervular spaces marked with black, most strongly in cell, below median, and below vein 1. Hindwing sericeous milk-white slightly opalescent, marginal area grey.

Expanse: 16–18 mm. Type ♀.

1 ♂. 3 ♀♀ Azzal, N. of Agades, July 1920. (Type ♀.)

201. **Cybolomia ledereri** sp. nov.

♂♀. Antennae dark grey; head, thorax, and abdomen mouse-grey. Forewings grey; on outer three-fifths of costal area five white and four black alternate oblong patches, a black streak followed by a white spot in cell, a black streak each side of vein 2, a black streak on vein 3, and five black streaks in white broader ones following internervular spaces. Hindwing sericeous dirty white, marginal area brownish grey; ♀ has the wing more extensively suffused with grey.

Expanse: ♂ 20 mm.; ♀ 22 mm.

1 ♂, 4 ♀♀ Takoukout, Damergou, March 1920.

202. **Cybolomia fenestrata** sp. nov.

There is considerable difference in size between the sexes.

♂. Antennae amber-brown; head and thorax purplish cinnamon; abdomen pale cinnamon-brown. Forewing brown, tinged with mauve on outer one-quarter, a postdiscal ovate vitreous spot beyond cell followed by an indistinct dusky streak. Hindwings cinnamon-buff. ♀ Much larger and darker, more cinnamon umber-brown with no vitreous spot.

Expanse: ♂ 11·5 mm.; ♀ 18 mm. Type ♂, Azzal.

1 ♂ Azzal, N. of Agades, July 1920; 1 ♂, 3 ♀♀ Mts. of Baguezan, Asben, May 1920.

203. **Metasia angustipennis** sp. nov.

♀. Antennae brown; head and thorax cinnamon-brown; abdomen dark mouse-grey above, buff on sides, anal tuft, and underside. Forewing sericeous brownish orange-buff with antemedian, median, and postmedian sinuate indistinct greyish bands; the median one proceeding from a black cellular stigma. Hindwings sericeous opalescent cream-buff greyer towards margin.

Expanse: 18 mm.

1 ♀ Kaleloua, N. Damagarim, September 1920.

204. **Metasia parallelalis** sp. nov.

♀. Uniform greyish buff with a postdiscal and a submarginal grey band.

Expanse: 20 mm.

1 ♀ Zinder, Damagarim, February 1920.

205. **Tegostoma comparalis sahariensis** subsp. nov.

Differs from *c. comparalis* Hübn. in the colour being much more sandy rufous and in many specimens having the pattern obsolete or almost absent.

2 ♀♀ Tanout, Damergou, September 1920; 1 ♂ Aderbissinat, N. Damergou, August 1920; 9 ♂♂, 20 ♀♀ Agades, S. of Asben, July 1920; 8 ♂♂, 21 ♀♀ Azzal, N. of Agades, July 1920.

REVIEW OF THE BIRDS COLLECTED BY ALCIDE D'ORBIGNY.

By C. E. HELLMAYR.

PART II.

Turdus fuscater = **Planesticus fuscater fuscater** (Lafr. & Orb.).

Turdus fuscater Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 16 (1837—"in Andibus [Bolivia]"); d'Orbigny, *Voyage*, Ois., p. 200. pl. 9. fig. 1 (La Paz, Enquisivi [prov. Sicasica], Cochabamba, Mizque, Valle Grande, Chuquisaca).

No. 1, adult (mounted): "No. 8,537. Adulte. La Paz, Bolivie, d'Orbigny, 1834. No. 195. Type. *Turdus fuscater* L. & O."—Wing, 146; tail, 134; bill, 27 mm.[1]

No. 2, adult (mounted): "No. 8,739. La Paz, Bolivie, d'Orbigny. 1837. No 198. *Turdus fuscater* L. & O. Type."—Wing, 145; tail, 132; bill, 27 mm.

No. 3, adult (very worn): "No. 8,549. Bolivie, 1834, d'Orbigny, no. 198. *T. fuscater* L. & O."—Wing, 140; tail, 128; bill, 26 mm.

No. 4, adult (mounted): "No. 8,538. Sicasica (Bolivie), 1834, d'Orbigny, no. 198."—Wing, 140; tail, 132; tars., 40 mm.

Although the specific name *fuscater* had universally been applied to an Ouzel found in Eastern Bolivia (Valle Grande, Chuquisaca) and N.W. Argentine, certain discrepancies in the original description pointed to some other bird,[2] while the various localities mentioned in the *Voyage* suggested the probability of several species having been united by the describers under that term. As already briefly stated in another place,[3] the type specimens, which I have carefully studied in the Paris Museum, *proved to belong to the Bolivian race of the Giant Ouzel*, long known as *Turdus* (*Semimerula* or *Merula*) *gigas*. Having had the advantage of comparing very large series, I think it appropriate to give a summary of the various forms which it is hoped will facilitate their future discrimination.

(*a*) *Planesticus fuscater fuscater* (Lafr. & Orb.).

Turdus fuscater Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 16 (1837—"in Andibus [Bolivia]"); d'Orbigny, *Voyage*, Ois., p. 200. pl. 9. fig. 1 (part.: "aux environs de la ville de La Paz . . . à Enquisivi" [prov. Sicasica]).

Turdus gigas (nec Fraser) Sclater & Salvin, *P.Z.S.* 1879. p. 591 (Sorata, Tilotilo); Allen, *Bull. Amer. Mus. N. Hist.* ii. 1889. p. 78 (Yungas, Bolivia).

Hab. Western Yungas of Bolivia: La Paz (d'Orbigny, Garlepp), Chaco, Cocapata, Sandillani, Cillutincara (Garlepp), Sorata, Tilotilo (Buckley), Sicasica (d'Orbigny).

Characters.—♂ ad. Upper part and sides of the head together with the throat sooty blackish, forming a kind of hood; back much lighter, sooty grey, the mantle strongly washed with brownish olive; the black of the throat passes into

[1] Designated as type of *T. fuscater* Lafr. & Orb.
[2] Cf. my note in *Journ. f. Ornith.* 50, 1902, p. 69.
[3] *Bull. B.O.C.* 16, 1906, p. 92.

sooty grey on the chest, becoming even paler, nearly smoke-grey on lower breast and abdomen ; axillaries and under-wing coverts sooty grey. In worn plumage, the blackish colour of the head and the brownish tinge of the back very nearly disappear through abrasion, so that the plumage looks almost uniform sooty grey. ♀ ad. (in fresh livery). Differs from the male in having the upper parts, including top and sides of the head, rufescent brown ; the throat pale brown striped with dusky ; the breast and belly light brownish olive ; the axillaries and under-wing coverts dusky brown, apically edged with dull orange.—In both sexes there is a more or less distinct whitish chin-spot.

Remarks.—The two specimens from La Paz (Nos. 1, 2) and an adult male from the same locality in the Berlepsch Collection, perfectly adult birds (with yellow bills and sooty grey under-wing coverts) in worn breeding plumage, agree very well together, except for the slightly paler under-surface of the types, which can be easily accounted for by their long exposure to light in the show gallery of the Museum. In these three examples the head is but little darker than the back, and the blackish colouring of the throat hardly apparent. No. 3, without exact locality, is, judging from its general coloration and small size, an adult female ; in consequence of its very worn condition, all colours are duller than in the freshly moulted female described above. The Sicasica bird resembles those from La Paz, but being in better plumage has the head more blackish, while the under-parts are more brownish and the under-wing coverts narrowly edged with pale orange, both these divergencies being perhaps signs of immaturity. There can be no question, however, that the four specimens of d'Orbigny's belong to one and the same species, which can only be looked upon as the southern representative of "*P. gigas*," from Colombia, Ecuador, and Peru. *We*, therefore, *designate* No. 1 as *type* of *Turdus fuscater* Lafr. & Orb., with *La Paz* as *terra typica*.[1]

P. f. fuscater, as restricted by the writer, differs from *P. f. gigantodes* by smaller size, much weaker legs and feet, blackish head, and more distinct whitish chin-spot. The female is altogether different by its brownish coloration, being much more like *P. f. cacozelus* (Bangs), of the Sierra de Santa Marta, from which it may be distinguished by reason of its darker upper-parts and more blackish tail.

Measurements of the specimens examined by the writer :

	Wing. mm.	Tail. mm.	Tars. mm.	Middle toe. mm.	Bill. mm.
Mus. H. von B. : Adult male from La Paz (October 14, 1893)	149	139	39	25	25½
Mus. H. von B. : Adult male from Cocapata (April 9, 1892)	150	145	42	26	25
Mus. H. von B. : Immature male from Chaco (June 25, 1894) . . .	151	138	41½	29	27
Mus. Brit. : Adult male from Sorata (C. Buckley)	154	143	—	—	25

[1] The other localities—Cochabamba, Mizque, Valle Grande, and Chuquisaca—are not represented by specimens in the Paris Museum. The three last-named unquestionably refer to *P. anthracinus* (= *T. fuscater* auct. nec Lafr. & Orb.), while at Cochabamba the Bolivian Giant Ouzel might be expected to occur. Very likely d'Orbigny—as he did in other cases—identified the thrushes met with in those localities from observations in the field, without actually taking specimens.

	Wing. mm.	Tail. mm.	Tars. mm.	Middle toe. mm.	Bill. mm.
Mus. H. von B.: Adult female from Sandillani (June 25, 1896) . .	145	138	42	28	27
Mus. Paris: two unsexed adults from La Paz	145, 146	132, 134	40	—	27
Mus. Paris: one unsexed female (?) from Sicasica	140	132	40	—	—

Besides, there are three specimens in the spotted juvenile plumage, from Cocapata and Cillutincara in the Berlepsch Collection, obtained like the others by the late Gustav Garlepp.

The species hitherto called *Turdus fuscater* differs from true *P. f. fuscater* (Lafr. & Orb.) by its much smaller size, especially shorter tail, and much weaker, slenderer feet. The adult males are of a uniform dark, sooty-grey colour, not unlike the Bolivian Giant Ouzel in worn plumage, while immature birds and females are much paler brownish or olive-grey. This bird is no doubt specifically distinct from the Giant Ouzels, and appears to be most nearly allied to *P. chiguanco* (Lafr. & Orb.). Its earliest name is *P. anthracinus* (Burm.).[1] More will be said about its status and distribution under the heading of *Turdus chiguanco* Lafr. & Orb.

(*b*) *Planesticus fuscater ockendeni* (Hellm.).

Turdus fuscater ockendeni Hellmayr, *Bull. B.O.C.* xvi. p. 91 (May 1906—Limbani, Andes of Carabaya, S.E. Peru).

Turdus gigantodes (nec Cabanis) Sclater & Salvin, *P.Z.S.* 1874. p. 677 (Chachupata, Andes of Cuzco; spec. examined).

Merula gigantodes Taczanowski, *Orn. Pérou*, i. 1884. p. 495 (part.: Chachupata); Seebohm-Sharpe, *Monogr. Thrushes*, ii. 1900. p. 59, pl. 93 (part.: Chachupata & Cuzco; figure of spec. ex Chachupata).

Hab. Andes of South-eastern Peru: Cuzco, Chachupata, Limbani, Carabaya (9,000 to 11,000 feet).

Characters.—♂ ad. At once recognizable from both *P. f. fuscater* and *P. f. gigantodes* by its much darker, uniformly blackish coloration, only a few feathers on the breast and upper-back showing narrow brownish edges; axillaries, underwing coverts, quills, and tail also blackish, not smoky grey or sooty, as in the allied forms. No trace of a white chin-spot. ♀ ad. Like the male, but underparts strongly washed with olive-brown.

Remarks.—Eight specimens from the Andes of South-eastern Peru are readily distinguishable by the above characters from a large series of *P. fuscater gigantodes*, as represented by skins from W. Colombia, Ecuador, Northern and Central Peru. Adult males are nearly uniform brownish black, and very much deeper coloured than the darkest *gigantodes* in fresh plumage which I have seen. Even immature birds (which are not quite so dark) may be separated by their chocolate-brown ground-colour of both the upper- and under-parts, and by lacking the orange suffusion under the wings. The two skins secured by F. Whitely at Chachupata, in the Andes of Cuzco, one of which was figured in the *Monograph of Thrushes* under the name of *Merula gigantodes*, are immature birds of the present form and agree well with a young female from Marcapata in the Tring Museum.

[1] *Turdus anthracinus* Burmeister, *Journ. f. Ornith.* 6, p. 159 (1858—Mendoza).

Measurements of the specimens examined by the writer :

	Wing. mm.	Tail. mm.	Tars. mm.	Bill. mm.
Tring Museum : two adult males [1] from Limbani, Carabaya, March 21, 1904 (G. Ockenden)	149, 150	139	44, 45	28, 29
Tring Museum : one adult female from Marcapata	146	144	44½	28
Tring Museum : two immature birds from Marcapata	146	144	44½	28
Tring Museum : two immature birds from Marcapata	142, 153	135, 142	43, 44	27, 28
Brit. Museum : one immature female from Chachupata	149	145	—	27½
Brit. Museum : one immature bird from "Andes of Cuzco".	148	138	—	27

(c) *Planesticus fuscater gigantodes* (Cab.).

Turdus gigantodes Cabanis, *Journ. f. Ornith.* 21, p. 315 (1873—Maraynioc, Chanchamayo district, Central Peru ; type [an adult female] in the Berlin Museum examined).

Hab. Western and Central Andes of Colombia (Paramillo, Popayan, Cerro Munchique, Cocal, Valle de las Pappas, S. Pablo ; Laguneta, Santa Isabel, Rio Toché, El Eden, Retiro, Santa Elena, Barro Blanco, etc.) ; Ecuador (Cayambé, Matos, Titiacun, Pichincha, Cuenca, Chillanes, Pallatanga, Nanegal, Chaupi, Riobamba, Papallacta, Corazon, etc.) ; Northern Peru (Cutervo, Chachapoyas, Molinopampa, Balsas) ; and Central Peru (Maraynioc, Ninabamba, Palaquemado, etc.).

Characters.—Sexes alike. General colour a rather dark sooty grey, becoming lighter, more smoke-grey or greyish brown in worn plumage ; the axillaries and under-wing coverts sooty or smoke-grey, very rarely edged with buff apically. The plumules in the anterior portion of the gonydeal angle are, as a rule, whitish, forming a small indistinct chin-spot which, however, is often absent.

Remarks.—I am unable to detect any constant differences between specimens from the *Western* and *Central* Cordilleras of Colombia (S. Pablo, Retiro, Santa Elena), and others from Ecuador, N. and Central Peru. Birds in fresh plumage are darker, more sooty, both above and below. Such examples I have from "Bogotá," [2] Cayambé (N. Ecuador), and Baños. Birds in worn condition are considerably paler, and closely resemble the form *P. f. gigas* of the Eastern Andes of Colombia. In fact, several examples in abraded livery from the type region of *gigantodes* (Ninabamba, Maraynioc) are hardly distinguishable from specimens of *gigas* taken at Guasca and Calera, vicinity of Bogotá, and it is not surprising that Sharpe, in Seebohm's posthumous *Monograph of the Thrushes*, should have identified a skin from Ninabamba (topo-typical *gigantodes*) as *gigas*. Although the differences separating *gigantodes* and *gigas* are slight, they are connected with different breeding areas,[3] and should be recognized in nomenclature.

[1] One, no. 675*a*, is the type of *Turdus fuscater ockendeni* Hellm.

[2] This bird was no doubt obtained somewhere in the Central Andes.

[3] See Chapman, *Bull. Amer. Mus. N.H.* 36, 1917, pp. 536, 537.

Measurements of the specimens examined by the writer:

	Wing. mm.	Tail. mm.	Tars. mm.	Bill. mm.
One adult female from S. Pablo, S.W. Colombia	152	140	42	26
One adult male from Quito	159	152	42	26
One adult female from Baños, Ecuador	153	144	44	26
One adult female from Cachi Llacta, Ecuador	145	135	43	28
One adult male from Cayambé, N.W. Ecuador	160	150	43	28
One adult female from Cayambé	150	135	40	27½
One adult male from Cutervo, N. Peru	158	152	43½	27½
One adult female from Cutervo	154	146	41	27½
One adult male from Maraynioc, C. Peru	158	147	42	28½
One adult female from Maraynioc	154	145	42	29
One adult female from Ninabamba	157	150	—	27½

(*d*) *Planesticus fuscater gigas* (Fraser).

Turdus gigas Fraser, *Proc. Zool. Soc. Lond.* 8, "1840," p. 59 (March 1841—Santa Fé de Bogotá).

Hab. Eastern Andes of Colombia (Bogotá, Guasca, Calera, El Roble, Chipaque, Quetame; Bucaramanga, Paramo de Pamplona).

Characters.—Much like *P. f. gigantodes*, but lighter, especially below, the abdomen being decidedly paler greyish brown than the breast; the under-wing coverts lighter smoke-grey with more distinct ochraceous edges.

Remarks.—Although single specimens are not always distinguishable, birds from Bogotá and Bucaramanga, by the paler colouring of the abdomen, form the passage to the still lighter race found in the Andes of Mérida.

Measurements:

	Wing. mm.	Tail. mm.	Tars. mm.	Bill. mm.
Ten unsexed specimens from Bogotá and Bucaramanga	155–165	152–160	40–46	26½–29

(*e*) *Planesticus fuscater pallidiventris* (Berl.).

Turdus gigas pallidiventris Berlepsch, *Ornith. Monatsberichte*, 10, p. 71 (1902—Andes of Mérida W. Venezuela).

Hab. Western Venezuela: Andes of Mérida (El Valle, 2,000 metr.).

Characters.—Differs from *P. f. gigas*, of E. Colombia, by much paler brownish grey under-parts, nearly greyish white in the middle of the belly; lighter greyish brown upper-surface; and by having the under-wing coverts always edged with orange-buff. Freshly moulted examples are readily distinguishable from *gigas* in corresponding stage, though worn specimens of the latter sometimes look exceedingly similar. Sexes alike. Three adult males from Mérida. Wing, 150–152; tail, 142–145; tars., 40; bill, 25½–26½ mm.

(*f*) *Planesticus fuscater cacozelus* (Bangs).

Merula gigas cacozela Bangs, *Proc. Biol. Soc. Wash.* 12, p. 181 (1898—Macotama, Sierra Nevada de Santa Marta).

Hab. Northern Colombia: Sierra Nevada of Santa Marta (San Sebastian, El Mamon, San Miguel, Paramo de Macotama, P. de Chiruqua).

Characters.—This excellent race may be distinguished from its geographical neighbours, *P. f. gigas* and *P. f. pallidiventris*, by its shorter wings and tail, much stouter bill, and its coloration. The upper-parts, instead of being sooty or brownish grey, are light hair-brown, with the rectrices decidedly brown, not blackish; the throat is more distinctly striped with dusky on a pale-brown ground; the remainder of the under-parts pale buffy brown, but slightly underlaid with greyish brown on chest and sides; the axillaries and under-wing coverts olive-brown, broadly edged with deep orange-buff. Sexes nearly alike.

Measurements:

	Wing. mm.	Tail. mm.	Tars. mm.	Bill. mm.
One adult male from San Miguel . .	149	146	42	30½
Three adult females from San Miguel and P. de Chiruqua	140–145	133–140	40–43	28½–31

Turdus chiguanco = Planesticus chiguanco chiguanco (Lafr. & Orb.).

Turdus chiguanco Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 16 (1837—"Tacna, rep. Peruviana"; descr. orig.); d'Orbigny, *Voyage*, Ois., p. 201, pl. 9, fig. 2 ("sur le versant occidental des Andes Peruviennes, du niveau de la mer à 2,000 mètres au dessus, c'est-à-dire aux environs de la ville de *Tacna*; et de là, en remontant la Cordillère, jusqu' au village de *Palca*").

No. 1, adult (mounted): "8,546. Pérou, Tacna. d'Orbigny, 1831, No. 2—6. *T. chiguanco* O. & L. Type." . . . Wing, 120; tail, 110; tars., 35½; bill, 23 mm.

No. 2, adult (mounted): "8,545. Pérou, Tacna. M. d'Orbigny, 1831. No. 6—3. *T. chiguanco* O. & L. Type." . . . Wing, 124; tail, 102½; tars., 37; bill, 24 mm.

No. 3, adult (mounted): "8,544. Pérou. M. d'Orbigny, 1831. No. 6. *T. chiguanco* O. & L. Type." . . . Wing, 125; tail, 103; tars., 36; bill, 24½ mm.

The three types are perfectly adult birds with unspotted upper-wing coverts and entirely yellow bills. The axillaries and under-wing coverts are light greyish brown, the latter but narrowly edged with buffy yellow; the chin and middle of the throat decidedly whitish with strongly defined light-brown shaft-streaks; the remainder of the under-surface pale brownish grey, passing into whitish on the middle of the belly; the under-tail coverts marked with distinct white edges and shaft-stripes. The types were obtained at Palca, above the town of Tacna, in the coast range of the Andes, province of Tacna, at d'Orbigny's time forming part of the Peruvian Republic, but nowadays belonging to Chile. Unfortunately, no other examples from the coast district are available for examination.[1] Birds from the Andes of Cuzco and Carabaya, S.E. Peru, and from N.W. Bolivia (Cusilluni, Tanampaya, Chaco) are larger and darker; the under-parts being more deeply as well as more uniformly brownish grey; the axillaries and under-wing coverts much suffused with orange-buff. The under-tail coverts either wholly uniform or with mere traces of light shaft-lines and edges; the whitish

[1] Sclater (*P.Z.S. Lond.* 1886, p. 396) records a single female from Sibaya, Cordillera of Tarapacá, which I unhappily omitted to examine when in London some years ago. Count Berlepsch (*Ornis*, 13, ii., September 1906, p. 106) mentions specimens from Palca obtained by the brothers Garlepp, but in spite of repeated researches they cannot be found in his collection, now the property of the Senckenbergian Natural History Society of Frankfort.

chin-spot is smaller or even obliterated, the throat brownish grey, hardly paler than the breast, with the dusky streaks obsolete. There are a few Eastern examples that may not be distinguishable from the types in the one or other character, but as a whole the series from S.E. Peru and N.W. Bolivia seems fairly constant. Still, before proposing their formal separation, I should like to see additional examples from N.W. Chile (typical *chiguanco*) and the adjoining coastal districts of S.W. Peru (Arequipa, Islay).

A single specimen each from Central Peru (Maraynioc) and Western Peru (Ica, near Lima) I am unable to separate from the Cuzco series either in size or colour.

Four skins from Chicani, northern slope of the Bolivian Andes on the head-waters of the Rio Beni, in the Berlepsch Collection, are perhaps again different. Compared with the series from S.E. Peru and N.W. Bolivia (vicinity of La Paz) they are still larger, with longer tail and stronger feet, and on the upper-parts of a darker, more brownish tinge, though single specimens cannot be told apart.

Specimens from various localities measure as follows :

	Wing. mm.	Tail. mm.	Tars. mm.	Bill. mm.
Three unsexed adults from Tacna, N.W. Chile	120–125	102½–110	35½–37	23–24½
Seven adult males from Cuzco, S.E. Peru	138–143	120–127	37–40	24½–29
Six adult females from Cuzco . .	130–136	114–120	36–39	24–25
One adult male from Tanampaya, N.W. Bolivia	141	127	39	26
Two adult males from Chicani, N.E. Bolivia	139, 144	126, 133	41½, 42	25, 28
Two adult females from Chicani .	136, 138	125, 127	40, 42	25¾, 26
One unsexed adult (? female) from Maraynioc, C. Peru . . .	130	112	40	25
One adult female from Lima, W. Peru	131	113½	38½	27
One adult male from Cuenca (Sig-sig), C. Ecuador (*P. chiguanco conradi* (Salvad. & Festa).[1] Type .	144	138	37	26

P. chiguanco chiguanco (sens. lat.) is thus seen to inhabit the mountains of Peru (from Cajamarca southwards), N.W. Chili and Northern Bolivia (Cordillera of La Paz, both slopes).

Its nearest ally (and perhaps geographical representative) is the Thrush universally called *T. fuscater* by authors, but, as we have shown above, entitled to the name *P. anthracinus* (Burm.).[2] Of this bird we have a very instructive

[1] *Turdus conradi* Salvadori & Festa, *Boll. Mus. Zool. Torino*, 14, No. 357, p. 4 (1899—Cuenca, Sig-sig, Central Ecuador).—This form, of which, in addition to the type, I have examined an adult from Riobamba, is fairly separable on account of its lighter, purer grey coloration and much longer tail. Its range is restricted to the highlands of Southern Ecuador.

[2] *Turdus anthracinus* Burmeister, *Journ. f. Ornith.* 6, p. 159 (1858—Mendoza).—*Turdus fuscater amoenus* Hellmayr, *Journ. f. Ornith.* 50, p. 68 (1902—Mendoza).

series from Central Bolivia (Valle Grande, Chuquisaca) before us. The adult males are easily recognizable by their dark, sooty-grey coloration, which involves even the axillaries and under-wing coverts. Females and immature males, however, are much paler, olivaceous or smoke-grey, and differ from *P. chiguanco* ex Cuzco, only by the slightly darker hue of the upper parts. Besides the large series from Valle Grande, there are a nearly adult male (in dark sooty plumage) and an immature male from Sandillani, W. Bolivia, procured by Gustav Garlepp, in the Berlepsch Collection. The last-named bird, which resembles *P. chiguanco* also in the under-wing coverts being for the greater part bright orange, conclusively proves the close affinity of the two species.

Four adult males from Tucumán (Lagunita, Santa Ana) agree well with those from Valle Grande, though some have rather larger bills. At one time I was inclined to separate subspecifically the inhabitants of Mendoza on account of their longer bill; but the specimens from Western Argentine in the British Museum are rather variable in that respect, and without a much larger series of properly sexed examples it would be hazardous to attempt any sub-division. Therefore I prefer to include, at least provisionally, the inhabitants of Bolivia and Western Argentine, down to Mendoza, under the term *P. anthracinus* (Burm.), which, in its turn, may eventually prove to be only a subspecies of *P. chiguanco.*

Measurements of the specimens examined by the writer:

	Wing. mm.	Tail. mm.	Tars. mm.	Bill. mm.
Six adult males from Valle Grande, Bolivia . .	135–141	126–132	36–38	24–26
Five immature males from Valle Grande . .	133–137	118–125	35½–37	25–26
Two adult females from Valle Grande . . .	127, 128	120, 124	36	25
One male from Sandillani, W. Bolivia. . . .	131	125	36½	25
One immature male from Sandillani, W. Bolivia . .	132	114	36	24
Four adult males from Tucumán	133–141	118–130	36–37	25½–27
One adult male from Cordoba (Cosquin) . . .	134	119	36	27
One adult female from Cordoba (Cosquin) . . .	127	117	35	24¾
Two adult females from Catamarca	129, 133	118, 122	36	26, 26¾
Three adult males from Mendoza . . .	132–135	123–125	35–36	30, 30, 32
Three adult females from Mendoza . . .	127–132	118–124	35–36	27, 31, 31
Three unsexed adults from Mendoza . . .	131, 132, 142	117, 123, 132	36	27½, 29, 31

Turdus magellanicus = Planesticus falcklandii magellanicus (King).[1]

Turdus magellanicus L. & d'O., *Syn. Av.* i. p. 16 (Patagonia).
Turdus falklandiae (not of Quoy & Gaimard [2]) d'O., *Voyage*, p. 202 (river du Rio Nègro, Patagonie, en hiver).

Nos. 1, 2, "♀" ad. (mounted): "de Patagonie, février 1831, par M. d'Orbigny, *T. magellanicus* King, femelle."

The Munich Museum possesses a large series from Western Patagonia (Neuquen), which I am unable to separate from Chilian (Valdivia) examples. D'Orbigny's skins are also in every respect similar.

The Magellanic Thrush inhabits Chile (about southwards from Coquimbo), Mas-a-tierra, Terra del Fuego, Staten Island, and southern Argentine, north to the Rio Colorado. On the Falkland Islands it is replaced by *P. f. falcklandii* (Quoy & Gaim.), of which I have examined the typical examples in the Paris Museum, and which is certainly but subspecifically distinct.[3]

Turdus chochi { ♂ = Planesticus rufiventris rufiventris (Vieill.).[4] / ♀ = Planesticus amaurochalinus Cab.[5]

Turdus chochi Vieillot [6]; L. & d'O., *Syn. Av.* i. p. 17 (Paraguay; prov. Santa Cruz, Bolivia).
Turdus rufiventris d'Orbigny, *Voyage*, p. 203 ("des environs de Buenos Ayres [en hiver] aux plaines brûlantes de Santa Cruz de la Sierra en Bolivia"; descr. ♂♀).

No. 1, adult (skin): "No. 72, par d'Orbigny, juillet 1829. Corrientes."—al. 117; c. 102; r. 22 mm. = *Planesticus r. rufiventris* Vieill.

No. 2, adult (skin): "D. No. 51. Chiquitos, Bolivie, *Turdus rufiventris* Mas. No. 196, par d'Orbigny, 1834."—al. 112; c. 95; r. 23 mm. = *P. r. rufiventris* Vieill.

No. 3, adult (skin): "No. 73. Corrientes, juillet 1829. *Turdus rufiventris* foem., par d'Orbigny."—al. 111; c. 92; r. 20½ mm. = *P. amaurochalinus* Cab.

No. 4, adult (mounted): "No. 73, de Buenos Ayres. *Turdus rufiventris* foem., par d'Orbigny."— = *P. amaurochalinus* Cab.

As we gather from referring to the descriptions in the *Voyage*, the authors of the *Synopsis Avium* regarded the Rufous-bellied (*P. rufiventris*) and the White-vented Thrush (*P. amaurochalinus*) as male and female of the same species; needless to say, quite erroneously.

Nos. 1 and 2 agree very well together. After carefully comparing a good series from Eastern Bolivia (Santa Cruz, Holgoin, Samaipata, Valle Grande) with numerous Brazilian specimens and others from Paraguay (Asunçion, Concepcion) and N.E. Argentine (Buenos Ayres), I am unable to recognize any local races of this species.

P. r. rufiventris ranges from the vicinity of Buenos Ayres and Cordova as

[1] *Turdus magellanicus* King, *Proc. Comm. Sci. & Corresp. Zool. Soc.* i. p. 14 (January 1831—"in fretu Magellanico").

[2] *Turdus falcklandii* Quoy & Gaimard, in Freycinet, *Voyage autour du monde "Uranie" et "Physicienne," Zoologie*, livr. 3, p. 104 (1824—"aux îles Malouines").

[3] Cf. Oustalet, *Mission Scient. Cap Horn, Zool.* vi. p. B.80, 278.

[4] *Turdus rufiventris* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 20, p. 226 (1818—"au Brésil").

[5] *Turdus amaurochalinus* Cabanis, *Mus. Heinean.* i. p. 5 (1850—"Brasilien").

[6] *Nouv. Dict. d'Hist. Nat.*, nouv. édit., 20, pp. 226–227 (1818—ex Azara: no. 79: Paraguay).

far north as the province Santa Cruz de la Sierra, Bolivia, and the Brazilian states Mattogrosso, Goyaz, and S. Bahia.

Nos. 3 and 4 are normal examples of the well-known *P. amaurochalinus*. In size the Corrientes bird corresponds with females from Paraguay (Sapucay, Asunçion) and S.E. Brazil (São Paulo), while males are decidedly larger.

P. amaurochalinus, like its rufous-bellied ally, occurs throughout the northern parts of Argentine, north of a line drawn from Buenos Ayres across to Mendoza; but extends its range considerably farther towards the Equator, having been obtained on the Peruvian Amazon, at S. Isabel, Rio Madeira; in the north-east Brazilian state Piauhy (Lake of Paranaguá), etc. In spite of this vast distribution I cannot find any constant characters, either in size or colour, connected with geographic areas in the large series of specimens examined.

Turdus olivaceus Lafr. & d'Orb. = **Planesticus amaurochalinus** (Cab.).

Turdus olivaceus Lafresnaye & d'Orbigny (nec Linnaeus[1]), *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 17 (1837—prov. Yungas, Bolivia).

No. 1, adult (skin): "d'Orbigny, 1834, de Yungas. D. 229. *Turdus rufiventris* foem., *T. olivaceus* d'Orb. Type."—al. 122; c. 105½; r. 21½ mm.

No. 2, adult (skin): "D. 229. Yungas, *Turdus rufiventris* foem. No. 131. d'Orbigny, 1834. *T. olivaceus* d'Orb. Type."—al. 122; c. 110; r. 21 mm.[2]

In the *Synopsis Avium* Lafresnaye and d'Orbigny distinguished the Bolivian specimens of the White-vented Thrush under the name of *T. olivaceus*, by reason of their larger size, from the alleged female of *T. chochi* (= *P. amaurochalinus* ex Corrientes et Buenos Ayres). *T. olivaceus* (which, if not preoccupied by Linnaeus, would have priority over *T. amaurochalinus* Cab. 1850) has hitherto escaped proper identification, owing to a serious *lapsus* in the description, which should read "*abdomine* (instead of *occipite*) *albescente*."

The two skins from the Bolivian Yungas, when compared with the Corrientes bird, are indeed conspicuously larger in all dimensions; they agree, however, in size as well as in other respects perfectly with adult males of *P. amaurochalinus* from S.E. Brazil (Rio Grande do Sul, São Paulo) and Argentine. The solution of the problem which caused d'Orbigny so much thought[3] is very trivial: in Argentine he met with females only, while all the specimens secured in the Bolivian Yungas happened to be males, hence the difference in size. In the *Voyage*[3] d'Orbigny already expresses his belief that the birds of Argentine and Bolivia (*T. chochi* ♀ and *T. olivaceus* Lafr. & Orb.) are specifically identical, but still sticks to the erroneous idea of the white-vented examples being the females of *T. rufiventris*.

As stated above, I can find no racial characters in individuals from different localities, and refer the types of *T. olivaceus*, from Bolivia,[4] together with the Argentine specimens, to *P. amaurochalinus* (Cab.).

[1] *Syst. Nat.* 12, i. p. 292 (1766—ex Brisson: Cape of Good Hope).

[2] A third specimen (Yungas 1834, par d'Orbigny) is mounted in the galleries; I accidentally omitted to take its measurements.

[3] See *Voyage*, Oiseaux, p. 205.

[4] I have examined a large number of additional skins from various Bolivian localities in Count Berlepsch's Collection.

Orpheus calandria Lafr. & Orb. = Mimus saturninus calandria (Lafr. & Orb.).

Orpheus calandria Lafresnaye & d'Orbigny, *Syn. Av.* in *Mag. Zool.* cl. ii. p. 17 (1837—Corrientes; descr. ad. et juv.); d'Orbigny, *Voyage*, Ois., p. 206, pl. 10, fig. 2 (part.: Corrientes).

No. 1, "♂" ad. (skin): "d'Orbigny, juillet 1829. No. 74. Corrientes. *Orpheus calandria*. No. 6. Mâle."—al. 111; c. 114; r. 18⅓ mm.

No. 2. A young bird in spotted plumage, same locality and date.

This species has been dealt with in another paper of mine,[1] to which the reader is referred. The above are the only d'Orbignyan specimens of the species in the Paris Museum, and must be regarded as the types, inasmuch as Corrientes is the sole locality given in the original description. Examples from the other places mentioned in the *Voyage*, viz. Maldonado, Montevideo (Uruguay), and Buenos Ayres, which, of course, would belong to *M. saturninus modulator* (Gould),[2] are not any longer in the collection.

M. modulator and allies are evidently conspecific with *Mimus saturninus* (Licht.),[3] of Lower Amazonia.

Orpheus thenca = Mimus thenca (Molina).[4]

Orpheus thenca Mol.; L. & d'O., *Syn. Av.* i. p. 17 (Chile); d'Orbigny, *Voyage*, p. 209, pl. 10, fig. 3 (Valparaiso, Chile).

Nos. 1–4, adults (skins): "No. 155, par d'Orbigny, Valparaiso, 1830, No. 9. *Orpheus thenca*, Nob."—al. 113, 114, 117, 118; c. 118, 121–123; r. 17½, 18, 18, 18½ mm.

No. 5, juv. (skin): "No. 155, par d'Orbigny, Valparaiso, 1830, No. 9. *Orpheus thenca* Nob."

This large Mocking-bird is a well-known inhabitant of Chile.

Orpheus dorsalis Lafr. & Orb. = Mimus dorsalis (Lafr. & Orb.).

Orpheus dorsalis Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 18 (1837—"in Andiis, rep. Boliviana"); d'Orbigny, *Voyage*, Ois., p. 211, pl. 11, fig. 1 ("versant oriental, entre La Paz, Cochabamba, et Chuquisaca, 2,000 à 3,700 m.").

No. 1 (♂), ad. (skin): "D. 204, de Cochabamba, 1834. *Orpheus dorsalis* Nob., par d'Orbigny, No. 194."—al. 119; c. 114; r. (deformed) mm.

No. 2, adult (skin): "D. 204, de Cochabamba, 1834. *Orpheus dorsalis* Nob., par d'Orbigny, No. 197."—al. 109; c. 103; r. 23 mm.[5]

The types agree well with an adult male from Potosi (Bolivia), Castelnau coll., and a couple of adults obtained by E. Budin in Jujuy, N.W. Argentine, in the Munich Museum. The three outer tail feathers are wholly white; the fourth white, but edged with blackish on each side; primary coverts and basal third of both webs of remiges (except inner secondaries and tertials) also white;

[1] *Nov. Zool.* xxi. 1914, pp. 159–160.

[2] *Orpheus modulator* Gould, *Proc. Zool. Soc. Lond.* iv. p. 6 (April 1836—"in fretu Magellan," errore!—*Rio de la Plata* (Montevideo, Maldonado), substituted as type locality, auct. Hellmayr, 1914).

[3] *Turdus saturninus* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 39 (1823—"Pará," errore!—The species occurs only in the campos of Lower Amazonia [Santarem, Rio Tapajóz; Monte Alegre]).

[4] *Turdus thenca* Molina, *Saggio Stor. Nat. Chili*, p. 250 (1782—Chile).

[5] A third specimen of d'Orbigny's, obtained at La Paz, I have examined in the Vienna Museum.

the whole upper-parts light rufescent brown, brightest on rump and upper-tail coverts, dullest on pileum.

The White-tailed Mocking-bird inhabits the highlands of Bolivia and N.W. Argentine (Jujuy).

Orpheus tricaudatus Lafr. & Orb. = Mimus triurus (Vieill.).[1]

Orpheus tricaudatus Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 18 (1837—Chiquitos E. Bolivia).
Orpheus triurus, d'Orbigny, *Voyage*, Ois., p. 208 (Mission de San José, Chiquitos).

No. 1, adult (skin): "No. 195, de Chiquitos, 1834, par d'Orbigny. D. 304. *Orpheus tricaudatus* Nob. Type."—al. 103; c. 105; r. 19½ mm.

This specimen as well as another taken by Natterer at Caité, six miles from the Rio Jaurú, Western Mattogrosso, do not appreciably differ from a series of Paraguayan and Argentine skins. The upper part of the head and mantle are pale greyish brown, the interscapulium, rump, and tail coverts washed with bright rufous; primary coverts white, their apical half black; the exterior and median secondaries white, forming a broad longitudinal stripe on the wing; three outer tail feathers white, the next black with a white shaft-streak.

M. triurus ranges from the Patagonian Rio Negro through Argentine and Paraguay to the lowlands of Eastern Bolivia (Caiza, Rio Pilcomayo, Chaco Boliviano; San José, Chiquitos) and the adjoining districts of Western Mattogrosso. The only example obtained on Brazilian territory appears to be Natterer's bird from Caité.

Orpheus patagonicus Lafr. & Orb. = Mimus patagonicus (Lafr. & Orb.).

Orpheus patagonicus Lafresnaye & Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 19 (1837—"in Patagonia"); d'Orbigny, *Voyage*, Ois., p. 210, pl. 11, fig. 2 ("bords du Rio Nègro, Patagonie"; descr. ad. et juv.).

No. 1, adult (skin): "No. 35, de Patagonie, février 1831, par d'Orbigny. *Orpheus patagonicus* Nob. Type. No. 8."—al. 110; c. 112; r. 18 mm.

The type agrees perfectly with a series from Western Patagonia (Neuquen, Rio Limay) in the Munich Museum. Specimens from Tucumán, Jujuy (Maimara), and Catamarca (Fuerte de Andalgula; E. White coll.) have the chest very slightly paler, less brownish. Unfortunately the material at hand is not satisfactory for comparative purposes, since all the Rio Negro examples are in abraded condition, while the birds from Western Argentine wear the new, freshly moulted plumage.

M. patagonicus is perhaps most nearly related to *Mimus lividus* (Licht.),[2] ranging over the coast districts of Eastern Brazil from Pará to Rio de Janeiro (Ilha do Marambaya).[3] The distribution of the Patagonian Mocking-bird extends from the Bay of Santa Cruz (Rio Chico) throughout the western states of Argentine, north to Tucumán and Jujuy. In the eastern provinces it is

[1] *Turdus triurus* Vieillot, *Nouv. Dict. d'Hist. Nat.* 20, p. 275 (1818—ex Azara, no. 224: Paraguay).
[2] *Turdus lividus* Lichtenstein, *Verz. Dubl. Berliner Mus.* p. 39 (1823—Bahia, E. Brazil).
[3] Although secured by Natterer as long ago as 1835 at Cajútuba, on the sea-coast east of Pará, this species is omitted in Snethlage's *Catalogo das Aves Amazonicas* (= Boletim Museu Goeldi, Pará, vol. viii.), 1914.

apparently of exceptional occurrence. I have, however, examined an undoubted specimen of *M patagonicus* (♀ ad. !), taken by Holland at Santa Elena, north Entrerios,[1] in the British Museum.

Donacobius vociferans = Donacobius atricapillus (Linn.).[2]

Donacobius vociferans Swains.[3]; L. & O., *Syn. Av.* i. p. 19 (no locality given).
Donacobius brasiliensis ("L.")[4]; d'Orbigny, *Voyage*, Ois., p. 213 (Corrientes;—"un seul couple").

The specimens are no longer to be found in the Paris Museum. D'Orbigny states having met with a single couple in a swamp in the province of Corrientes. Skins from Paraguay in the Munich and Tring Collections agree well with those from Eastern Brazil (Bahia).

Donacobius albovittatus Lafr. & Orb. = D. atricapillus (Linn.) juv.

Donacobius albovittatus Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 19 (1837—Chiquitos, Guarayos, Eastern Bolivia); d'Orbigny, *Voyage*, Ois., p. 213, pl. 12, fig. 1 ("dans les marais des environs de San José, mission dans la province de Chiquitos"; descr. ♂ ad. [!], ♀ juv.); Hellmayr, *Nov. Zool.* xxi. 1914, p. 158 (crit. = *D. atricapillus* [L.] juv.).

No. 1, "♂" juv. (mounted): "Bolivie, Chiquitos, par d'Orbigny. ♂. 1834—193—No. 10. *Donac. albovittatus* d'Orb. & Lafr. Type."—al. 86; c. 110; r. 23⅓ mm.

No. 2, "♀" juv. (skin): "193. d'Orbigny, 1834. *Donacobius albovittatus* Nob. Femelle. 359, de Guarayos."—al. 83; c. 94; r. 23 mm.[5]

Since writing on this species I have discovered, in the mounted collection of the Paris Museum, the type of d'Orbigny's description of the alleged "adult male," which calls forth a few supplementary remarks.

No. 1, corresponding to d'Orbigny "mâle adulte," is in more advanced plumage than the Guarayos bird spoken of in *Novitates Zoologicae*, xxi. p. 158. The wings and tail feathers are full-grown; top and sides of the head covered with the deep-black feathers of the adult plumage; the back is deep chocolate-brown, the under-surface bright ochraceous. As the only remains of the juvenile dress there may be observed, above the ear coverts and on the sides of neck, a few isolated whitish plumes which indicate a kind of supercilium, although this feature is immeasurably exaggerated in plate 12, fig. 1, of d'Orbigny's work. Quite similar specimens are in the Tring Museum from the Rio Caura, Venezuela, and Pebas, N.E. Peru.

No. 2, partly in juvenile plumage, answers to d'Orbigny's "femelle et jeune âge." With the exception of the frontal feathers and a few others above the ear coverts and on the nape showing the deep black colour of the adults, the whole upper part of the head is still clad in the fluffy, dull chocolate-brown juvenile garb. From above the eye to the sides of the neck runs a broad, continuous white superciliary stripe. The quills and tail feathers are still in the

[1] *Mimus patachonicus* Holland, *Ibis*, 1895, p. 214.

[2] *Turdus atricapillus* Linnaeus, *Syst. Nat.* 12, i. p. 295 (1766—ex Brisson: "Cap boni spei"—errore! subst. type locality: East Brazil, auct. Berl. & Hartert, 1902).

[3] *Zoolog. Illustr.* (2nd series), ii. pl. 72 (1831-32.—Pernambuco, N.E. Brazil).

[4] *Turdus brasiliensis* Gmelin, *Syst. Nat.* 1, ii. p. 831 (1789—ex Latham: "Brasil"; Brit. Mus.).

[5] The dimensions given in *Nov. Zool.* 21, p. 158, are not quite exact and should be corrected as above.

sheaths. There is, in the Paris Museum, a nearly identical example procured by Laglaize at San Fernando de Apure, Venezuela; and another from San Esteban, N. Venezuela, I have seen in Count Berlepsch's collection.

Sylvia venustula = Compsothlypis pitiayumi pitiayumi (Vieill.).[1]

"*Sylvia venustula* Tem." [2]; L. & d'O., *Syn. Av.* i. p. 20 (rep. Argentina, rep. Boliviana).
Sylvia venusta d'Orbigny, *Voyage*, p. 218 (Corrientes; Chiquitos, Yungas, Sicasica, Valle Grande, Bolivia).

No. 1, (♂) ad. (skin): "de Yungas, par M. d'Orbigny, 1834. D. 56. *S. venusta.*"—al. 57; c. 42; r. 10 mm.

No. 2, adult (skin): "de Chiquitos, par d'Orbigny, 1834. D. 56. No. 211."—al. 53; c. 38 mm.

Birds from Bolivia, of which I have seen a considerable number, do not differ in any way from topotypical Paraguay skins.

Sylvia velata = Geothlypis aequinoctialis velata (Vieill.).

Sylvia velata Vieill. [3]; L. & O., *Syn. Av.* i. p. 20 (in imp. Brasiliensi; rep. Boliviana); d'Orbigny, *Voyage*, p. 217 (Rio de Janeiro; Corrientes; Chiquitos; descr. ad. and juv.).

No. 1, (♂) ad. (skin): "Rio de Janeiro, 8bre 1826. No. 6, Passer. Mâle. No. 14. Envoi de M. d'Orbigny, *Sylvia velata* Vieill."—al. 59; c. 56 (much worn); r. 12 mm.

No. 2, (♀) ad. (skin): "d'Orbigny, juillet 1829. No. 156. Corrientes, *Sylvia velata* Vieill."—al. 60; c. —; r. (damaged) mm.

The adult male is identical with another from Victoria, Espirito Santo, S.E. Brazil, in the Munich Museum. What d'Orbigny took for the "jeune âge" is in reality the adult female. No. 2 agrees with specimens of the same sex from S.O. Brazil (Minas) and Buenos Ayres. I could not find any Bolivian skins in the Paris Museum.

G. a. velata ranges from Buenos Ayres and Cordoba northwards to N.W. Argentine (Salta, Tucumán), the plains of Eastern Bolivia (Chiquitos), Mattogrosso (Chapada, etc.), and the eastern states of Brazil. In Eastern Peru it is represented by the nearly related *G. aequinoctialis assimilis* Berl. & Stolzm.[4]

N.B.—*Sylvia velata* Vieill. appears to be the earliest available name for the southern form with cinereous temporal region. Vieillot's description, though not very accurate, corresponds tolerably well with the birds found in S. Brazil and Argentine, and has been so identified by the earlier French authors, some of whom might have had an opportunity of inspecting the type. *Sylvia cucullata* Lath.,[5] which has been referred to the present species by Sharpe and Richmond, was most certainly intended for some other bird. The diagnosis "S. virens subtus flava, fronte, genisque nigris, cauda cuneiformi. Magnitude *mitratae*,

[1] *Sylvia pitiayumi* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 276 (1817—ex Azara no. 109: Paraguay).

[2] *Sylvia venusta* Temminck, *Pl. col.*, livr. 49, pl. 293, fig. 1 (1824—"au Brésil").

[3] *Hist. Nat. Ois. Amér. sept.* ii. p. 22, pl. 74 ("1807"—no locality given: "de la collection de M. Dufresne").

[4] *Geothlypis canicapilla assimilis* Berlepsch & Stolzmann, *Ornis* 13, part 2, September 1906, p. 75 (Chirimoto [type], Santa Ana, Maranura, E. Peru).

[5] *Ind. Ornith.* ii. p. 528 (1790—no locality. Mus. D. Parkinson).

cujus forte varietas" cannot by any means be applied to our *Geothlypis* with clear cinereous pileum and hind-crown! *Tanagra canicapilla* Swainson,[1] sometimes employed for the Brazilian bird, is no doubt a synonym of *G. a. aequinoctialis* (Gm.),[2] the figure showing distinctly enough the olive-greenish temporal region and occiput, so characteristic of the Guianan race. Swainson's type is very likely to have come from Trinidad, which politically—even nowadays—belongs to the "West Indies."

Sylvia leucoblephara = Basileuterus leucoblepharus leucoblepharus (Vieill.).[3]

Sylvia leucoblephara Vieill.; L. & O., *Syn. Av.* i. p. 20 (prov. Corrientescenti, rep. Argentina); d'Orbigny, *Voyage*, p. 216, pl. 12, fig. 2 (Corrientes).

No. 1, (♂) ad. (skin): "d'Orbigny, juillet 1829. No. 112–15, du Chaco. *Sylvia leucoblephara* Vieillot."—al. 70; c. 64; r. 13 mm.

No. 2, adult (mounted): "d'Orbigny, juillet 1829, du Chaco, "Bolivie." *Basileuterus leucoblepharus* (Vieill.)."

The skin from Chaco (No. 1) agrees in every particular with topotypical specimens collected by W. Foster at Sapucay, Paraguay, in the British Museum. Birds from Rio Grande do Sul (Taquara), obtained by H. von Jhering, in the Berlepsch Collection, merely differ by having the under-tail coverts more yellowish.

Twelve skins from the states Rio de Janeiro (Novo Friburgo), São Paulo (Ypanema; Victoria [= Botocatú]; Fazenda Cayoá, Salto Grande, Rio Paranapanema), and Paraná (Roça Nova, Serra do Mar), are slightly smaller, have the upper-parts paler, more yellowish green, the breast and sides much less shaded with slate-grey, the axillaries and under-tail coverts deep olive-yellow instead of pale yellowish or whitish. This well-recognizable race is obviously entitled to the name *Basileuterus leucoblepharus superciliosus* (Swains.).[4] It was probably an example of this form erroneously identified as *B. leucoblepharus* which misled Oberholser to redescribe the typical Paraguayan race as *Basileuterus leucoblepharus calus*.[5]

Adult males of the two forms measure as follows:

(*a*) *B. leucoblepharus leucoblepharus* (Vieill.) (6). Wing, 67–70; tail, 63–66 mm.

(*b*) *B. leucoblepharus superciliosus* (Swains.) (8). Wing, 63–67; tail, 58–63 mm.

B. leucophrys Pelz.,[6] of which I have examined the typical examples in the Vienna Museum, is another member of this group, and may be only subspecifically distinct from *B. leucoblepharus*. It differs, however, very markedly by its

[1] *Zool. Illustr.* (1st ser.) iii. pl. 174 (1822–23.—"West Indies").

[2] *Motacilla aequinoctialis* Gmelin, *Syst. Nat.* 1, ii. p. 972 (1789—ex Daubenton, *Pl. enl.* 685, fig. 1 (= ♀): Cayenne).

[3] *Sylvia leucoblephara* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 206 (1817—no locality; according to Vieillot, *Tabl. enc. méth.* ii. 1820, p. 459, the description is based upon Azara, no. 153: Paraguay).

[4] *Trichas superciliosus* Swainson, *Anim. in Menag.* p. 295 (1838—"Brazil").

[5] *Proc. Biol. Soc. Wash.* 14, p. 188 (December 1901—Sapucay, Paraguay; W. T. Foster).

[6] *Zur Ornith. Brasil*, ii. p. 137 (1868—Porto do Rio Paraná, north São Paulo; Rio Manso, east of Cuyabá, Mattogrosso).

much larger size (in two adult males the wing measures 75, 75½, the tail 73 75 mm.) and by several important colour-characters. The upper-parts are brownish olive tinged with rufescent (instead of olive-green), the flanks olive-brown (not slaty or green), the under-tail coverts buffy yellow (instead of whitish to olive-yellow). Moreover, from the nasal plumes to above the posterior margin of the auriculars runs a very distinct, pure white superciliary stripe (about 3 mm. wide), whereas in *B. leucoblepharus* there is but a narrow whitish streak to be seen above the lores. In addition to the three types in the Vienna Museum, only two other specimens are on record, ♂ and ♀ taken by H. H. Smith at Chapada, Mattogrosso, October 20, 1883.[1]

Sylvia ruficeps Lafr. & Orb. = **Thlypopsis ruficeps** (Lafr. & Orb.).

Sylvia ruficeps Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 20 (1837—Ayupaya, Bolivia; descr. orig. ♂).
Hylophilus ruficeps[2] d'Orbigny, *Voyage*, Ois., p. 219, pl. 13, fig. 1 (Palca, prov. Ayupaya).

No. 1, (♂) ad. (mounted): "Bolivie, Ayupaya, par d'Orbigny, 1834. No. 17 —204. Type de *Hylophilus ruficeps*. No. 9,518."—al. 64; c. 56; r. 11 mm.

The type is slightly larger, and has the head a little bit deeper orange-rufous than two adult males from S.E. Peru (Marcapata) in the Munich Museum, but the differences are trifling.

This Tanager inhabits the mountain forests of the Andes from S.E. Peru (Marcapata) to N.W. Argentine (Tucumán).

Sylvia concolor Lafr. & Orb. = **Xenospingus concolor** (Lafr. & Orb.)

Sylvia concolor Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 20 (1837—Arica, rep. Peruviana); d'Orbigny, *Voyage*, Ois., p. 216, pl. 18, fig. 1 ("dans la vallée d'Arica, Pérou, . . . un seul individu"; descr. ♂ ad.).

No. 1, (♂) ad. (mounted): "d'Arica, par M. d'Orbigny, janvier 1831. No. 169 du Catalogue de d'Orbigny. *Sylvia concolor* Lafr. et Orb. Type de l'espèce."[3]—al. 72; c. 80; caud. grad. 16; r. (damaged) mm.

The type is an adult male in ashy-grey plumage, as described by Sharpe in the *Cat. Birds Brit. Mus.* xii. p. 799. The upper parts are light ashy grey, the quills and rectrices dusky, edged with pale grey; a narrow rim of whitish plumes round the eye; lores sooty grey, darker than the sides of the head; under-surface paler ashy grey. The bill is wholly *yellow*. Cabanis[4] has drawn attention to several inaccuracies in d'Orbigny's plate. This rare Finch is restricted to the arid coast-belt of Southern Peru and Northern Chile (Pica, prov. Tarapacá[5]; Arica, prov. Tacna.[6]). H. Whitely obtained it on the Rio

[1] Allen, *Bull. Amer. Mus. N. Hist.* iii. p. 345.

[2] *Hylophilus ruficeps* Wied (*Beitr. Naturg. Bras.* 3, ii. 1831, p. 725—Eastern Brazil) is, of course, quite a different bird. See *Verhandl. Orn. Ges. Bayern*, 12, Heft 2, February 1915, pp. 131–133.

[3] The label, besides, bears a manuscript name of Bonaparte which need not be published.

[4] *Journ. f. Ornith.* 15, 1867, p. 349.

[5] Sclater, *P.Z.S. Lond.* 1891, p. 133; Lane, *Ibis*, 1897, p. 16.

[6] At d'Orbigny's time this province formed part of the Peruvian Republic.

Tambo, dept. Arequipa, while Kalinowski met with it even farther north, in the province of Ica.[1]

Hylophilus poecilotes = Pachysylvia poicilotis poicilotis (Temm.).[2]

Hylophilus poecilotes Tem.; L. & O., *Syn. Av.* i. p. 20 (no locality).

Not mentioned in the *Voyage*, nor could I find d'Orbignyan specimens in the Paris Museum. The bird was probably met with in the vicinity of Rio de Janeiro.

Dacnis cayanus = Dacnis angelica arcangelica Bonap.

Dacnis cayanus (errore, nec *Motacilla cayana* Linn.[3]) L. & O., *Syn. Av.* i. p. 20 (Yuracarès, Bolivia); d'Orbigny, *Voyage*, Ois., p. 221 (Yuracarès; descr. ♂ ad.).

Although the specimen is no more in the Paris Museum, d'Orbigny's description leaves no doubt about his *Dacnis cayanus* being referable to the white-bellied species.

Birds from N. Bolivia and various Peruvian localities in the late Count Berlepsch's collection and in the Munich Museum are practically identical with Bogotá skins, and must, consequently, be referred to *D. a. arcangelica*. The differences which separate the Upper Amazonian form are very slight, consisting in the brighter blue tinge of the males and duller coloration, especially underneath, of the females. As the synonymy is somewhat confused, the following notes about the subject might be acceptable to ornithologists.

(*a*) *Dacnis angelica angelica* Bonap.[4]

Dacnis angelica (de Filippi MS.) Bonaparte, *Atti della sesta Riunione degli Scienziati Italiani tenuta in Milano nel settembre* 1844, p. 404, note (1845—"Brasile," coll. Milan Museum; descr. ♂ ad.).
Dacnis melanotis Strickland in Jardine, *Contrib. to Ornith.* 1851, part i. p. 16 (January 1851—descr. et synon. [excl. cit. *Pl. enl.* 669, fig. 1]; Cayenne, Demerara; descr. ♂ ad.).

Hab. Cayenne, British Guiana, and N.E. Brazil (Pará district).

[1] Berlepsch & Stolzmann, *Proc. Zool. Soc. Lond.* 1892, p. 376.

[2] *Hylophilus poicilotis* Temminck, *Rec. Pl. Col.*, livr. 29, pl. 173, fig. 2 (1822—"Brésil," coll. Natterer, sc. Ypanema, São Paulo).

[3] *Syst. Nat.* 12, i. p. 336 (1766—ex Brisson: "Le Pipit bleu, de Cayenne" [excl. cit. Hernandez]).

[4] An earlier name is probably *Motacilla lineata* Gmelin (*Syst. Nat.* 1, ii. p. 990 [1789—ex "Le Pipit à coiffe bleue," Buffon, *Hist. Nat. Ois.* v. 1787, p. 342: Cayenne]). Gmelin's description is faulty, besides there is an obvious misprint in Buffon's account. If we read "parce qu'il a une espèce de coiffe ou de cape d'un beau *noir* [instead of "bleu"] brillant et foncé, qui prend au front, passe sur les yeux et s'étend jusqu' au milieu du dos, il y a seulement sur le sommet de la tête une tache bleue longitudinale," we get an excellent description of *D. angelica*, which is supplemented by what refers to the under-parts: "remarquable par une raie blanche qui commence au milieu de la poitrine et va en s'élargissant jusque dessous la queue." Nevertheless, it seems desirable to re-examine the type (if still extant) before upsetting the nomenclature of this well-known bird.

(*b*) *Dacnis angelica arcangelica* Bonap.

Dacnis arcangelica (sic) Bonaparte, *Bull. Soc. Linn. Normandie*, ii. p. 31 (1857— = "angelica ex Bogotá, auct., sanè diversa").[1]

Dacnis modesta Cabanis, *Journ. f. Ornith.* 21, p. 64 (1873—Monterico, Chanchamayo, C. Peru; descr. orig. ♀); Berlepsch, *Journ. f. Ornith.* 37, 1889, p. 295 (crit. = *D. angelica* ♀).[2]

Hab. Upper Amazonia: Colombia (Bogotá coll.; Rio Putumayo); Eastern Ecuador (Napo, Quijos, etc.), North, Central, and Eastern Peru; N.W. Bolivia (Yuracarès); W. Brazil (Rio Madeira, R. Acre).

Dacnis cyanater = Dacnis cayona glaucogularis Berl. & Stolzm.[3]

Dacnis cyanater (nec Lesson [4]); L. & O., *Syn. Av.* i. p. 21 (Yuracarès, Chiquitos, Bolivia).

Dacnis cyanocephalus d'Orbigny, *Voyage*, p. 221 (Rio Tamampaya, prov. Yungas; Santa Cruz de la Sierra, Yuracarès; descr. ♂♀).

No. 1, "♂" ad. (skin): "No. 323. d'Orbigny, 1834. D. 253, Bolivie. *Dacnis cyanocephala*. Mâle."

No. 2, "♀" ad. (skin): "*D. cyanocephala* fem. 323. d'Orbigny, 1834. Yuracarès, D. 253. Femelle."

A dozen additional specimens from various Bolivian localities (Simacu; Yungas; prov. Sara) have been examined in the collections of Count Berlepsch, Tring and Munich. They agree with topotypical Peruvian examples (Chanchamayo) in having the mantle and throat-patch dull greenish black, but are generally (though not constantly), both above and below, somewhat lighter, more greenish blue. The wings, too, are as a rule slightly shorter. In view of the individual variation exhibited by the series I do not, however, advocate the separation of the Bolivian birds. Skins from Mattogrosso (Chapada), on the upper-parts, resemble *D. c. glaucogularis*; but the throat-patch is more blackish (though not deep black as in the eastern forms), and the wing much longer (68–71 mm. in adult males), thus forming the transition to *D. c. paraguayensis* Chubb.[5]

This last-named race, which I consider as well-founded, although not differing in colour from *D. cayana cayana* (Linn.), may readily be distinguished by its larger size. It ranges from Paraguay and Rio Grande do Sul northwards to S. Paulo, Western Minas (Rio Jordão, Bagagem), and Goyaz, as I have shown in the report on Mr. Müller's Lower Amazonian Collections.[6]

[1] Bonaparte's term just escapes being a nomen nudum, for alone his note "*angelica* ex Bogotá auct." allows us to identify it, since at least one of the earlier authors, viz. Sclater (*Contrib. to Ornith.*, 1851, part 3, July, pp. 108–14; *Proc. Zool. Soc. Lond.* 23, December 1855, p. 137), in speaking of *D. angelica*, mentions the distinctive character of the Bogotá bird.

[2] *Dacnis modesta* Cab., as pointed out by Berlepsch, is no doubt the female of the Amazonian form of *D. angelica*, and has no relation whatever to *D. analis* auct., with which Sclater (*Cat. Birds Brit. Mus.* 11, 1886, p. 25) synonymized it.

[3] *Proc. Zool. Soc. Lond.* 1896, p. 336 (1896—La Gloria & La Merced, Chanchamayo, C. Peru).

[4] *Traité d'Orn.*, p. 458 (1831—"du Brésil";—"le type provient du voyage de M. Geoffroy en Portugal," Pucheran, *Rev. Mag. Zool.* (2), vi. 1854, p. 70)—the type of *D. cyanater* which I have examined in the Paris Museum is an adult male of the small form, with deep black throat-patch, which ranges from Venezuela and Trinidad as far south as Rio do Janeiro (coast district). It measures: wing, 64; tail, 44; bill, 12½ mm. *D. cyanater* thus becomes a synonym of *D. cayana cayana* (Linn.).

[5] *Ibis* (9), iv. p. 619 (1910—"Paraguay, Mattogrosso, and S.E. Brazil," no type locality specified; we designate *Sapucay, Paraguay*).

[6] *Abhandl. Bayer. Akad. Wissensch., Math.-phys. Kl.*, 26, no. 2, 1912, pp. 6–7.

Dacnis flaviventer Lafr. & Orb.

Dacnis flaviventer Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 21 (1837—Yuracarès Bolivia; descr. orig. ♂♀); d'Orbigny, *Voyage*, Ois., p. 220, pl. 13, fig. 2 (Yuracarès).

No. 1, (♂) ad. (skin), without original label: "Bolivie, par d'Orbigny. *D. flaviventer* Lafr. & Orb. Type de l'espèce."

No. 2, ("♀") ad. (skin): "*Dacnis flaviventer* fem. d'Orb. Yuracarès Bolivie, par d'Orbigny, 1834. No. D. 402–323."

No. 3, "♀" ad. (skin): "*D. flaviventer*, fem. Nob. 323. d'Orbigny, 1834."

The types are in rather indifferent condition; but a fine adult male taken by G. Garlepp at San Mateo, Yuracarès, in the Berlepsch Collection, is absolutely identical with individuals from other Amazonian localities.

This splendid species ranges from the eastern slopes of the Andes of Bolivia, Peru, Ecuador, and Colombia to the Caura River, Venezuela, and the Tapajóz, N. Brazil.

Dacnis analis Lafr. & Orb. = Ateleodacnis speciosa speciosa (Temm.).[1]

Dacnis analis Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 21 (1837—Chiquitos, Eastern Bolivia; descr. orig. ♂ ad.).

No. 1, (♂) ad. (skin): "D 344. De Chiquitos, par d'Orbigny, 1834. No. 209. *Dacnis analis* Nob. Type."—al. 60; c. 40½; r. 10 mm.

The type agrees exactly with adult males from Bahia and Rio de Janeiro (topotypical *A. speciosa*). The under-parts are even paler, more whitish than in several of the Brazilian examples, the sides only being light bluish grey, and the foreneck tinged with dull greyish. Additional specimens from Eastern Bolivia (Quebrada onda) substantially corroborate the identity of the Bolivian and Brazilian birds. *D. analis* Lafr. & Orb. becomes, therefore, a synonym of *A. speciosa*, whose range is seen to extend from Piauhy, Bahia, and Rio de Janeiro across the continent to Eastern Bolivia (Chiquitos), N.W. Argentine (Jujuy), and Paraguay (Sapucay). In Upper Amazonia (Bogotá coll.; E. Ecuador, Peru) it is replaced by a nearly allied form, which differs by having the under-parts much darker, nearly uniform indigo-blue, without, or with very little, whitish admixture in the anal region. For this dark race the name *D. analis* has generally been applied, erroneously however, as shown in the preceding lines.

I therefore designated it under the new term *Ateleodacnis speciosa amazonum* Hellm.,[2] taking No. 99, ♂ ad. Tarapoto, N. Peru, February 13, 1885, Gustav Garlepp coll., in the collection of Count Berlepsch, as **type**.

[1] *Sylvia speciosa* ("P. Max" MS.) Temminck, *Rec. Pl. Col.*, livr. 49, pl. 293, fig. 2 (1824—Rio de Janeiro, S.E. Brazil; descr. orig. ♂ ad.).

[2] *Verhandl. Orn. Ges. Bay.* 13, Heft 1, p. 106 (February 1917—Tarapoto (E. Peru).—Sclater (*Cat. B. Brit. Mus.* 11, 1886, p. 25), under his *Dacnis analis* (ex Upper Amazonia), quotes *Helinai(a) brevipennis* Giraud (*Ann. Lyc. Nat. Hist. N.Y.* v. no. 2, p. 40, pl. iii. fig. 1 [April 1851—"Mexico and Texas"]), while Ridgway (*Bull. U.S. Mus.* 50, part 3, 1904, p. 218) relegates this name to the synonymy of *Pachysylvia decurtata* (Bonap.). After careful consideration of the case, I am inclined to follow Cassin's suggestion (*Proc. Acad. N. Sci. Philad.* 1864, p. 271) in identifying it with the female of *Ateleodacnis s. speciosa*. In no case, however, can Giraud's name be referred to the Amazonian race, since the countries inhabited by the latter were at that time literally unexplored.

Birds from Eastern Peru (Tarapoto, Pintobamba, Ucayali) and those found in Bogotá collections agree very well together. The inhabitants of Lower Amazonia (Rio Branco, Tapajóz, Tocantins) are described by authors to be somewhat different, and may constitute yet another recognizable race.

Adult males from various localities present the following dimensions :

A. s. speciosa

	Wing. mm.	Tail. mm.	Bill. mm.
Six from Eastern Brazil (Rio, Bahia) .	55–58½	38½–42	9½–10½
Three from Eastern Bolivia . . .	58–60	40–42	10–10½

A. speciosa amazonum

	Wing. mm.	Tail. mm.	Bill. mm.
Three from Eastern Peru . . .	54–57	40–41	10½–11
One from Bogotá.	59	40½	11

Synallaxis dorsomaculata Lafr. & Orb. = **Phleocryptes melanops** (Vieill.).[1]

Synallaxis dorsomaculata Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 21 (1837—Buenos Ayres [rep. Argentina] ; descr. orig.).
S. dorsomaculatus d'Orbigny, *Voyage*, p. 237, pl. 14, fig. I (Barracas, near Buenos Ayres).

Nos. 1–3, adults (one mounted, two in skin) : " de Buenos Ayres, juillet 1829, par d'Orbigny. *Syn. dorsomaculata* Nob. Type de l'espèce."

I am unable to discover any constant differences between specimens from Paraguay, Barracas al Sud (type locality of *S. dorsomaculata*), Neuquen, and Chile. Cfr. also *Mém. Soc. d'Hist. Nat. Autun*, 19, 1906, p. 66.

Jhering[2] found this species at São Lourenço, Rio Grande do Sul, the only recorded locality on Brazilian territory.

Siptornis[3] **maluroides** (Lafr. & Orb.).

Synallaxis maluroides Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 22 (1837—Buenos Ayres, rep. Argentina ; descr. orig.) ; d'Orbigny, *Voyage*, Ois., p. 238, pl. 14, fig. 3 (" aux environs de Buenos Ayres, du côté de la *Boca*, en hiver ").

Nos. 1, 2, adults (mounted) : " de Buenos Ayres, juillet 1829, par d'Orbigny, No. 165. *Syn. maluroides* Nob. Type de l'espèce."—al. 50½, 51 ; c. 57, 59 ; r. 12, 12½ mm.

This aberrant species ranges from the Rio Negro (Patagonia) to the vicinity of Buenos Ayres, thence following the lagunes along the sea-coast through Uruguay to the southern part of Rio Grande do Sul (São Lourenço).[4]

[1] *Sylvia melanops* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 232 (1817—ex Azara : no. 232 : Paraguay).

[2] *Annuario do Estado do Rio Grande do Sul para* 1900, Porto Alegre, p. 128.

[3] The genus " *Siptornis* " auct. certainly requires subdivision, as has been pointed out by Ridgway (*Bull. U.S. Mus.* 50, part 5, 1911, pp. 160, 161) ; but this question does not fall within the scope of the present paper, so for the sake of convenience I have accepted it in the customary sense.

[4] Cfr. Jhering, *Annuario Estad. Rio Grande do Sul*, 1900, p. 129.

Synallaxis troglodytoides Lafr. & Orb. = Cistothorus platensis platensis (Lath.)

Synallaxis troglodytoides Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 22 (1837—Patagonia); d'Orbigny, *Voyage*, Ois., p. 238 ("Bahia de San Blas, au 40e degré lat. sud, en janvier, . . . un seul tué").

No. 1, adult (skin), with a large paper label, on which is written from d'Orbigny's hand: "*Synallaxis troglodytoides* Nob." Type of species.—al. 45½; c. 45½; tars. 16; r. 11¾ mm.

The type of *S. troglodytoides* proved on examination to be a worn example of the ordinary Marsh Wren of La Plata. Its determination involved a complete revision of the South American races of this widespread bird as far as the limited material permitted, and it is hoped that the results of my laborious studies, given in the succeeding pages, may help ornithologists towards a better understanding of this intricate group. In defining the various forms, I have omitted such characters as are common to several of them, or which by reason of their variability are useless for diagnostic purposes. In comparing specimens from different localities, due attention should be paid to seasonal change. Birds in freshly moulted plumage are invariably much more brightly coloured, while in the breeding season all tints become paler and duller. I am able to distinguish ten geographic races, of which eight are found south of the Panamanic Isthmus.

(*a*) *Cistothorus platensis platensis* (Lath.).

Sylvia platensis Latham, *Ind. Ornith.* ii. p. 548 (1790—ex Daubenton, *Pl. enl.* 730, fig. 2; Buenos Ayres [1]).

Synallaxis troglodytoides Lafr. & d'Orb., *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 22 (1837—Patagonia, viz. Bahia de San Blas, in the south of prov. Buenos Ayres; type in Paris Museum examined).

Cistothorus fasciolatus Burmeister, *Journ. f. Ornith.* 8, p. 252 (1860—Mendoza, W. Argentine [2]; types in Halle Museum examined).

Type locality: Buenos Ayres.

Hab. N.E. Patagonia (Rio Negro); Prov. Buenos Ayres (Bahia de San Blas, Rio Colorado, Bahia Blanca, Carhué, Lavalle, Estancia Espartilla, Barracas al Sud, Lujan Bridge); Entrerios: Santa Elena, east of La Paz; in the west to Córdoba and Mendoza.

Descr.—Upper part of the head black, with very distinct, though narrow, buff streaks (more whitish in abraded plumage); interscapulium broadly striped longitudinally with buffy white and black; lower back and rump fulvous-brown, here and there with a few isolated buffy streaks and small blackish spots; upper-tail coverts darker rufescent-brown, strongly vermiculated with blackish. Broad superciliary stripe creamy white; under-parts white, only flanks, anal region, and under-tail coverts light fulvous, foreneck hardly shaded with buff. Tail bright russet-brown, all rectrices regularly barred on both webs with blackish.

Remarks.—Specimens from San Blas (type of *S. troglodytoides*), Bahia Blanca, and Mendoza (types of *Cist. fasciolatus*) are absolutely identical. D'Orbigny's type and one of the Mendoza birds (No. 1,742*b* of the Halle Museum), both in

[1] According to Buffon, the bird was procured by Commerson.

[2] The description is incomplete, but a more detailed one is given by the same author in his *Reise La Plata Staaten*, ii. 1861, p. 476.

very worn, bleached breeding dress, are rather pale; but the other example from Mendoza and two adult ♂♂ from Bahia Blanca,[1] all of which are in good, fresh plumage, agree with a topotype from Buenos Ayres (Barracas al Sud). The latter merely differs by showing a slight tinge of russet on the forehead.[2] An adult male from Santa Elena, east of La Paz (Entrerios), September 20, 1892, Holland coll., British Museum, resembles *C. p. platensis*, but by its shorter bill and by having the *three outer tail feathers uniform blackish* it forms the transition to *C. p. polyglottus*, of Paraguay and S.E. Brazil.

C. p. platensis, of Central Argentine, stands somewhat between *C. p. hornensis* and *C. p. polyglottus*. From the latter it may be distinguished by the regular blackish barring of the rectrices on both webs, the conspicuous buff stripes of the pileum, larger size, and the slightly variegated rump; from *C. p. hornensis* by the white (only on sides and crissum fulvous) under-parts, much narrower, lighter streaks on pileum, and much less variegated rump.

Examined: seven specimens.

	Wing. mm.	Tail. mm.	Bill. mm.
One adult San Blas (type of *S. troglodytoides*) .	45½	45½	11¾
Two ♂♂ ad. Bahia Blanca (4.i.37, Darwin; 10.x.99, Venturi)	45½, 46	47, 48	11½, 12½
One ♂ ad. Barracas al Sud (14.vii.03, Venturi)	43	44	10½
Two adults Mendoza (types of *C. fasciolatus*) .	45, 46	45, 45½	11, 11½
One ♂ ad. Santa Elena, Entrerios (20.ix.92, Holland)	43	—	11

(*b*) *Cistothorus platensis tucumanus* Hart. & Vent.

Cistothorus platensis tucumanus Hartert & Venturi, *Nov. Zool.* xvi. p. 163 (Dec. 1909.—Tucumán, N.W. Argentine).

Type locality: Tucumán.

Hab. N.W. Argentine (prov. Tucumán: Tucumán, Villa Lenge, S. Pablo (1,200 m.); Cuesta de Malamala (1,300 m.).

Descr.—Agrees with *C. p. platensis* in coloration of tail, markings of pileum, and paleness of under-parts, but differs by its longer bill, and by having the lower back and rump plain fulvous-brown (not variegated with black and white streaks or spots), while the dusky cross-lines on the upper-tail coverts are less pronounced.

Remarks.—This race, by the uniform rump and less barred upper-tail coverts, approaches *C. p. graminicola*, while in other respects it is an exact counterpart of *C. p. platensis*.

Examined: two specimens (including the type) in the Tring Museum.

Two females from Tucumán.—Wing, 47, 47½; tail, 48, 49; bill, 12½, 13 mm.

[1] One of them was obtained by C. Darwin on January 4, 1837, during the voyage of the *Beagle* (No. 1,443 D, labelled "*Troglodytes platensis*"). In the *Cat. Birds Brit. Mus.* vi. p. 245, it is erroneously referred to *C. polyglottus*.

[2] The Mendoza specimens (types of *C. fasciolatus*) may be termed ultra-typical of *C. p. platensis*, and show not the slightest approach to *C. p. hornensis*, which lives on the Chilian side of the Andes as well as in the western portion of the Gobernacion del Chubut.

(c) *Cistothorus platensis hornensis* (Less.).[1]

Troglodytes hornensis Lesson, *L'Institut*, 1834, no. 72, p. 316 (1834—"pris en mer, le 7 janvier 1831, à vingt lieues dans le sud-est du Cap Horn").

Thryothorus eidouxi Bonaparte, *Consp. Av.* i. p. 221 (1850—based on "Troglodyte des Marais? [Wils.]. Fem.," *Voyage au Pôle Sud* "Astrolabe" et "Zélée," Atlas, *Zool.*, Ois., pl. 19. fig. 6—"Bras."—errore! the typo was secured at *Talcahuano*, Chile; cfr. Hombron et Jacquinot, *Voy. Pôle Sud*, *Zool.* iii. 1853, p. 94).

Troglodytes platensis Gould, in Darwin, *Zool.* "Beagle," part 11, 1839, p. 75 (part.: Falkland Islands); idem., *P.Z.S.* 1859, p. 95 (Falklands).

Cistothorus platensis Sclater, *P.Z.S.* 1860, p. 384 (Falkland Islands); Abbott, *Ibis*, iii. 1861, p. 153 (Falkland Islands); Ridgway, *Proc. U.S. Mus.* xii. 1889, p. 131 (Gregory Bay, Magellan Straits); Sclater, *A New List of Chilian Birds*, 1892, p. 1 (Chile); Schalow, *Zool. Jahrb.*, Suppl. iv., 1898, p. 729 (Cabo Espiritu Santo, Tierra del Fuego; Ushuwaia, Beagle Channel); Crawshay, *Birds of Tierra del Fuego*, 1907, p. 43, plate (Useless Bay Settlement).[2]

Cistothorus platensis eidouxi Hellmayr, *Bull. B.O.C.* 19, 1907, p. 76 (distrib.).

Type locality: near Cape Horn.

Hab. Chile (Santiago, Talcahuano, Concepcion, Gregory Bay, Magellan Straits, etc.), S. Argentine, Gob. del Chubut (Valle del Lago Blanco); Tierra del Fuego (Useless Bay, Cabo Espiritu Santo, Ushuwaia, Beagle Channel); Falkland Islands.

Descr.—Differs from *C. p. platensis* and *C. p. tucumanus* by having the stripes on the head wider and darker, decidedly fulvous-brown; the black and buff markings on upper-back much more strongly developed and extended all over the lower back and rump; the deeper fulvous-brown of the flanks invades also the breast; the upper-tail coverts have distinct blackish cross-bars.

Remarks.—The coarsely striped upper-surface (from the mantle down to the rump) renders this form easily recognisable among its affines. As in *C. p. platensis*, there is a broad, creamy-white superciliary stripe, and all the rectrices are, on both webs, barred with blackish. Birds from Southern Chile and Western Chubut (Valle del Lago Blanco) agree very well together. Several skins from the Falkland Islands are slightly larger, and more brownish both above and below.

Examined: twelve specimens.

	Wing. mm.	Tail. mm.	Bill. mm.
Three adult males: Concepcion, Chile .	47, 47, 47	40, 43, 43½	12½–13
One adult female: Concepcion, Chile . .	44	42	13
One adult female: Talcahuano, Chile[3] .	45½	42	12½
Three adult males: Chubut (Valle del Lago Blanco; Koslowsky coll., Tring Mus.) .	49, 49, 48	40, 43, 46	12
Two adults: Falkland Islands[4] . . .	49, 50	38, 44	11½, 12

[1] Although generally referred to the Patagonian race of the House Wren (*Troglodytes musculus mogellanicus* Gould), Lesson's *T. hornensis* was clearly based upon an example of the southern form of *Cistothorus platensis*, as has been pointed out long ago by the late P. L. Sclater (*P.Z.S.* 1867, p. 319). In fact, the description "*La tête* est *d'un roux assez vif, guillochée de traits noirs; les parties supérieures* du corps sont *couvertes de flammèches noir luisant, blanches* et *rousses*," furnishes such an excellent characteristic of the latter bird as to leave no possible doubt respecting its identification.

[2] No attempt has been made to draw up a complete synonymic list, though I deemed it convenient to quote some of the more important references relating to the above form.

[3] "No. 105. Talcahuano, par MM. Hombron et Jacquinot, 1841. ♀. *Troglodytes Eydouxi* Ch. Bonap. figuré, *Voy. au Pôle Sud.*, pl. 19, fig. 1, sous le nom de Troglodyte des Marais. Type de l'espèce."—Coll. of the Paris Museum.

[4] A specimen with the erroneous locality "Uruguay," from the voyage of *L'Uranie*, is in the Paris Museum. It was, no doubt, secured on the Falklands where the naturalists of the expedition, Quoy & Gaimard, have made important collections.

(*d*) *Cistothorus platensis graminicola* Tacz.

Cistothorus graminicola Taczanowski, *Proc. Zool. Soc. Lond.* 1874, p. 130 (1874—Maraynioc, Chanchamayo, Central Peru ; descr. orig.).

Type locality : Maraynioc, Chanchamayo, Central Peru.

Hab. Central Peru (Maraynioc, Ingapirca) ; C. East Peru : Puna de Idma ; N.W. Bolivia (Khapaguaia [?]).

Descr.—Like *C. p. tucumanus* with the lower back wholly uniform ; but general coloration more rufescent ; the stripes on pileum deep fulvous-brown, obsolete on forehead ; sides of head and superciliaries deep buff (as in *C. p. aequatorialis*) ; flanks and lower tail-coverts deeper fulvous-brown ; upper-tail coverts marked with a few wavy cross-lines of dusky. All the rectrices are regularly barred with blackish across both webs ; the interscapulium is broadly striped with buff and black as in the allied forms.

Remarks.—This form combines the fulvous general coloration of *C. p. aequatorialis* with the striped head of the southern races ; being thus, to a certain extent, intermediate in its characters. From *aequatorialis* it may be recognized—in addition to the distinctly streaked pileum—by the slightly paler tone of the plumage, from its southern allies by the more fulvous general colour, the uniform lower back (without whitish streaks or dusky spots), etc.

An immature bird, the only one I have seen from N. Bolivia, seems to belong to the present form, although the upper-tail coverts are conspicuously barred with dusky.

Examined : two specimens.

	Wing. mm.	Tail. mm.	Bill. mm.
One adult male : Ingapirca, C. Peru . . .	52½	53	12½
One adult male : Puna de Idma, E. Peru . .	49	43	12⅓

(*e*) *Cistothorus platensis aequatorialis* Lawr.[1]

Cistothorus aequatorialis Lawrence, *Ann. Lyc. Nat. Hist.* 10, p. 3 (1871—Pichincha, Ecuador).
Cistothorus brunneiceps Salvin, *Ibis* (4) v. p. 129, pl. iii. fig. 1 (1881—Sical, W. Ecuador).

Type locality : Pichincha, Ecuador.

Hab. Western Ecuador (Sical, Cechce, Chimborazo, Corazon, Milligalli, Pichincha, etc.), and, according to Chapman,[2] Southern Colombia.

Descr.—Very nearly related to *C. p. graminicola*, but even more decidedly rusty ; the upper-tail coverts perfectly uniform, without the slightest trace of dusky markings ; the fulvous-brown of the flanks more extended and darker in tone ; the throat washed with buff (not pure white), and especially by having the top of the head plain rufescent-brown, or with the merest suggestion of light streaks on crown and nape. Tail as in *C. p. graminicola.*

Remarks.—There is no possible doubt as to the identity of *C. brunneiceps* and *aequatorialis.* The supposed discrepancies in Lawrence's description which induced Salvin to create a new species have no real existence. One of my specimens (♂ ad. west side of Pichincha) has indeed " the feathers of the crown

[1] I am not acquainted with the recently described *Cistothorus apolinari* Chapm. (*Bull. Amer. Mus. N.H.* 33, 1914, p. 635 : Suba Marshes, four miles from Bogotá, Colombia, 8,600 feet).

[2] *Bull. Amer. Mus. N.H.* 33, 1914, pp. 626–627.

and hind-neck in their centres marked with paler, nearly obsolete stripes," while in others from the same place the pileum is entirely devoid of light markings, just like the type of *C. brunneiceps*. The superciliary stripe, in this form, is particularly broad and bright buff, the upper-tail coverts are always wholly unbarred.

Examined: five specimens from W. Ecuador.

	Wing. mm.	Tail. mm.	Bill. mm.
Three adult males	48–50	42–46	12½–13
One adult female	46	40½	12½

(*f*) *Cistothorus platensis meridae* Hellm.[1]

Cistothorus platensis meridae Hellmayr, *Bull. B.O.C.* 19, p. 74 (1907—El Loro, Merida, W. Venezuela).

Hab. Western Venezuela: Mérida.

Remarks.—I have nothing to add to what I have said regarding this interesting local race, which is easily recognizable by the numerous dusky cross-lines on the flanks. A second specimen recently examined in the Senckenbergian Museum at Frankfort agrees in every detail with the type.

(*g*) *Cistothorus platensis polyglottus* (Vieill.).

Thryothorus polyglottus Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 34, p. 59 (1819—ex Azara, no. 151: Paraguay).

Troglodytes omnisonus Naumann, *Vögel Deutschl.* iii. tab. to p. 724 (1823—ex Azara, no. 151: Paraguay).

Troglodytes interscapularis Nordmann, in Erman's *Reise, Naturhist. Atlas*, p. 13, no. 90 (1835—"Brasilien," presumably São Paulo).

Type locality: Paraguay.

Hab. Paraguay (Azara, Bertoni); S.E. Brazil: Rio Grande do Sul (Pedras Brancas), Paraná (Villa de Castro, Curytiba), São Paulo (Ytararé, Ypanema, Borda do Matto, Vendinha (both places near Mogymirim), Itatinga, Paciencia, Batataes); Western Minas Geraës (Curvelo, Lagoa Santa).[2]

Descr.—Upper part of the head and nape earthy brown, either uniform or with hair-like pale shaft-lines on forehead and crown; interscapulium broadly striped with black and buffy white; lower back and rump plain, light russet-brown; upper-tail coverts with dusky cross-bars; lores whitish, ear coverts greyish brown, finely streaked with buff; a narrow but distinct superciliary streak whitish; under-parts white, inner flanks and tail coverts buffy brown. Median pair of rectrices regularly barred across with russet and black; the other tail feathers with the *inner web plain dusky* (except the tip, which is buff), and the outer web russet with blackish cross-bars.

Remarks.—This form is nearly related to *C. p. platensis*, from which, however, it differs in smaller size; shorter, weaker bill; much narrower superciliary streak; plain brown lower back (not variegated with black and whitish); by lacking the distinct shaft-stripes on the crown; finally by having the inner web

[1] I do not know *C. platensis tamae* Cory (*Field Mus. Nat. Hist., Publ.* 190, *Orn. Ser.* i., no. 10, August 1916, p. 344) from the Paramo de Tama, Tachira, W. Venezuela.

[2] What the birds recorded as *C. polyglottus* by Lillo (*Anal. Mus. Nac. Buenos Ayres*, 8, 1902, p. 173: Tucumán) and Dabbene (*Anal. Mus. Nac. B. Ayres*, 18, 1910, p. 355: Chaco; coll. Venturi) may be I am unable to decide. In any case, they can hardly belong to true *C. p. polyglottus*.

of the rectrices (except the middle pair) uniform dusky, not barred with russet or fulvous. Occasionally a few isolated tiny streaks may be observed on forehead or crown, though these are always much less developed than in *C. p. platensis*. The type of *T. interscapularis* in the Berlin Museum I have found to be identical with the skins obtained by Natterer in Southern Brazil. Paraguayan specimens I have not yet had an opportunity of examining, but from Azara's detailed description (I am using Sonnini's French translation) it is clearly seen that *T. polyglottus* can only refer to the present species.[1] As stated above, a specimen from Entrerios in the British Museum is decidedly intermediate between *C. p. platensis* and *C. p. polyglottus*, which, therefore, must be treated as subspecies.

Examined: nine specimens from Southern Brazil (Paraná, São Paulo).

	Wing. mm.	Tail. mm.	Bill. mm.
Six adult males	41–44	39–44	10–10½
Two adult females	41, 41	38, 41	10½, 11

(*h*) *Cistothorus platensis alticola* Salv. & Godm.

Cistothorus alticola Salvin & Godman, *Ibis* (5) i. p. 204 (1883—Roraima, British Guiana).

Type locality: Roraima, British Guiana.

Hab. Roraima Mountains, British Guiana.

Descr.—Exceedingly close to *C. p. polyglottus*, and only distinguishable by having the flanks more extensively, as well as darker, rufescent-brown, and by the superciliary streak being obsolete or even wholly absent.

Remarks.—Twelve specimens from Roraima differ from nine *C. p. polyglottus* in the way indicated above. The pileum and the lower back are always plain earthy brown, without any streaks or spots, the upper-tail coverts barred with blackish as in the South Brazilian form. The superciliary streak is but slightly indicated, sometimes even wanting. The darker brown of the flanks extends on to the sides of the breast. The ground colour of the tail is rather variable, being either earthy brown as in *C. p. polyglottus*, or fulvous as in *C. p. graminicola*; the outermost rectrix is occasionally barred on both webs, but the inner web of the second to the fifth rectrix is plain dusky or greyish brown, at the utmost with a few pale wavy cross-lines.

Examined: twelve specimens from Roraima.

	Wing. mm.	Tail. mm.	Bill. mm.
Nine adult males	44–46	41–42	10–11
One adult female.	42½	40½	11

C. p. polyglottus and *C. p. alticola* resemble, in markings of tail, the Central American representatives of this group, which, for the sake of completeness, are mentioned hereafter. Their characters need not be insisted upon, as they have been fully dealt with in Ridgway's work.[2]

[1] Sonnini (edition of Azara, iii. p. 327 (no. 151) describes "Le tout-voix" as follows: "le derrière du cou est noir, agreablement rayé en long de blanc; d'autres lignes noirâtres traversent le fond brun roussâtre du dos et du croupion; mais ces lignes deviennent plus nombreuses et plus apparentes sur les couvertures supérieures de la queue. Le côté extérieur des pennes des ailes, et *l'extérieur de celles de la queue*, aussi bien *que leur extrémité*, sont *rayés en travers de brun clair et de noirâtre*; . . . le reste des ailes est brun, et *celui de la queue noirâtre*."

[2] *Bull. U.S. Mus.*, no. 50, part iii. 1904, pp. 484–486.

(*i*) *Cistothorus platensis lucidus* Ridgw.

Cistothorus polyglottus lucidus Ridgway, *Proc. Biol. Soc. Wash.* 16, p. 169 (1903—Boquete, Chiriquí).

Hab. Panama (Chiriqui, Veragua); Costa Rica.

(*j*) *Cistothorus platensis elegans* Scl. & Salv.

Cistothorus elegans Sclater & Salvin, *Ibis*, i. p. 8 (1859—Lake of Dueñas, Guatemala).

Hab. Eastern Mexico to British Honduras.

Synallaxis phryganophila = Schoeniophylax phryganophila (Vieill.).[1]

Synallaxis phryganophila Vieill.; L. & d'O., *Syn. Av.* i. p. 22 (Corrientes, rep. Argentina).
Synallaxis phryganophilus d'Orbigny, *Voyage*, p. 239 (Corrientes).

Nos. 1, 2, adults (mounted): "de Corrientes, juillet 1829, par d'Orbigny. *Synallaxis phryganophila*, Vieill."

These specimens are in every way identical with others from Paraguay and the neighbourhood of Buenos Ayres.

Synallaxis ruficauda = Synallaxis cinnamomea russeola (Vieill.).[2]

Synallaxis ruficauda Vieill.[3]; L. & O., *Syn. Av.* i. p. 22 (Corrientes, rep. Argentina); d'Orbigny *Voyage*, p. 240 (Rincon de Luna, prov. Corrientes).

Nos. 1, 2, adults (mounted): "de Corrientes, juillet 1829, par d'Orbigny. *Synallaxis ruficauda*, Vieill."

Identical with specimens from Southern Brazil. As pointed out by Ménégaux & Hellmayr,[4] *S. cinnamomea russeola* is the earliest name for the southern race of this widespread bird, ranging from the banks of the Rio Paraná to north-eastern Brazil (Piauhy, Pernambuco).

Synallaxis striaticeps Lafr. & Orb. { "adult" = *Siptornis pyrrhophius striaticeps* (Lafr. & Orb.). "juv." = *Siptornis pyrrhophius pyrrhophius* (Vieill.).[5]

Synallaxis striaticeps Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 22 (1837—Corrientes [rep. Argentina], at Cochabamba [rep. Boliviana]); d'Orbigny, *Voyage*, Ois., p. 241, pl. 16, fig. 1 ("au sud de Corrientes, en hiver, . . . à Cochabamba et Valle Grande, Bolivia, à 2,000 m. alt."; descr. ad. et juv.).

No. 1, adult (mounted): "haut Pérou, un des types. *S. striaticeps* d'Orb. & Lafr. 295–365. Vallée Grande, par d'Orbigny, 1834."—al. 63; c. 64;

[1] *Sylvia phryganophila* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 11, p. 207 (1817—ex Azara, no. 229: Paraguay).

[2] *Sylvia russeola* Vieillot, l.c., 11, p. 217 (1817—ex Azara, no. 233: Paraguay).

[3] *Nouv. Dict. d'Hist. Nat.* 32, p. 310 (1819—"apportée du Brésil," the type which I have examined in the Paris Museum was obtained by Delalande fils in the vicinity of *Rio de Janeiro*, S.E. Brazil).

[4] *Mém. Soc. d'Hist. Nat. d'Autun*, 19, 1906, p. 72.

[5] *Dendrocolaptes pyrrhophius* Vieillot, *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 26, p. 118 (1818—ex Azara, no. 245: "Paraguay," se. *Corrientes*, n.e. Argentine).—As suggested by Bertoni (*El Hornero*, i. 1919, p. 257), the "Tropadore acanelado y pardo" of Azara (No. 245), upon which *D. pyrrhophius* Vieillot as well as *Dendrocolaptes superciliosus* Lichtenstein (*Abhandl. Berliner Akad. Wiss. a.d.J.* 1818–19, publ. 1820, p. 204) are based, is doubtless referable to the bird described by Berlepsch & Leverkühn (*Ornis*, 6, 1890, p. 22) as *Synallaxis heterocerca*, from specimens obtained by E. W. White at Cosquin, prov. Cordoba. Vieillot's name, having many years' priority, must be adopted as specific designation of the group.

r. 14½ mm. = *S. p. striaticeps* (Lafr. & Orb.).—We designate No. 1 as **type** of the species.

No. 2, (♀) ad. (mounted) : " Un des types. *Syn. striaticeps* d'Orb. & Lafr. Corrientes, juillet 1829, par d'Orbigny. 166—D. 86."—al. 58 ; c. 65 ; r. (damaged) mm. = *S. p. pyrrhophius* (Vieill.).

There has been considerable uncertainty about the correct application of the specific name *striaticeps*. While it was generally recognized that two distinct forms had been confused in the original description, authors differed in restricting the name to one or the other of its components. Sclater and Salvin used the term *striaticeps* for the Argentine form, and separated two specimens obtained by Buckley in the Yungas of La Paz, N. Bolivia, as a new species which was called *Synallaxis rufipennis*.[1] Berlepsch and Leverkühn,[2] on the other hand, expressed the opinion that the northern birds were entitled to the name *striaticeps*, and accordingly designated the Argentine form under the new term *S. heterocerca*. Ménégaux and Hellmayr,[3] overlooking this action, adopted the former course, calling the Argentine race *S. striaticeps striaticeps*, the Bolivian one *S. striaticeps rufipennis*.

In May 1914 I took all the available material of this group, consisting of 28 specimens in the collections of Count Berlepsch, Munich and Tring, to the Paris Museum, with a view to deciding that vexed question of nomenclature.

The rather cursory description in the *Magasin de Zoologie* could be equally referred to either the Argentine or the Bolivian form, although certain passages (" remigibus fuscis margine exteriore rufescentibus," " rectricibus . . . totis cinnamomeis," " hypochondriis abdomineque rufescente grisescentibus ") point rather in favour of the latter. The matter is further complicated by the fact that the locality " Corrientes " stands in the first place. In the more detailed account in the ornithological portion of the *Voyage*, d'Orbigny describes what he takes for the " adulte " as having " les plumes de la tête jaunâtres, chacune pourvue d'une tache noire, sur sa longueur," while the " jeune " is characterized in the terms : " dessus de la tête brun, les taches longitudinales à peine marquées et les plumes de cette partie moins allongées."

Let us now consider the two Parisian specimens, and see how they answer to the above statement.

No. 1 (Valle Grande, Bolivia) is a bird in very worn plumage, from which little can be gained regarding the colour of the edges to the secondaries—one of the principal characters between the two races, as will be shown presently. The right half of the tail (rectrix 1 to 6) is fortunately complete : *all the rectrices* are *uniform cinnamon-rufous*, without trace of dusky tips. The flanks and lower-tail coverts are decidedly buffy brownish (like an adult from Trigal, Bolivia, in the Berlepsch Collection) ; the upper-tail coverts cinnamon-rufous, slightly tipped with ashy ; the *blackish* and *buff stripes*, on the head, *extend over the whole pileum down to the nape*.

No. 2 (Corrientes) is an aberrant example of the Argentine form, with the middle rectrices nearly uniform rufous. It differs from No. 1 by greyish rather than buff flanks, and by having the *striping of the head much less pronounced*, as

[1] *Proc. Zool. Soc. Lond.* 1879, p. 620 (1879—Tilotilo, Bolivia).
[2] *Ornis*, 6, 1890, p. 22.
[3] *Mém. Soc. d'Hist. Nat. d'Autun*, 19, 1906, p. 78.

well as *restricted to forehead* and *occiput*. Besides, the feathers of the pileum are conspicuously shorter.

From the preceding it is evident that d'Orbigny (one of the describers) regarded and described the Bolivian bird as the adult, and that from Corrientes as the young of his *S. striaticeps*. Therefore I think we are justified in restricting that name to the *northern* race.

Turning now our attention to the Argentine form, it is well to say at the outset that its distinctive features are much less strongly marked than was supposed by Berlepsch and Leverkühn. Neither the size nor certain colour-characters, e.g. the tinge of the light crown-stripes, lower back, and upper-tail coverts, can be relied upon for discriminating the southern birds. Even the coloration of the median tail feathers is subject to some individual variation. By carefully comparing nearly thirty specimens from various localities I am led to the following conclusions :

(1) Birds from Northern and Central Bolivia (Tilotilo ; Samaipata, Valle Grande, Trigal ; Chuquisaca) have the black and buff (or whitish) striping extended over the whole pileum down to the nape ; the secondaries and tertials conspicuously edged with cinnamon- or russet-brown ; the flanks buffy brown ; the rectrices (even the median ones) plain cinnamon-rufous. They are entitled to the name *S. pyrrhophius striaticeps* (Lafr. & Orb.), of which *S. rufipennis* (Scl. & Salv.) becomes a synonym.

(2) Birds from the Central and Eastern Argentine states (Cordobá ; Santa Fé [Mocovi, Ocampo, Ceres] ; Corrientes, Entrerios [La Soledad] ; Buenos Ayres [Barracas al Sud]) [1] have the edges to the secondaries and tertials always earthy or greyish brown, without rufescent tinge ; the striping of the head confined to forehead and occiput ; the flanks greyish brown or ashy ; the central pair of rectrices with the entire inner web and the whole or part of the outer web greyish brown to dusky brown. Out of fifteen skins from the above-mentioned localities, only two (d'Orbigny's female from Corrientes and one of the males from Ocampo, Santa Fé) have the median rectrix cinnamon-rufous, with an obsolete dusky margin along tip of inner web, thus pointing towards *S. p. striaticeps*. I am unable to detect any constant differences between the types of *S. heterocerca* from Cordobá and a series from the Paraná River. This form is thus the true *S. p. pyrrhophius* (Vieill.).

(3) Birds from N.W. Argentine (states Tucumán, Salta, Jujuy) closely resemble *S. p. pyrrhophius*, and merely differ by having the dusky colour on the median rectrix restricted to the apical portion of the inner web, this patch varying in length from 20 to 25 mm. In the series of nine examples, however, there are again two (one each from Noreo, Tucumán, and Salta) with the whole of the inner web of the median rectrix dark brown, thereby approaching *S. p. pyrrhophius*, found in the more southern districts of the Argentine Republic. For the present I am not inclined, with the comparatively limited material, to separate these birds, even subspecifically, from *S. p. pyrrhophius*.

These remarks may be closed by giving the measurements of the adult specimens examined in the present connection.

[1] The birds recorded from the Rio Negro, Patagonia (Hudson) and Uruguay (Tala, prov. Durazno [Dalgleish], Paysandú (Peel), Santa Elena, Dept. Soriano [Aplin]), s.n. *S. striaticeps*, are no doubt also referable to *S. p. pyrrhophius*. However, I have not seen specimens from either of those places.

(*a*) *Siptornis pyrrhophius striaticeps* (Lafr. & Orb.).

	Wing. mm.	Tail. mm.	Bill. mm.
One adult from Valle Grande, Bolivia (Type) .	63	64 (worn)	14½
One adult from Samaipata, Bolivia . .	64	72½	13½
One adult from Trigal, Bolivia . . .	64	70	14

(*b*) *Siptornis pyrrhophius* — ?

	Wing. mm.	Tail. mm.	Bill. mm.
One male from Tucumán (Norco) . .	64	73	14
Two males from Salta (Metan, Arenal) .	65, 66	71, 74	13½, 14
One male from Jujuy (S. Francisco) . .	66	74	15
One female from Tucumán (Norco) . .	62	72	14
One female from Salta (Metan). . .	62	70	13
One female from Jujuy (San Francisco) .	62½	68	15

(*c*) *Siptornis pyrrhophius pyrrhophius* (Vieill.).

	Wing. mm.	Tail. mm.	Bill. mm.
One male (?) from Cordobá [1] . . .	60	67	14
One male from Entrerios (La Soledad) .	65	73	13
Three males from Santa Fé (Ocampo, Ceres).	62–65	71–73	13–14
Two females from Cordobá . . .	58, 61	63, 65	13½, 14
One female from Entrerios (La Soledad) .	61	74	13
One female from Corrientes . . .	58	65	—
Three females from Santa Fé (Mocovi, Ceres).	57–59	63–65	12–13½
One female from Buenos Ayres (Barracas al Sud)	60	68	14

Synallaxis albiceps Lafr. & Orb. = **Siptornis albiceps** (Lafr. & Orb.).

Synallaxis albiceps Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 23 (1837—Sicasica, Bolivia ; descr. orig.) ; d'Orbigny, *Voyage*, Ois., p. 241, pl. 16, fig. 2 ("aux environs du village Capiñata, prov. Sicasica, versant oriental, 2,000 m.").

Nos. 1, 2, adults (mounted) : "de Sicasica, Bolivie, par d'Orbigny, 1834. No. D. 287. Types de l'espèce."—al. 65, 68 ; c. 69 ; r. 14½ mm.

Birds from Unduavi and other places in High Bolivia procured by G. Garlepp agree very well with the types. This very distinct species, which is perhaps worthy of ranking as a separate genus (*Cranioleuca* Reichb.), appears to be confined to the highlands of Bolivia.

In Central and Southern Peru (dept. Cuzco) it is replaced by *Siptornis* (or *Cranioleuca*) *albicapilla* (Cab.),[2] which is widely different both in structure and coloration.

[1] Type of *S. heterocerca* Berl. & Leverk.

[2] *Synallaxis albicapilla* Cabanis, *Journ. f. Ornith.* 21, p. 319 (1873—Maraynioc, Chanchamayo, C. Peru).

Synallaxis fuliginiceps Lafr. & Orb. = **Leptasthenura fuliginiceps fuliginiceps** (Lafr. & Orb.).

Synallaxis fuliginiceps Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 23 (1837—Sicasica, Bolivia ; descr. orig.) ; d'Orbigny, *Voyage*, Ois., p. 242, pl. 17, fig. 1 (Enquisivi, prov. Sicasica ; Valle Grande).

Leptasthenura fuliginiceps boliviana Allen, *Bull. Amer. Mus.* ii. p. 91 (1889—North Bolivia).

No. 1, adult (mounted) : " de Sicasica, Bolivie, par d'Orbigny, 1834. No. D. 286. *Synallaxis fuliginiceps* Lafr. & Orb. Type de l'espèce."—al. 65 ; c. 96 ; r. 10 mm.

No. 2, adult (skin) : " de Sicasica, Bolivie, par d'Orbigny, 1834. *Syn. fuliginiceps* Nob. D. 286."—al. 65 ; c. 95 ; r. 10½ mm.

No. 3, adult (skin) : " de Valle Grande, Bolivie, par d'Orbigny, 1834. *Syn. fuliginiceps* Nob. D. 286."

In addition, I have examined an adult and a young bird from Tilotilo, Yungas of La Paz, coll. Buckley, in the British Museum. The five Bolivian skins are quite similar *inter se*, having the under-parts fulvescent or isabella colour, the uropygium decidedly washed with buff, and the back light fulvescent-brown.

Birds from " Paraná " (Entrerios ; type of *L. paranensis* Scl.[1]), Catamarca (Sierra de Totoral ; E. W. White), Mendoza (Weisshaupt), and Tucumán (Norco ; Dinelli) differ by their much paler, buffy-grey under-parts (only the flanks and crissum passing into a light brownish buff), and nearly uniform mouse-grey back and rump. The wings are, as a rule, slightly shorter in the Argentine birds. There is, however, no appreciable difference in the colour of the cap, wings, or tail between the two series. The southern form has, therefore, to stand as *L. fuliginiceps paranensis* Scl.

The dimensions of the two races compare as follows :

L. fuliginiceps fuliginiceps (Lafr. & Orb.).

	Wing. mm.	Tail. mm.	Bill. mm.
Four adults (not sexed) from Bolivia . . .	64–65	95–100	10–10½

L. fuliginiceps paranensis Scl.

	Wing. mm.	Tail. mm.	Bill. mm.
Two adults (not sexed) from " Paraná (Entrerios) "	57, 59	86, 90	10, 11
Two females from Catamarca (Sierra de Totoral) .	57, 60	90, 95	9¾, 10½
One male from Mendoza	61	—	10½
Two males from Norco, Tucumán . . .	63, 63	94, 98	10, 10⅓

[1] Sclater, *Proc. Zool. Soc. Lond.*, p. 377 (November 1861—" in rep. Argentina " ; the type in the British Museum is labelled as having been obtained by Burmeister at " Paraná, Entrerios." — This locality appears to me extremely doubtful, as the species, otherwise, is known only as an inhabitant of the mountainous western provinces).

Synallaxis aegythaloides = {**Leptasthenura aegithaloïdes aegithaloïdes** (Kittl.).[1] / **Leptasthenura aegithaloïdes berlepschi** Hart.[2]

Synallaxis aegythaloides Kittl.; L. & O., *Syn. Av.* i. p. 23 ("Chili, Patagonia, et Andium vertice [rep. Boliviana]"); O., *Voyage*, p. 243 (Rio Nègro en Patagonie, au 41° lat. sud; Valparaiso, Cobija, Chile; La Paz, Bolivie, alt. 4,000 m.).

Nos. 1, 2, adults (mounted, skin): "de Cobija, Chili, par d'Orbigny, 1831." = *L. a. aegithaloïdes* (Kittl.).

Nos. 3, 4, adults (skins): from Chile (without exact locality), collected by d'Orbigny, presumably at Valparaiso. = *L. aegithaloïdes aegithaloïdes* (Kittl.).

Nos. 5, 6, adult and young (skins): "de Patagonie, février 1831, par d'Orbigny. *Synallaxis aegythaloides* Kittl. No. D. 147." = *L. aegithaloïdes pallida* Dabb.[3]

No. 7, adult (skin): "d'Orbigny, de La Paz, Bolivie, 1834. D. 147. *L. aegithaloïdes*. No. 364."—al. 64; c. 95; r. 9 mm. = *L. aegithaloïdes berlepschi* Hart.

No. 8, adult (skin): "60. *L. aegithaloides*." No doubt also from La Paz, coll. d'Orbigny.—al. 69; c. 82 (much worn); r. 9 mm. = *L. aegithaloïdes berlepschi* Hart.

On carefully comparing fifteen specimens from various parts of Chile (Cobija, Coquimbo, Valparaiso, Quillota, Concepcion, Valdivia) in the Paris and Munich collections, I fail to discover constant differences connected with any particular geographic areas. An adult female taken by Lataste at San Alfonso (dept. Quillota) is especially convincing as to the non-existence of a southern race which at some time I was inclined to recognize. This bird, secured a few miles from the type locality of *L. aegithaloïdes* (Valparaiso), is fully as dark as the two Valdivia skins discussed in the third part of my paper on the Types of Neotropical Birds,[4] whereas the Cobija skins, which are distinctly paler, cannot be distinguished from a series obtained in the vicinity of Concepcion. Accordingly I must refer to a single, somewhat variable form all the birds found on the Chilian coast from Cobija down to Valdivia. It is, no doubt, the same race that was met with by Whitely at Islay, dept. Arequipa, coast of S.W. Peru.[5] According to Lynch Arribálzaga,[6] the true *L. a. aegithaloïdes* has been collected also on the Lago General Paz, western Chubut, close by the Chilian frontier.[7]

The Patagonian specimens[8] are remarkably pale above, the back being light brownish grey, very nearly as in *L. platensis* Reichb., and the abdomen is more strongly washed with buff than in any of the numerous Chilian examples I have seen. Unfortunately all the skins yet examined are in worn breeding plumage, so I must leave the question in abeyance whether they constitute

[1] *Synnalaxis* (sic) *Aegithaloïdes* Kittlitz, *Mém. Acad. Sci. St. Pétersb.* (sav. étr.), i. p. 187, pl. vii (1831—"auf den Höhen um Valparaiso," Chile).

[2] *Leptasthenura aegithaloïdes berlepschi* Hartert, *Nov. Zool.* xvi. p. 210 (1909—Ang. Pericholi, Jujuy, N.W. Argentine).

[3] Dabbene, *El Hornero*, ii. No. 2, p. 135 (Dec. 1920—W. Chubut, Patagonia).

[4] *Nov. Zool.* xxi. 1914, p. 175.

[5] *Synallaxis aegithaloïdes* Sclater & Salvin, *Proc. Zool. Soc. Lond.* 1867, p. 985.

[6] *Anal. Mus. Nac. Buenos Ayres*, 8, 1902, p. 164.

[7] Dabbene (*El Hornero*, ii. 1920, p. 136) has lately shown it to pertain to *L. a. pallida* Dabb.

[8] In addition to d'Orbigny's I have examined a third example, ♀ ad., obtained by H. W. Hudson in March 1871 on the Rio Negro, in the collection of the Tring Museum.

a recognizable geographical race or not.[1] It should be mentioned, however, that they are very distinct from *L. platensis*, having the outer rectrices tipped with pale grey, etc., etc.

Bolivian specimens of *L. aegithaloïdes*—besides Nos. 7 & 8, I have examined twelve more from Sajama and La Paz—whose divergencies in size and colour were already noticed by d'Orbigny,[2] agree in every respect with two topotypes of *L. a. berlepschi* Hart. from Jujuy, in the Munich Museum. They differ from twenty *aegithaloïdes* (Chile and Patagonia) by their conspicuously paler, light cinnamon-brown crown-stripes; much paler sandy-brownish (instead of grey-brown to dark earthy brown) back and rump; buff (instead of dull greyish white) ground colour of breast and abdomen; somewhat slenderer, longer bill; longer wings and tail, etc. *L. a. berlepschi* inhabits the mountains of N.W. Argentine (Salta, Jujuy) and Bolivia (La Paz), at high altitudes; and I have little doubt the birds found by Lane (*Ibis*, 1897, p. 39) in the Cordillera of Tarapacá, N.W. Chile, belong likewise to this well-marked race.

Leptasthenura platensis Reichb.,[3] with its long, pointed crest and pale rufous tips to the lateral rectrices, is totally different from *L. aegithaloïdes* and its races, as has been shown by Ménégaux and Hellmayr.[4] Its range extends from Western Uruguay (Paysandú [Gibson], Santa Elena, dept. Soriano [Aplin]), and Entrerios (Concepcion del Uruguay [Barrows], La Soledad [Brittain], Paraná [Burmeister]), south to the eastern section of the province Buenos Ayres (Belgrano [Durnford], Ajó [C. B. Grant], Cape San Antonio [Gibson], Pacheco [S. Venturi], Conchitas [Hudson]), and west to Cordoba, Catamarca, and Tucumán (Rio Sali). I have examined specimens from Soriano (Uruguay), Entrerios (La Soledad), Buenos Ayres, Cordoba, Catamarca, and Rio Sali.

[Dabbene's record[5] from the Rio Negro is apparently based upon Hudson's *L. aegithaloides*,[6] which belongs, however, to *L. a. pallida* and *not* to *L. platensis*, as I have convinced myself by actual comparison of one of the examples. To the same form are most certainly referable the birds obtained by Durnford[7] in Eastern Chubut, and by Darwin at Santa Cruz, Patagonia. Doering[8] tells us that the most northerly locality at which *L. aegithaloides* was met with was about four miles south-west of Nueva Roma (in the south-western corner of the province Buenos Ayres), farther to the south it was found particularly common between the Rio Colorado and Rio Negro. The range of this form thus appears to extend all over Eastern Patagonia, between the 39° and 50° S. lat.]

Synallaxis leucocephala Lafr. & Orb.

Synallaxis leucocephala Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* ii. p. 24 (1837—Patagonia) d'Orbigny, *Voyage*, Ois., p. 244.

The species described as "Subtus rufo, infra brunneo rufescens; capite supra albido; cauda elongata," was only seen, but not obtained! As no bird

[1] They have since been separated by Dabbene as *L. a pallida*.

[2] *Voyage*, Ois., pp. 243–244.

[3] *Handb. Scans., Sittinae*, p. 160 (August 1853—Rio de la Plata).—The lately described *L. punctigula* Chapm. (*Bull. A. Mus. N.H.* 41, 1919, p. 327: Sarmiento, Tucumán) is obviously the same.

[4] *Mém. Soc. d'Hist. Nat. Autun*, 19, 1906, p. 67.

[5] *Anal. Mus. Nac. B. Ayres*, 18, 1910, p. 292.

[6] *Proc. Zool. Soc. Lond.* 1872, pp. 544, 548.

[7] *L. aegithaloides* Durnford, *Ibis*, 1878, p. 396.

[8] *Inform. ofic. Exped. Rio Negro*, 1881, p. 43.

answering to this somewhat general description has since been met with in Patagonia, *S. leucocephala*, in all probability, will for ever remain a mystery to ornithologists.

Synallaxis humicola = { **Siptornis humicola** (Kittl.).[1] / **Siptornis d'orbignyi** (Reichb.).[2] / **Siptornis arequipae** (Scl. & Salv.) or subsp.

Synallaxis humicola (nec Kittlitz[1]); Lafr. & d'Orb., *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 24 (1837—La Paz, rep. Boliviana; descr.); d'Orbigny, *Voyage*, Ois., p. 245, pl. 17, fig. 2 ("aux environs de Corrientes, en hiver, Valparaiso, Chili"; La Paz, Cochabamba, Palca [prov. Ayupaya]).

No. 1, adult (skin): "de Valparaiso, Chili, par d'Orbigny. 1830. *Syn. humicola* Kittl. No. 159." = *Siptornis humicola* (Kittl.).

No. 2, adult (mounted): "d'Ayupaya, Bolivie, par d'Orbigny, 1834. No. 369—D. 197. *Type* de *B. d'Orbignyi* Reichb."—al. 68; c. 77; r. 13½ mm.

No. 3, juv. (skin): "de Cochabamba, Bolivie, par d'Orbigny, 1834. No. 369—D. 197."—Wing, 65; tail, 66; bill (damaged) mm.

In the *Synopsis Avium* Lafresnaye and d'Orbigny based their description of *S. humicola* exclusively upon Bolivian examples. Reichenbach, on recognizing that the bird characterized and figured under that designation in the ornithological portion of the *Voyage* was totally different from the Chilian species, gave it the new specific name *Bathmidura d'Orbignyi*. As we have explained in another place,[3] the adult bird from Palca, No. 2, the only specimen corresponding to the characters of *B. d'Orbignyi* in the Paris Museum, is to be taken as the **type** of the latter species, whose type locality becomes, therefore, *Palca*, prov. Ayupaya, C. Bolivia. The range and distinguishing features of this strongly marked form having been discussed by me in the paper just referred to,[4] I need not dwell any more on the subject.

The young bird from Cochabamba appears to be identical with some female and immature examples secured by the late Gustav Garlepp at La Paz, W. Bolivia. They differ from *S. d'orbignyi* in lacking the rufous-brown patch on the wings, in having less rufous in the tail, etc.; they closely resemble *S. arequipae* (Scl. & Salv.),[5] as represented by several adult males from Sajama, W. Bolivia, but are smaller and exhibit certain slight colour-differences which, however, may be due to age. Until adult males in good plumage are available these skins from La Paz and Cochabamba may well be referred to *S. arequipae*, at least provisionally.

From "Corrientes," where d'Orbigny states having met with "*S. humicola*" in winter, the Paris Museum does not possess any specimen, either mounted or in skin. Needless to say, the birds observed on the Paraná cannot have pertained to *S. d'orbignyi*, which, in Argentine, is confined to the mountainous western

[1] *Synnalaxis* (sic) *humicola* Kittlitz, *Mém. Acad. Sci. St. Pétersb.* (sav. étr.), i. p. 185, pl. vi. (1831—Valparaiso, Chile).

[2] *Bathmidura d'Orbignyi* Reichenbach, *Scansoriae, Sittinae*, p. 163 (1853—based on *S. humicola* Lafr. et d'Orb. [nec Kittl.], *Syn. Av.* i. p. 24: Bolivia).

[3] *Verhandl. Orn. Ges. Bay.* 13, Heft 1, February 1917, p. 114, footnote 1.

[4] *L.c.* pp. 115–116.

[5] *Synallaxis arequipae* Sclater & Salvin, *Proc. Zool. Soc. Lond.* 1869, p. 417 (1869—"in vicin. urbis Arequipae, Peruv. occid.").

districts. D'Orbigny no doubt mistook some allied species, perhaps *S. baeri* Berl., for the *Siptornis* afterwards secured in Bolivia.

No. 1 of the above list, from Valparaiso, is a typical example of *S. humicola* (Kittl.), which I have as yet seen only from Chile.

Synallaxis ruficapilla = { **Synallaxis azarae azarae** d'Orb. / **Synallaxis azarae frontalis** Pelz.[1]

Synallaxis ruficapilla (nec Vieillot[2]); L. & O., *Syn. Av.* i. p. 24 (prov. Corrientes [rep. Argentina]; rep. Boliviana); d'Orbigny, *Voyage*, Ois., p. 246 (Corrientes, Arg.; Carcuata [Yungas], Enquisivi [prov. Sicasica], Chaluani [prov. Mizqué], Moxos, Bolivia).

Synallaxis Azarae d'Orbigny, *Voyage*, Ois., p. 246, in text (betw. 1839 and 1847.—" un individu . . . tué . . . dans la républiqne de Bolivia ").

No. 1, adult (mounted): " de Corrientes, par M. d'Orbigny, juillet 1829. No. 163—D. 72."—al. 60; c. 78; r. 11½ mm. = *Synallaxis azarae frontalis* Pelz.

No. 2, adult (mounted): " de Corrientes, par M. d'Orbigny, juillet 1829. No. 163."—al. 59; c. 79; r. 10½ mm. = *Synallaxis azarae frontalis* Pelz.

No. 3, juv. (skin): " par d'Orbigny, Yungas 1834. No. 367—D. 275."—al. 57; c. 80; r. 10¾ mm. = *Synallaxis azarae azarae* d'Orb.

No. 4, adult (skin): " 20. *S. azarae* d'Orb., probablement le type, par d'Orbigny, " Valle Grande," 1834. No. 267—D. 276."—al. 57; c. 93; r. (damaged) mm.

As in the case of the preceding species, *S. ruficapilla* also covers several distinct forms. In the *Voyage*, d'Orbigny describes under that heading a *Synallaxis* with rufous cap and tail, for which rather an extensive area (the Argentine province Corrientes, the plains of Moxos, the Yungas of La Paz (Carcuata), the Central Bolivian provinces Sicasica and Mizqué) is given as habitat. Furthermore, in the text a single specimen obtained in Bolivia (exact locality not stated) is discussed at length, and in case of its proving to represent a distinct species the name *S. azarae* proposed for it.

Nos. 1 and 2, which correspond to d'Orbigny's general description of *S. ruficapilla*, are referable to the bird we are accustomed to call *S. frontalis* Pelz., widely distributed in the interior of Brazil, Paraguay, and N. Argentine. It may, however, be that the inhabitants of the latter country are subspecifically separable. Argentine birds[3] differ from a large series of Brazilian skins (Bahia; Agwa Suja near Bagagem, Minas Geraës; Goyaz; Cuyabá, Mattogrosso) by having the forehead as far back as the anterior angle of the eye conspicuously brownish grey, very nearly as in *S. a. azarae* (= *griseiventris* Allen). In typical *frontalis*, of Brazil, to which also a number of Paraguayan specimens (Sapucay; vicinity of Asunción) must be referred, there is merely a narrow frontal edge dull grey, obscured by rufous tips to the feathers. As a rule, the difference is well marked, but a few of my examples from Minas Geraës approach the Argentine form very closely.

[1] *Synallaxis frontalis* Pelzeln, *Sitzungsber. Akad. Wissens. Wien, math.-naturw. Kl.*, 34, p. 117 (1859—based on *Parulus ruficeps* ♀, Spix, *Av. Bras.* i. 1824, p. 85, pl. 86, fig. 2: *Rio São Francisco* Bahia, E. Brazil).

[2] *Nouv. Dict. d'Hist. Nat.*, nouv. édit., 32, p. 310 (1819—" au Brésil "; the type was secured near *Rio de Janeiro* by Delalande fils, in 1816; see *Mém. Soc. d'Hist. Nat. Autun*, 19, 1906, p. 69).

[3] In addition to d'Orbigny's two Corrientes examples I have examined an adult ♂ from La Soledad (Entrerios; C. B. Brittain), ♂♀ from Santa Ana, Tucumán (G. A. Baer); two ♂♂, one ♀ from Ocampo, prov. Santa Fé (Venturi), in the Munich and Tring Collections.

No. 4, the type of *S. azarae* d'Orb.,[1] when compared with the Corrientes birds, has, in fact, a longer tail, the rufous cap much lighter and more extended towards the nape, and the upper-wing coverts of a clearer rufous colour, as claimed by d'Orbigny.

In a joint communication with M. Ménégaux,[2] I have already alluded to its close similarity to *S. griseiventris* Allen,[3] but refrained from uniting the two "species," partly because we could not exactly match the type, partly on account of the locality "Valle Grande," where another member of this group, *S. fuscipennis* Berl.,[4] at that time undescribed, is met with. Thanks to the kindness of M. Ménégaux and my much-lamented master, the late Count Berlepsch, I have been enabled to compare the type of *S. azarae* once more with four specimens of *S. fuscipennis*,[5] ten topotypical examples of *S. griseiventris*, from the Western Yungas of Bolivia, and twelve skins of the same form from Marcapata, S.E. Peru.

The careful study of this very satisfactory material leaves not the slightest doubt that the type of *S. azarae* is merely a freshly moulted example of *S. griseiventris*. From the many specimens from Bolivia and S.E. Peru it hardly differs by the slightly broader rectrices with their under-surface just a shade lighter rufous. The under-side of the body shows exactly the same grey tinge with whitish admixture along middle of breast and abdomen as an adult male from Chaco, Yungas, Bolivia (June 12, 1897, Garlepp coll., No. 600, Tring Museum), while another male from the same locality (May 7, 1894, collector's no. 484, Mus. Berlepsch) very nearly matches the type in the "nuance" of the lower surface of the tail feathers. The cinnamon-rufous of the pileum and upper-wing coverts is generally rather darker in the Bolivian series of *griseiventris*. A "semiad." male from Sandillani, Yungas (August 14, 1896, collector's no. 1,630, Mus. Berlepsch), however, agrees in the clear colour of those parts with the type of *azarae*, and a bird from Cocapata, Yungas (April 19, 1892, collector's no. 1,575, Mus. Berlepsch), has the rufous cap even so far extended backwards as d'Orbigny's typical example.

It should be mentioned here that in *S. griseiventris*, as a rule, the tail is of a darker rufous than in *S. frontalis* of Brazil, Paraguay, and Argentine, though sometimes examples (e.g. the type of *azarae*, a male from Chaco, Yungas, and the ♂ semiad. from Sandillani) may be found that do not differ in this respect from their Brazilian ally.

S. fuscipennis Berl., of Eastern Bolivia (Valle Grande, etc.), can be easily distinguished from *S. a. azarae* (= *griseiventris*) by the much darker rufous (= *frontalis*) cap and wing coverts, much shorter tail with the inner web of the central rectrix dusky brown, and by having only the basal half of the remiges narrowly edged with dull rufous-brown.

We must, therefore, assume that the indication "Valle Grande," on the label of the type of *S. azarae* (which, by the way, is not from d'Orbigny's hand, in whose work the locality is not mentioned either) is erroneous, and that the

[1] Ménégaux & Hellmayr have given their full reasons for this identification in *Mém. Soc. d'Hist. Nat. Autun*, 19, 1906, pp. 70–71; and in *The Auk*, 23, 1906, pp. 480–481.

[2] *Mém. Soc. d'Hist. Nat. Autun*, 19, 1906, p. 71.

[3] *Bull. Amer. Mus. N. Hist.* ii. p. 91 (1889—Yungas, Bolivia).

[4] *Ornis*, 14, p. 362 (February 1907—Samaipata [type], Olgin, Valle Grande, E. Bolivia).

[5] One ♂ ad. Valle Grande, two unsexed adults from Samaipata (including the type), and an adult from Olgin, all collected by the late Gustav Garlepp.

bird was really obtained in the Western Yungas.[1] In any case, *S. griseiventris* becomes a synonym of *S. azarae*, which is to be accepted as the earliest specific name of the whole group. We have, thus, to distinguish in Southern South America :

(*a*) *Synallaxis azarae azarae* d'Orb. (Syn. *S. griseiventris* Allen).

Bolivia : Western Yungas (Sandillani, Chaco, Cocapata, Songo, Carcuata, Ramosani, etc.) ; South-eastern Peru ; Marcapata (S. Domingo, 4,500 feet, Ockenden coll., Tring Museum ; Cuzco, 6,400 feet, O. Garlepp coll., Mus. Berlepsch ; Ollachea near Macuzani, Watkins coll., Mus. Munich ; Inca Mine, 6,000 feet, Keays coll.) ; Central East Peru : Santa Ana (Kalinowski).

(*b*) *Synallaxis azarae fuscipennis* Berl.

Eastern Bolivia (Valle Grande, Samaipata, Olgin).

(*c*) *Synallaxis azarae frontalis* Pelz.

Eastern and Central Brazil (from Pernambuco and Bahia south to Western Minas Geraës and northern São Paulo, west to Mattogrosso [Cuyabá, Chapada, etc.]) ; Paraguay (Lambaré, Bernalcué near Asunción, Sapucay, Colonia Risso, S. Rafael, Villa Oliva, Puerto Pinasco, Villa Franca, etc.) ; Northern Argentina (from the neighbourhood of Buenos Ayres west to Cordoba, north to Tucumán, Salta, etc.) ; probably also the plains of Eastern Bolivia (Moxos).

From d'Orbigny's other localities (Mizqué, south of the Sierra de Cochabamba ; Moxos, eastern plains) there are no specimens in the Paris Museum. The Mizqué birds might have belonged to *S. azarae fuscipennis*, while those from the Moxos plains were almost certainly referable to *S. azarae frontalis*, which is found in the adjoining Brazilian province of Mattogrosso.

Synallaxis bitorquata Lafr. & d'Orb. = **Melanopareia**[2] **torquata bitorquata** (Lafr. & Orb.).

Synallaxis bitorquata Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 24 (1837—Chiquitos, rep. Boliviana ; descr. orig. ♂).

Synallaxis torquatus (nec Wied [3]) d'Orbigny, *Voyage*, Ois., p. 248, pl. 15, fig. 2 (Mission de Concepcion Chiquitos, E. Bolivia).

This species, at first described as new by Lafresnaye & d'Orbigny from an example secured in the East Bolivian hill-country, was synonymized with

[1] As it is convenient to have a type locality specified, we designate as such for *S. azarae* CARCUATA, Yungas of La Paz, W. Bolivia, one of the original places mentioned by d'Orbigny.

[2] *Melanopareia* Reichenbach, *Handb. spez. Ornith. Scansoriae, Sittinae*, p. 164 (1853—Species : *M. maximiliani* (d'Orb.), *M. torquata* (Wied)).—*Rhoporchilus* Ridgway, *Proc. Biol. Soc. Wash.* 22, p. 69 (1909—Type : *Formicivora speciosa* Salvin).

We fully agree with Ridgway's contention that *Formicivora speciosa* and allies find their natural place in the family *Formicariidae* and constitute a separate genus, most nearly related to *Myiothera strigilata* Wied (type of *Myrmorchilus* Ridgw.). Ridgway has, however, entirely overlooked the fact that this group of birds is congeneric with *Synallaxis torquata* Wied and *S. maximiliani* d'Orb., for which Reichenbach, in 1853, had already created the genus *Melanopeira*. It comprises the following species and subspecies :

(1) *Melanopareia elegans elegans* (Less.). (See Hellmayr, *Nov. Zool.* 13, 1906, pp. 334–335.)

(2) *Melanopareia elegans speciosa* (Salv.).

(3) *Melanopareia torquata torquata* (Wied).

(4) *Melanopareia torquata bitorquata* (Lafr. & Orb.).

(5) *Melanopareia maximiliani maximiliani* (d'Orb.).

(6) *Melanopareia maximiliani argentina* (Hellm.).

[3] *Synallaxis torquatus* Wied, *Beitr. Naturg. Bras.* 3, ii. p. 697 (1831—"Campo Geral," i.e. the campo district on the confines of the provinces Bahia and Minas Geraës, Eastern Brazil ; types lost, see Allen, *Bull. Amer. Mus. N.H.* ii. 1889, p. 244).

S. torquata in the ornithological portion of the *Voyage*. Unfortunately I have not been able to discover the type in the collection of the Paris Museum, and it appears to be lost.[1]

On comparing thirteen skins from various parts of Brazil I notice certain differences, which are apparently of subspecific value.

Wied describes the upper part of the head and nape as greyish brown (" graubraun "), and three examples obtained by Reiser [2] in the Sierra do Piauhy (which separates the East Brazilian states Piauhy and Bahia) correspond exactly with the Prince's detailed account. In these skins the pileum and hind neck are light brownish grey, with a hardly perceptible olive hue ; the bastard quills and the edge of the wing are black, conspicuously margined with white.

Six adults from São Paulo (Irisanga, Ytararé), a couple from Goyaz (Faz. Esperança), and one ♀ from Western Minas Geraës (Lagoa Santa) differ from the Piauhy birds in smaller size and by having the pileum and hind neck warm rufescent-brown (between " mummy brown " and " mars brown " of Ridgway's *Nomenclature of Colours*), and the bastard wing as well as the edge of the wing mainly cinnamon-brown.

Description (cf. " capite supra brunneo ") and plate of *S. bitorquata* evidently refer to the brown-capped race, as might be expected from geographical reasons.

If my views be correct, the two races had to stand as follows :

(*a*) *Melanopareia torquata torquata* (Wied).

N.E. Brazil in states of Bahia (Wied) and Piauhy (Oro, on the way from São Antonio to Santa Philomena, Sierra do Piauhy ; Reiser coll.).

(*b*) *Melanopareia torquata bitorquata* (Lafr. & Orb.).

Interior of Brazil in states of Minas Geraës (Lagoa Santa, Lages), São Paulo (Ytararé, Cimeterio do Lambari, Paciencia, Irisanga, Rincão, Batataes), Goyaz (Fazenda Esperança), Mattogrosso (Chapada), and the adjoining parts of Bolivia (Mission Concepcion, Chiquitos).

Measurements :

	Wing. mm.	Tail. mm.	Bill. mm.
One ♂ ad. Oro, Piauhy (*M. t. torquata*) .	54	68	13
Three ♂♂ ad. São Paulo (*M. t. bitorquata*)	52–54	60	11–11½
One ♂ ad. Goyaz (*M. t. bitorquata*) .	51½	66	11¾
Two ♀♀ Piauhy (*M. t. torquata*) . .	53, 55	70, 73	12½–13
Two ♀♀ São Paulo (*M. t. bitorquata*) .	50, 51	55, 63	10–10½
One ♀ Goyaz (*M. t. bitorquata*) . .	54	64	10
One ♀ Minas Geraës (*M. t. bitorquata*) .	50	58	11

Synallaxis maximiliani d'Orb. = **Melanopareia m. maximiliani** (d'Orb.).

Synallaxis torquata (nec Wied, 1831 !) Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 25 (1837—Carcuata, Bolivia ; descr. orig. ♂ ad.).

Synallaxis maximiliani d'Orbigny, *Voyage*, Ois., p. 247, pl. 15, fig. 1 (betw. 1839 and 1847.—nom. nov. ;—" mont Biscachal, aux environs de Carcuata, Yungas ").[3]

No. 1, (♂) ad. (mounted) : " *S. maximiliani* d'Orb. Type, de Yungas, 1834, par d'Orbigny."—al. 53 ; c. 68 (incompl.) ; r. 12 mm.

[1] In the *Catalogue de la Coll. Lafresnaye*, p. 75, two specimens, nos. 2,443, 2,444, are indicated as types de *S. bitorquata* Lafr. !

[2] *Denkschr. math.-naturw. Kl. Akad. Wissens. Wien*, 76, 1910, p. 69.

[3] See Ménégaux et Hellmayr, *Mém. Soc. d'Hist. Nat Autun*, 19, 1906, p. 74.

The type agrees with two other adult males from the Yungas of La Paz, (Tanampaya, Chulumani, Tusiquaya) in the Tring and Berlepsch collections, in having the belly posterior to the black gorget nearly uniform chestnut-rufous. The throat is bright buff; the feathers of the upper-back are white at the base, then follows a black zone, while the apical portion is dull olive. *M. m. maximiliani* is hitherto only known as an inhabitant of the Western Yungas of Bolivia.

In Argentine (Chaco, Pilcomayo, Cordoba, Tucumán) a nearly related form, *M. maximiliani argentina* (Hellm.),[1] takes its place, which is immediately recognizable by its paler olivaceous upper-parts and much lighter belly. The twelve specimens which we have examined are fairly constant in their characters.

Synallaxis patagonica d'Orb. = Siptornis patagonica (d'Orb.).

Synallaxis patagonica d'Orbigny, *Voyage*, Ois., p. 249 (betw. 1839 and 1847.—Rio Nègro, Patagonia; descr. orig.).

Nos. 1, 2, adults (skin): "par d'Orbigny, Patagonie, février 1831, *Synallaxis patagonica* d'Orb. No. 71."—al. 58, 58; c. 69, 70; r. 11½, 12 mm.

One of the specimens is rather paler throughout, with the under-surface of the wings somewhat lighter rusty.

This species is immediately recognizable among its affines by the proportionately short wings and the broad, rounded rectrices, with the shafts soft and not at all protruding. Like several other species, it is hardly congeneric with the majority of the so-called "*Siptornis*," although it possesses twelve tail feathers.

Its range is restricted to the northern parts of the arid Patagonian subprovinces. Hudson[2] obtained it forty years after d'Orbigny on the banks of the Rio Negro; Durnford[3] in Eastern Chubut, farther to the south; while Doering[4] met with it a little more northwards, on the Rio Colorado. Finally, the Munich Museum acquired an adult female, secured by Emil Weiske, on December 2, 1910, on the Rio Limay, Terr. of Neuquen, which is the most westerly locality yet on record. The bird agrees well with the types in the Paris Museum.

Troglodytes coraya = Thryothorus genibarbis bolivianus (Todd.).[5]

Troglodytes coraya (nec Gmelin[6]), L. & O., *Syn. Av.* i. p. 25 (Yungas and Guarayos, Bolivia).
Thryothorus coraya d'Orbigny, *Voyage*, p. 229 (Carcuata, prov. Yungas; Concepcion, Guarayos).

No. 1, (♂) ad. from Bolivia (without exact locality), collected by d'Orbigny.—Wing, 63; tail, 54; bill, 16 mm.

This specimen—the only one I have been able to discover in the collections of the Paris Museum—is no doubt from Carcuata, Yungas, N. Bolivia, since it agrees in every detail with skins obtained by Otto Garlepp at Songo, in the same district. Birds from the province of Sara, C. Bolivia, whence came the

[1] *Synallaxis maximiliani argentina* Hellmayr, *Bull. B.O.C.* 19, p. 74 (1907—Norco, Tucumán, N.W. Argentine).

[2] *Proc. Zool. Soc. Lond.* 1872, p. 544.

[3] *Ibis*, 1877, p. 36.

[4] *Informe ofic. Exped. Rio Negro, Zool.*, 1881, p. 44.

[5] *Pheugopedius genibarbis bolivianus* Todd, *Proc. Biol. Soc. Wash.* 26, p. 170 (1913—Province Sara, C. Bolivia; coll. J. Steinbach).

[6] *Turdus Coraya* Gmelin, *Syst. Nat.* 1, ii. p. 825 (1789—ex "Le Coraya," Buffon et Daubenton *Pl. enl.* 701, fig. 1: Cayenne); cfr. Hellmayr, *Nov. Zool.* 20, 1913, pp. 228–234.

type of *P. g. bolivianus* Todd, are perfectly similar to those from the Western Yungas.

T. g. bolivianus is closely allied to *T. genibarbis intercedens* Hellm.,[1] of Central Brazil (Goyaz, Mattogrosso), but may be distinguished by the conspicuously cinereous sides of neck, the deep tawny ochraceous under-parts, and the greyish fore-neck, separating the white throat from the colour of the belly. In the light coloration of the upper parts and smallness of the bill the two races are precisely alike. Typical examples of *T. g. intercedens*, from the state of Goyaz, are whitish or very pale buffish underneath, with the flanks only light cinnamon or rufescent-brown, and so is also an adult female from Cuyabá, E. Mattogrosso. Two males from Western Mattogrosso (Villa Bella, and Engenho do Gama, on the Rio Guaporé, not far from the Bolivian frontier), point towards *T. f. bolivianus* by reason of their deeper, more ochraceous under-parts. It is possible that the birds met with by d'Orbigny at Concepcion, Guarayos, N.E. Bolivia, might have belonged to this intermediate form rather than to *T. g. bolivianus*, but in absence of specimens this question must be left in abeyance.

A list of the races of *T. genibarbis*, then known, I have given in the account of Baer's collections from Goyaz.[2]

Thryothorus modulator d'Orb. = **Leucolepis modulator modulator** (d'Orb.).

Troglodytes arada (nec Latham[3]), L. & O., *Syn. Av.* i. p. 25 (Yungas, Bolivia).
Thryothorus modulator d'Orbigny, *Voyage*, Oiseaux, p. 230 (October 1838—Yuracarès, Yungas, N. Bolivia; descr. orig.).

Nos. 1, 2, adult, imm. (skins): "No. 113—D. 409, de Yucacarès, par d'Orbigny, 1834. *Thryothorus modulator* Nob."—al. 69, 68; c. 38, 35½; r. 18, 17½ mm.

The two specimens agree very well together, except that No. 2, an immature bird, is slightly lighter ferruginous on throat and forehead. Two more examples from Northern Bolivia (San Mateo) I have examined in the Berlepsch Collection. An adult male procured by W. Hoffmanns on the left bank of the Rio Madeira[4] is likewise referable to the typical form, whose range I should, for the present, restrict to the left bank of the Upper Madeira and its head-waters, up to the northern slopes of the Bolivian Andes (Yuracarès, San Mateo).

The doubtfully separable *L. modulator rufogularis* (Des Murs) replaces it to the west and north, ranging from the Rio Purús to the Rio Solimoëns (Teffé) and west to Northern Peru (Sarayaçu, Ucayali; Yurimaguas, Tarapoto). More material than is at present available should be examined in order to satisfactorily establish the status of this supposed geographical race. However, see my remarks in *Novitates Zoologicae*, xiv. 1907, p. 41, l.c. xvii. 1910, pp. 261–2.

[1] *Nov. Zool.* xv. p. 17 (1908—Rio Thesouras, state of Goyaz, C. Brazil).

[2] Loc. cit. pp. 17–18.

[3] *Turdus arada* Latham, *Ind. Ornith.* i. p. 358 (1790—based on "Le Musicien, de Cayenne," Daubenton, *Pl. enl.* 709, fig. 2); = *Formicarius musicus* Beddaert, *Tabl. Pl. enl.*, p. 44 (December 1783—based on the same); = *Myrm*[*ornis*] *Arada* Hermann, *Tabl. Affin. Anim.* p. 211, note r (1783—based on "L'Arada," Buffon, *Hist. Nat. Ois.*, 4, 1778, p. 480: Cayenne).—This name has undoubted priority over Boddaert's, and the species will have to stand as *Leucolepis arada* (Herm.).

[4] Hellmayr, *Nov. Zool.* 14, 1907, p. 346: *Leucolepia modulator rufogularis*, errore; idem, l.c. 17, 1910, p. 261: *Leucolepis modulator modulator.*

Other nearly allied but well-characterized forms occur in Eastern Ecuador and S.E. Colombia: *L. modulator salvini* (Sharpe), and Lower Amazonia (from the right bank of the Rio Madeira to the right side of the Tapajóz): *L. modulator griseolateralis* (Ridgw.). Their characters I have discussed in my memoir *The Birds of the Rio Madeira*.[1]

Troglodytes pallida Lafr. & Orb. = **Troglodytes musculus magellanicus** Gould.[2]

Troglodytes pallida Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 25 (1837—Patagonia; descr. orig.).

Troglodytes pallidus d'Orbigny, *Voyage*, Ois., p. 234 ("Rio Nègro, en Patagonie, au 41e degré lat. sud").

No. 1, adult (skin): "No. 44. *Troglodytes pallidus* d'O., par d'Orbigny, février 1831, de Patagonie."—al. 53; c. 45½; r. 12 mm.

The type is a specimen in very worn, bleached, breeding plumage of the Patagonian House-Wren. There is a series from various Patagonian localities (city of Neuquen; Laguna del Rio Limay; Rio Traful, Lago Nahuel Huapi), obtained by Adolf Lendl, E. Weiske, and Krüger, in the Munich Museum. The late Professor Oustalet,[3] regarded the type of *T. pallidus* as "une variété, à plumage pâle et décoloré, du *T. furvus* ou *musculus*." After going over the same material upon which the French ornithologist had based his conclusions, I am unable to concur with this view. Neither the length of the bill nor any other measurement affords reliable means to distinguish the type from other Patagonian skins. As regards coloration, the type-specimen is so exceedingly worn as to be utterly useless for comparative purposes; our own Neuquen examples —in much better condition—are absolutely indistinguishable from birds taken in Tierra del Fuego.

T. m. magellanicus differs from its northern representative *T. m. bonariae* Hellm.,[4] of Buenos Ayres, Corrientes, and S. Brazil, by smaller bill, much paler earthy-brown upper-parts, with more rufescent rump, brighter rufous tail, and by having the under-tail coverts either plain (unbarred) ochraceous or but minutely spotted with blackish. In the pale isabelline coloration of the lower parts the two races are practically alike.

[On the Falkland Islands, a nearly related form, *T. musculus cobbi* Chubb,[5] is met with. It is described as being similar to *T.* "*hornensis*" (viz. *T. m. magellanicus*), but larger, with stronger feet and bill. This form I have not seen.]

[1] *Nov. Zool.* xvii. 1910, pp. 262–263.

[2] *Troglodytes magellanicus* Gould, *Proc. Zool. Soc. Lond.* 4, "1836," p. 88 (February 1837—"in fretu Magellanico").—This name is certainly earlier than *T. pallida* Lafr. & Orb., since the publication of the *Magasin de Zoologie* for the year 1837 had been unduly delayed, as we learn from an editorial notice in the preface to that volume. *T. magellanicus* thus appears to be the first available subspecific name for the most southerly of the many races of the House-Wren on the South American continent. It has for many years been known as *T. musculus hornensis*. However, *T. hornensis* Less. is unquestionably referable to the Magellanic form of the Grass-Wren (*Cistothorus platensis*), as we have shown above (see p. 252).

[3] *Miss. Scient. du Cap Horn, Zool.* vi. 1891, p. B. 75.

[4] *Auz. Orn. Ges. Bay.* no. 1, February 1919, p. 2.

[5] *Bull. B.O.C.* 25 1909, p. 16.

	Wing. mm.	Tail. mm.	Bill. mm.
Three ♂♂ ad. Patagonia (Neuquen)	52, 53, 55	47, 47, 48	11½–12
One ♂ ad. Tierra del Fuego .	53½	48½	12
Six ♂♂ ad. Buenos Ayres . .	52–54	45–48	12½–14

Troglodytes tecellata Lafr. & Orb. = **Troglodytes musculus tecellatus** Lafr. & Orb.

Troglodytes tecellata Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* cl. ii. p. 25 (1837—Tacna, rep. Peruviana ; descr. orig.) ; d'Orbigny, *Voyage*, Ois., p. 232 ("dans la vallée de Tacna").

No. 1, adult (mounted) : "*Troglodytes tecellatus* (Lafr. & Orb.). Type, par d'Orbigny, janvier 1831, de Tacna, Pérou, No. 21."—al. 54 ; c. 40½ ; r. 13½ mm.

Much uncertainty existed with regard to the name *tecellata*. Sharpe[1] used it for the large race of the Peruvian and W. Bolivian highlands afterwards separated by Berlepsch and Stolzmann[2] as *T. musculus puna* ; while Oberholser,[3] under the heading of *T. m. tecellatus*, united three distinct forms : that from the littoral of Western Peru, its southern representative in N.W. Chile (Tacna), and the Andean race of Peru and W. Bolivia, his description being apparently based upon an example from Mapiri, Yungas of La Paz, Bolivia.

The careful study of more than fifty House-Wrens from various parts of Peru and Bolivia in the Berlepsch, Munich, and Paris collections, however, renders it certain that *T. m. tecellatus* constitutes a very well-marked geographical race of the *T. musculus* group. Although intermediate in range between *T. m. audax* Tsch.,[4] of the Peruvian littoral (Callao, Lima) and *T. m. chilensis* Less. (of which *T. m. acosmus* Oberholser[5] is a synonym as will be shown hereafter), of Central Chile, it is readily distinguishable from either.

Besides the type of *T. tecellata* at Paris, I have examined two more specimens in the Berlepsch Collection, both adult males obtained by Otto Garlepp at Tacna, October 13, 1902, and at Asapa near Arica, November 2, 1902. Their measurements are : wing, 53, 54½ ; tail, 40, 44 ; bill, 14 mm. The three examples differ from a large series of *T. m. puna* (more than thirty skins), from the highlands of Cajamarca, Junin, Cuzco, Peru, and W. Bolivia (La Paz, etc.), in smoky grey or light brownish grey (instead of rufescent-brown) upper-parts, with wider black barring on the back and much less rufescent suffusion on the rump ; greyish (not dull rufous) wings and tail ; and nearly white lower surface, with only a slight isabelline tinge chiefly across chest and along sides. In *T. m. puna* the under-surface is ochraceous or deep buff, passing to cinnamon on flanks and crissum. The under-tail coverts in *T. m. tecellatus* are buff, broadly barred with black and largely tipped with white. From *T. m. audax*, of Lima, W. Peru, the N. Chilian form may be distinguished by its more greyish (less brownish) back with conspicuous blackish barring, much less rufous rump, strongly barred upper-tail

[1] *Cat. Birds Brit. Mus.* vi. 1881, p. 259 (Arequipa, S.W. Peru).

[2] *Proc. Zool. Soc. Lond.* 1896, p. 329 (1896—Ingapica [Lake Junin], Queta [near Tarma], dept. Junin, Central Peru).

[3] *Proc. U.S. Mus.* 27, 1904, p. 203.

[4] *Troglodytes audax* Tschudi, *Arch. f. Naturg.* 10, i. p. 282 (1844—Peru, sc. west coast, near Lima ; cfr. Berl. & Hellm., *Journ. f. Orn.* 53, 1905, p. 6).—Syn. *Troglodytes murinus* Less., December 1844 ;—*T. musculus enochrus* Oberholser, 1904 (Lima, W. Peru).

[5] *Proc. U.S. Mus.* 27, p. 204 (1904—Central Chile, coll. Reed, i.e. *Concepcion*).

coverts, greyish (instead of rufous) tail, nearly white (not bright buff) under-parts, and by having the lower-tail coverts distinctly barred with black and white.

The type of *T. tecellata* has rather broader blackish bars above and more whitish under-parts than the two specimens in the Berlepsch collection, both divergencies being no doubt due to its abraded condition.

T. m. tecellatus is as yet only known from the arid (desert-like) coast-belt of the province of Tacna in N.W. Chile, but will most probably be also found in neighbouring districts of a similar nature.[1]

Troglodytes guarayana = Thryophilus g. guarayanus (Lafr. & Orb.).

Troglodytes guarayana Lafresnaye & d'Orbigny, *Syn. Av.* i. in *Mag. Zool.* vii. cl. ii. p. 26 (1837—Guarayos, rep. Boliviana).

Troglodytes guarayanus d'Orbigny, *Voyage*, Ois., p. 233 ("Guarayos, au sein des forêts chaudes et humides qui séparent la province de Chiquitos de celle de Moxos, rép. de Bolivie").

The type no longer exists in the collections of the Paris Museum. The late R. B. Sharpe [2] identified the species with *Thryophilus fulvus* Scl.,[3] from the highlands of N.W. Bolivia and S.E. Peru, but this is obviously a mistake. The bird described by Sclater [4] is an inhabitant of the temperate zone of the Andes, ranging from 8,000 to 10,000 feet elevation, while *T. guarayanus* was discovered in the tropical humid forests of the Guarayos Territory, plains of E. Bolivia. But apart from geographical reasons there are other discrepancies in d'Orbigny's description which forbid to follow Sharpe's lead. In the *Voyage*, p. 233, the wing (50 mm.) is stated to exceed the tail (40 mm.) by about 10 mm., while in *Cinnicerthia fulva* (Scl.) wings and tail are of nearly equal length.[5] Certain details of coloration in this bird do not correspond either to the original diagnosis of *T. guarayana*.

There are, however, two specimens from Santa Cruz de la Sierra, E. Bolivia, of a small *Thryophilus* at Tring and Frankfurt (Berlepsch collection) that agree exceedingly well with the characters of *T. guarayana*, notably in having the "oreilles et joues variées de gris et de blanchâtre," [6] the "gorge et cou blanc grisâtre," the "dessus de la tête gris brun" and the "queue rousse, avec *des raies noires très espacées*, d'abord par bandes irrégulières transversales, à la base des rectrices; mais ensuite elles sont disposées par zigzags, suivant à leur extrémité, la forme de la plume." [7] The dimensions, although—as usual with d'Orbigny—too small, may well be applied to the bird from Santa Cruz, which has, indeed, the tail decidedly shorter than the wing (54–59 against 42–47 mm.

[1] The two specimens in the collection of the Boston Society, which Ridgway (*Proc. Boston Soc. N.H.* 23, 1888, p. 388) found to be referable to the Mexican *Troglodytes brunneicollis* Scl., were, of course, erroneously labelled as "types" of *T. tecellata* Lafr. & Orb.! See also Stone (*Proc. Ac N. Sci. Philad.* 51, 1899, p. 311), who gives a good diagnose of *T. m. tecellatus*.

[2] *Cat. Birds Brit. Mus.* 6, 1881, p. 211.

[3] *P.Z.S. Lond.*, December 1873, p. 781 (1874—Huasampilla, dept. Cuzco, S.E. Peru).

[4] *Thryophilus fulvus* Scl. is out of place in the genus *Thryophilus*, and, in my opinion, strictly belongs to *Cinnicerthia*, with the members of which it agrees in structure as well as in general style of coloration.

[5] In six specimens from Huasampilla, dept. Cuzco (one, the type) and Sandillani, N. Bolivia, the wing varies from 53 to 59, the tail from 51 to 60 mm.

[6] In *Cinnicerthia fulva* the upper portion of the ear coverts is occupied by a large deep sepia-brown patch, while the lower one is buff like the throat.

[7] In *C. fulva*, on the contrary, the blackish bars, from 18 to 19 on the central pair, are very closely set, crossing, from base to tip, in regular unbroken lines the whole width of the rectrices.

of the tail). The two specimens from Santa Cruz are practically identical with the typical series of *Thryophilus minor* Pelz.,[1] which, consequently, becomes a synonym of the earlier *T. guarayanus* (Lafr. & Orb.).

Troglodytes fulva = { **Troglodytes musculus puna** Berl. & Stolzm.[2] / **Troglodytes musculus rex** Berl. & Leverk.[3] }

Troglodytes fulva (nec *Motacilla furva* Gmelin[4]); L. & O., *Syn. Av.* i. p. 26 (prov. Sicasica, Yungas, Bolivia).

Troglodytes platensis (nec *Sylvia platensis* Lath.[5]), d'Orbigny, *Voyage*, Ois., p. 231 (var. B: part.: La Paz, provinces de Yungas, Sicasica; Valle Grande).

No. 1, adult (skin): "*Troglodytes platensis* var., No. 213, par d'Orbigny, 1834. D. No. 8, de La Paz."—al. 56; c. 48; r. 14 mm. = *T. m. puna* Berl. & Stolzm.

No. 2, adult (skin): "213, Chulumani, Yungas, par d'Orbigny, 1834. D. No. 8. *Troglodytes platensis* var."—al. 54; c. 43; r. 13 mm. = *T. m. puna* Berl. & Stolzm.

No. 3, adult (skin): "213. *Trogl. platensis* var., par d'Orbigny, 1834. Sicasica, No. D. 8—20."—al. 58; c. 52; r. 14 mm. = *T. m. puna* Berl. & Stolzm.

[Specimens from Valle Grande which are no longer in the Parisian collection belong to *T. m. rex*, as will be shown hereafter.]

Owing to scanty material the Bolivian races of the House-Wren were not well understood hitherto. At the outset it must be stated that, in contradiction to a verbal assertion of the late Count Berlepsch published by myself,[6] *T. m. rex*, from the districts south of the Sierra de Cochabamba in Central Bolivia, is totally different from *T. m. puna*, of the high mountains of N.W. Bolivia (dept. La Paz). In fact, the two forms are not even nearly related, the latter being but a large edition of *T. m. wiedi* (if separable from *T. m. musculus*), while *T. m. rex* closely resembles the Chilian *T. m. chilensis*. This is clearly demonstrated by the large amount of material I have been able to examine in the present connection.

D'Orbigny's specimens from La Paz, Chulumani, and Sicasica as well as a large series from La Paz and Chicani in the Berlepsch Collection, are racially identical with a paratype of *T. m. puna* from Ingapirca, Junin, C. Peru. A dozen skins from the highlands of Cuzco (Lucre, Anta, 3,500 metr.), and four from Ollachea near Macuzani, Carabaya, 11,500 feet, S.E. Peru, are also referable to the same form, which, like other races of the group, varies somewhat in size and coloration. From its geographical neighbour, *T. m. audax*, of Lima, Callao, etc., it may be distinguished by larger size, heavier feet, darker back, much brighter cinnamon-rufous rump and tail, and much deeper ochraceous under-parts. The back and upper-tail coverts are either plain or distinctly barred with dusky;

[1] *Ornith. Bras.* ii. pp. 47, 66 (1867—Villa Bella de Mattogrosso, Rio Guaporé, W. Mattogrosso).—See Hellmayr, *Nov. Zool.* xv. 1908, p. 16 (diagn.; range).

[2] *Proc. Zool. Soc. Lond.* 1896, p. 329 (1896—Ingapirca, Queta, dept. Junin, C. Peru).

[3] *Troglodytes furvus* (Gm.), subsp. *rex* Berlepsch & Leverkühn, *Ornis*, 6, p. 6 (1890—Samaipata, C. Bolivia).

[4] *Syst. Nat.* 1, ii. p. 994 (1789—based on Brown, *Illustr.*, p. 67, pl. 18, fig. 2: irrecognizable).

[5] *Ind. Ornith.* ii. p. 548 (1790—based on "Le Roitelet, de Buénos Ayres," Daubenton, *Pl. enl.* 730, fig. 2).

[6] *Nov. Zool.* xii. 1905, p. 270, in text.

the under-parts, rather variable in shade, pass into cinnamon-brown on flanks and tail coverts, the latter having but rarely a few dusky anteapical spots.

An adult male from Cajabamba, dept. Cajamarca, N. Peru, possesses all characters of *T. m. puna*, but is very slightly darker, more of a sepia-brown above. More specimens should be examined.

Birds from the high plateau of Cuzco (3,500 m. alt.), as stated above, are typical *T. m. puna*. However, as we descend the Marcapata valley to an altitude of 2,000 metr., we meet with Wrens which, by their darker rufous rump and tail, form the passage to *T. m. clarus* Berl. & Hart. ; and still lower down, at 1,000 metr. elev., specimens are found which I am compelled to actually refer to that latter form. Similar examples I have seen from Rio San Gaban (700 m. alt.) and La Oroya, Inambari Val (about 850 m.), Marcapata. Thus, it is seen that *T. m. puna* gradually merges into *T. m. clarus*, the Amazonian race of the House-Wren.

Having disposed of the highland race, let us now turn to the House-Wrens of the Central Bolivian districts south of the Sierra de Cochabamba, which has been described as *T. m. rex* Berl. & Lev. I have before me the type of the subspecies, an adult male obtained by Prof. Behn at Samaipata on April 24, 1847 ; an adult female from the same locality taken by G. Garlepp on July 21, 1890 ; and an adult male secured by the same collector at S. José (Mizqué) on June 27, 1890, all three belonging to the Berlepsch collection. The first-named place is a little to the north of Valle Grande, whence d'Orbigny recorded his "var. B." of *T. platensis*. These birds are totally different from *T. m. puna*, being pale isabelline instead of deep ochraceous beneath. Indeed, they are exceedingly similar to *T. m. chilensis* Less. (ten specimens from La Concepcion and Valparaiso examined), but may be recognized by their much larger, longer bill and slightly brighter under-parts. From *T. m. musculus* and *T. m. wiedi*, of Brazil, they differ by much brighter cinnamon-rufous rump and much paler isabelline lower surface ; from *T. m. clarus* by brighter rump, plain crissum, and more brownish back. There can be no longer any doubt as to *T. m. rex* being a distinct race, most nearly allied to *T. m. chilensis*.

Measurements of adult males :

T. musculus puna Berl. & Stolzm.

	Wing. mm.	Tail. mm.	Bill. mm.
One from Ingapirca, Junin, C. Peru .	59	48	14
One from Cajabamba, N. Peru . .	59½	53	14
Nine from Cuzco, S.E. Peru (3,500 m.) .	55–59	44–49	13–14
Two from Macuzani, S.E. Peru . .	59½, 60	50, 51	14½
Four from La Paz and Chicani, N.W. Bolivia	57½–60	48–53	14–14½

T. musculus rex Berl. & Lev.

	Wing. mm.	Tail. mm.	Bill. mm.
Two from Samaipata, C. Bolivia . .	52, 55½	43, 49	13½, 14

Troglodytes hiemalis = { **Troglodytes musculus wiedi** (Berl.).[1] / **Troglodytes musculus bonariae Hellm.**[2] / **Troglodytes musculus chilensis Less.**[3] }

Troglodytes hiemalis (nec Vieillot[4]), L. & O., *Syn. Av.* i. p. 26 (Rio de Janeiro; Buenos Ayres; Corrientes).

Troglodytes platensis d'Orbigny, *Voyage*, Ois., p. 231 (var. A: Buenos Ayres, Corrientes, Valparaiso, Chile; var. B, part.: Rio de Janeiro).

No. 1, "♂" ad. (skin): "de Rio de Janeiro, No. 8. Mâle. Envoi de M. d'Orbigny, 13. 9bre 1827. *Trogl. platensis.*"—al. 50; c. 40; r. 13½ mm. = *T. musculus wiedi* (Berl.).

No. 2, adult (skin): "d'Orbigny, juillet 1829, No. 82. Buenos Ayres. *Trogl. platensis.*"—al. 51; c. 44; r. 13½ mm. = *T. musculus bonariae* Hellm.

No. 3, (♂) ad. (skin): "d'Orbigny, juillet 1829. No. 82. Corrientes. *Trogl. platensis.*"—al. 53; c. 45; r. 12½ mm. = *T. musculus bonariae* Hellm.

No. 4, adult (skin): "d'Orbigny, Valparaiso, Chile, 1830. No. 10. *Trogl. platensis.*"—al. 51; c. 46; r. 12½ mm. = *T. musculus chilensis* Less.

The bird from Rio de Janeiro agrees with examples from other parts of S.E. Brazil (São Paulo, Western Minas) and Paraguay (Villa Rica). *T. m. wiedi*, which is perhaps barely separable from *T. m. musculus*, of Eastern Brazil (Bahia to Pernambuco), is the common House-Wren of Southern Brazil. Its breeding area extends from southern Espirito Santo (Victoria), Minas Geraës (Bagagem; Rio Jordão, prov. Araguary; Lagoa Santa), and southern Goyaz, west to Paraguay. Thence it appears to range right across the Gran Chaco to the western provinces of Argentine. At least, four specimens from Jujuy and Tucumán (Tafi Viejo, Manantial) in the collections of the Munich Museum and the Museo Nacional of Buenos Ayres, I am unable to distinguish from average examples of our Brazilian series.

[1] *Thryothorus wiedi* Berlepsch, *Journ. f. Ornith.* 21, p. 231 (1873—new name for *Thryothorus platensis* Wied (nec *Sylvia platensis* Latham, 1790), *Beitr. Naturg. Bras.* 3, ii. 1831, p. 742; we regard *Rio de Janeiro* as type locality; the other localities mentioned by Wied, viz. Caravellas and Belmonte, S. Bahia, might refer to typical *T. m. musculus*; the two original examples in the Wied collection have no definite locality; see Allen, *Bull. Amer. Mus.* ii. 1889, p. 214).—The name *T. guarixa* which I used for this southern form of the Brazilian House-Wren is untenable. It was first published by Lesson (*Traité d'Orn.* 1830–31, p. 400); and again by the same author (*Rev. Zool.* 3 1840, p. 264) in the spelling *T. guerexa*; but both have, as pure nomina nuda, no nomenclatorial standing. Pucheran (*Arch. Mus. Paris*, 7, **1855**, p. 338), at last, gave a proper description of *T. guarixa*, basing his account upon two S. Brazilian examples, collected by Delalande junior and A. de Saint-Hilaire respectively. In the meantime, however, Des Murs (in Gay, *Hist. fis. y polit. Chile, Zool.*, 1, **1847**, p. 312) had applied the name *T. guarixa* to the bird described by Lesson (*Voyage* "Coquille," *Zool.* 1, ii. April 1830, p. 665) from La Concepcion, Chile, as *T. chilensis*. *T. guarixa* Des Murs, 1847, thus becomes a synonym of *T. chilensis* Less. 1830, and excludes the use of *T. guarixa* Puch. 1855 in any other sense. Therefore we have to revert to *T. wiedi* Berl. for the S. Brazilian House-Wren.

[2] *Anz. Orn. Ges. Bayern*, No. 1, p. 2 (February 1919—La Plata, Buenos Ayres).

[3] *Troglodytes chilensis* Lesson, *Voyage* "Coquille," *Zool.* 1, ii. p. 665 (April 1830—"aux environs de La Concepcion," Chile); —Syn. *T. musculus acosmus* Oberholser, *Proc. U.S. Mus.* 27, p. 204 (1904—Central Chile, Reed coll.; = Concepcion).—There can be little doubt that *T. chilensis* is the earliest name for the Chilian House-Wren. Although quoted by Sharpe (*Cat. B.* 6, 1881, p. 404, among the synonyms of *Cistothorus platensis* (!), Lesson's description clearly indicates a bird of the *musculus* type; this conclusion being furthermore strengthened by the fact that the author subsequently (*Rev. Zool.* 3, 1840, p. 264) identified his *T. chilensis* with "*T. guarexa*" of the Paris Museum, i.e. the common South Brazilian House-Wren, to which the Chilian bird bears indeed very close resemblance.

[4] *Nouv. Dict. d'Hist. Nat.*, nouv. éd., 34, p. 514 (1819—based on Wilson, *Amer. Ornith.* pl. 8, fig. 6: U.S. of America).

No. 2, an adult from Buenos Ayres, is in very poor state of preservation. Ten additional examples from the same locality in the Buenos Ayres, Tring, and Munich Museums, are very different from *T. m. wiedi*, being much less rufous above and much paler below.

In coloration of under-parts they closely resemble *T. m. magellanicus*, from Patagonia and Tierra del Fuego, but are much darker, sooty brown (instead of light greyish or earthy brown) above, with less rufescent rump and duller rufous tail, while the under-tail coverts are strongly banded with black and white instead of being plain cinnamon-brown or merely dotted with dusky; the bill, too, is conspicuously stronger. Birds from Rio Grande do Sul (Taquara do Mundo Novo) and Santa Catharina (Blumenau) are in all essential respects similar. I have, consequently, separated this hitherto overlooked race as *T. musculus bonariae* Hellm.

No. 3, an adult male in good condition, obtained at Corrientes in July 1829, likewise belongs to *T. m. bonariae*. It is, in fact, an extreme example of that form with very dark upper-parts and strongly barred under-tail coverts.

T. m. wiedi, of C. Brazil, Paraguay, and N.W. Argentine, may at once be recognized from *T. m. bonariae* by its conspicuously reddish-brown upper-parts, bright rufous-brown rump and tail, deep ochraceous (instead of light isabelline) lower surface, and plain (unbarred) under-tail coverts.

No. 4, Valparaiso, Chile, is a typical example of *T. m. chilensis*, agreeing with a series from La Concepcion, Valdivia, and other places in Southern Chile. This race is exceedingly close to *T. m. magellanicus*, but may be distinguished by its decidedly more brownish back, much more rufous rump, tail coverts, and rectrices. The colour of the under-surface offers no constant difference. Besides *T. m. tecellatus* in the north-west, this is the only form of House-Wren occurring in Chile proper. How far south it ranges I am unable to say. The most southerly locality whence I have seen it is Puerto Montt, prov. Llanquihue.

It may be convenient to close these remarks by giving a list of the recognizable races of *T. musculus* in southern S. America.

(*a*) *T. musculus musculus* Naum. Eastern Brazil (Bahia to Pernambuco).

(*b*) *T. musculus wiedi* (Berl.). Southern and Central Brazil (from Espirito Santo and Goyaz southwards to S. Paulo); Paraguay; Northern Argentine (Chaco, Jujuy, Tucumán).

(*c*) *T. musculus bonariae* Hellm. S. Brazil (Santa Catharina, Rio Grande do Sul), Uruguay, N.E. Argentine (states of Corrientes, Entrerios, Buenos Ayres). —Exact western and southern limits of range not known.

(*d*) *T. musculus magellanicus* Gould. Patagonia south to Tierra del Fuego.

(*e*) *T. musculus cobbi* Chubb. Falkland Islands.

(*f*) *T. musculus chilensis* Less. Central and Southern Chile, from Coquimbo south to at least Puerto Montt and Chiloë.

(*g*) *T. musculus rex* Berl. & Leverk. Central Bolivia (Samaipata, Valle Grande, Mizqué).

(*h*) *T. musculus tecellatus* Lafr. & Orb. N.W. Chile (prov. Tacna).

(*i*) *T. musculus audax* Tschudi. Coast region of Western Peru (from Callao to Ayacucho).

(*k*) *T. musculus puna* Berl. & Stolzm. High mountains of Peru, and W. Bolivia, Western Yungas.

TWO NEW AFRICAN SPHINGIDAE.

By DR. KARL JORDAN.

1. **Polyptychus grayi niloticus** subsp. nov. (text-figs. 1, 2).

♀. On upperside of forewing the undulate double line which crosses apex of cell vestigial; no crenulate line between discal and postdiscal lines (also in fresh specimens ??). Fringe of hindwing not spotted brown and white, the short scales being all brown and the long ones white.——Underside almost uniformly greyish fawn (Ridgway, *Nomencl. Colours*, iii. 22), terminal area not deeper brown than centre of wings; on both wings the discal line rather thick,

1

2

Figs. 1 and 2.—*P. grayi niloticus.*

with barely a trace of a second line on its distal side; postdiscal line sharp and thin.

Genital sclerite sinuate centrally in front of the orifice; this antevaginal ridge much plicate, thicker than in *P. g. grayi*; from sinus frontad extends an obtuse carina flanked by a deep depression each side (text-fig. 1).

Length of forewing: 36 mm.

Hab. White Nile, lat. 12° 11′ (Capt. Yardley); 1 ♀ in Tring Museum.

A much-battered ♂ in the Oxford Museum from the Sudan also belongs to this subspecies. It is distinguished from *P. g. grayi* ♂ by the above-mentioned slight differences in colour, and by the genitalia, especially the armature of the claspers. In *P. g. grayi* the large hook of the harpe is curved towards the sagittal plane of the body, standing more or less erect on the plane of the clasper; in the Sudanese ♂ the hook lies flat on the clasper (text-fig. 2). Moreover, proximally to this hook the harpe bears a tooth, which is absent from *P. g. grayi*.

One ♂ in Oxford Museum from South End of Talodi Range, Nuba Hills, Sudan, July 24, 1918 (R. S. Wilson).

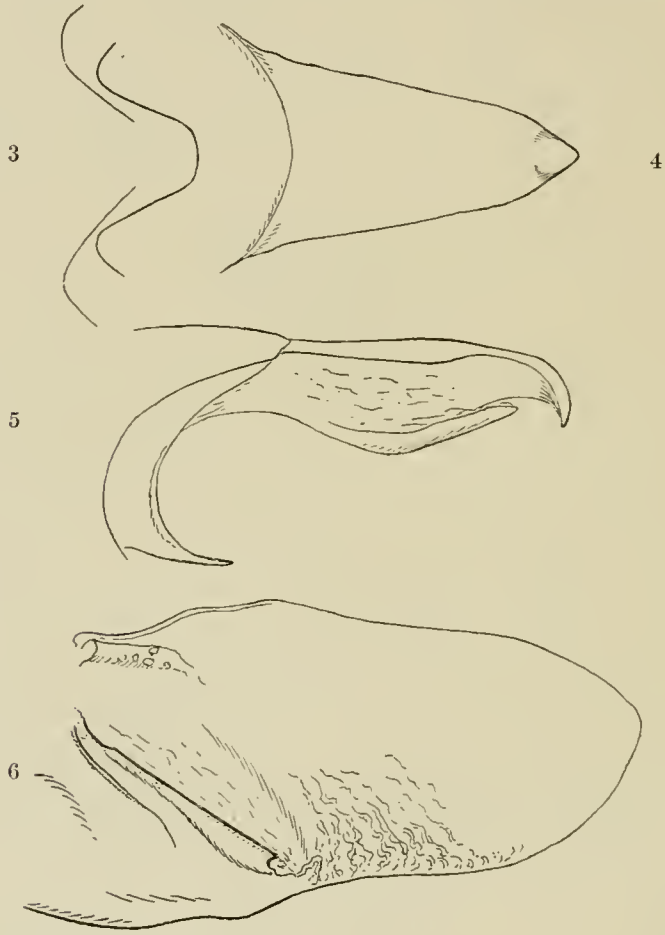
2. **Polyptychus delicatus** sp. nov. (text-figs. 3–6).

♂. Luteo-griseus; alis integris, antica lineis transversis e lunulis nigris compositis ornata, postica flava.

Long. al. ant. 29 mm., lat. 14 mm.

Hab. Diego Suarez, Madagascar, March 1917 (G. Melou), 1 ♂.

Proboscis large. Palpus with the joint open; second segment longer than it is broad in side-view, slightly narrowing apicad, apex not truncate. Head



FIGS. 3–6.—*P. delicatus.*

with raised median tuft. Antenna rather slender, strongly compressed, ventral outline even, each segment very slightly incurved in middle (lateral aspect), median segments much higher than long, penultimate one longer than high. Foretibia strongly spinose on dorsal side, at apex a long spine (broken off in both tibiae in our specimen), epiphysis large, reaching apex of foretibia; mid- and hindtibiae grey above, spurs non-spinose, long apical one of hindtibia reaching to middle of first tarsal segment.

Body and wings creamy buff (Ridgway, *Nomencl. Colours*, v. 11). Wings entire; termen of forewing convex, apical angle a little less than 90°; three blackish lines on forewing: first antemedian, obsolescent, commencing at costal margin 9 mm. from base, running obliquely across cell to above point of origin of M^1, here broken at a right angle and running straight to hindmargin, this second portion of the line twice or thrice interrupted; proximally to this line a faint trace of a blackish spot or line; nearly 3 mm. from lower cell-angle a slightly S-shaped line crosses the disc, composed of diffuse lunules, outside this line and posteriorly joining it a row of small lunules, obsolete near costa; a postdiscal line of more sharply marked lunules almost straight, posteriorly 2 mm. distant from median line, and nearly 5 mm. from apex of SM^2, anteriorly 3 mm. from tip of wing; fringe with a slight tawny tint.——Hindwing uniformly ochre-yellow, with the fringe and abdominal margin creamy buff.

Underside creamy buff; forewing ochre-yellow to beyond middle, this colour gradually shading off, beyond middle a continuous transverse line, curved and blackish from costal margin to near R^2, then yellowish and faint, crossing M^2 about 9 mm. from termen; 4 to 5 mm. outside this line a faint trace of a second line, and more distal still an oblique thin blackish streak extending from R^2 towards apex of wing, which it does not reach.——On hindwing two blackish parallel lines, continuous, about 3·5 mm. distant from each other, the proximal one near lower cell-angle, more prominent than the outer line, both obsolescent behind; before anal angle the base of fringe brown.

Neuration: R^2 of hindwing above middle of cell-apex, upper cross-vein curved or angulate, lower cell-angle acute.

Genitalia: Tenth tergite long, gradually narrower to near apex, then rather abruptly acuminate, flattened above (text-figs. 4 and 5). Tenth sternite (text-fig. 3) short, somewhat broader basally than long, strongly rounded off. Clasper (text-fig. 6) without friction-scales, sole-shaped, without projecting armature; the oblique, smooth, rather more strongly chitinized, oblique margin of the triangular basi-ventral portion of the clasper represents the harpe. Penis-funnel broad, short, triangular, with the tip truncate and slightly sinuate. Penis-sheath broad, flattened, slightly curved, with the edges sharp, and with a longitudinal median carina on apical portion.

In the shape of the wings not unlike *P. mutata* Walk. (1855), but quite different in colouring and the large tongue.

ON SOME BIRDS FROM THE WEYLAND MOUNTAINS, DUTCH NEW GUINEA

By LORD ROTHSCHILD, F.R.S.

THE collection on which this article is based was made from October 1920 to January 1921, mostly on Mount Kunupi, Weyland Mountains.

The Weyland Mountains are a range of mountains to the north of the main range, inland from Geelvink Bay.

I am much indebted to Mr. J. J. Joicey for the opportunity of working out this collection.

The three brothers Pratt, sons of A. E. Pratt, the well-known explorer, who collected these birds, were sent out to make as complete a collection of the lepidoptera of these regions as possible; so that it is evident that little time could be devoted to birds.

Notwithstanding the comparatively small number of species, however, the collection is of great scientific interest, as it illustrates well the erratic distribution of some forms, and elucidates many doubtful points. As might have been expected, the largest number of specimens belong to the *Paradisaeidae*, but a number of parrots, honey-eaters, and other birds prove to be of great interest.

PARADISAEIDAE.

There are 153 examples of 22 species and subspecies of this family in the collection, of which 121 specimens of 12 species and subspecies were collected in the Weyland Mountains and their neighbourhood, while the remaining 34 skins of 16 subspecies, including 5 forms included above, are native skins without data.

1. **Seleucides nigricans nigricans** (Shaw).

Paradisea nigricans Shaw, *Gen. Zool.* vol. vii. pt. 2. p. 489. pls. lx, lxi (1809).

The extremely bright orange-yellow side plumes of the oldest of these 2 ♂♂ at first led me to think that they were either Schlüter's *nigricans auripennis* or else a new form, but the size of the bill and wings agrees entirely with typical *nigricans*, so that it is impossible to separate them until ♀♀ from the same country can be examined.

1 ♂ vix ad., 1 ♂ juv., Wanggar River, 15 miles above its mouth, south of Geelvink Bay, 600 ft., January 1921 and October 1920.

2. **Falcinellus striatus atratus** Rothsch. & Hart.

Falcinellus striatus atratus Rothschild & Hartert, *Novit. Zool.* vol. xviii. p. 160 (1911) (Mt. Goliath).

The fact of this race occurring in the north, while its terra typica was on the southern slopes of the main range, goes far to prove that typical *striatus striatus* is confined to the Berau (Arfak) Peninsula.

10 ♂♂ ad., 3 ♂♂ juv., 6 ♀♀, Mt. Kunupi, Weyland Mts., November—December 1920, 6,000 ft.

3. **Astrapia splendidissima** Rothsch.

Astrapia splendidissima Rothschild, *Novit. Zool.* vol. ii. p. 59. pl. v. (1895).

This magnificent bird is also found south of the main central range, but how far east and west its range extends is at present unknown.

2 ♂♂ ad., 12 ♂♂ juv., 2 ♀♀, Mt. Kunupi, Weyland Mts., 6,000 ft., November—December 1920.

6 ♂♂ ad. trade skins are also in the collection.

4. **Paradisea minor minor** Shaw.

Paradisea minor Shaw, *Gen. Zool.* vol. vii. p. 486 (1809).

Quite typical *minor minor*. The extent of the range of this form eastwards, and where it meets *minor finschi*, is unknown.

2 ♂♂ ad., Wanggar River, south of Geelvink Bay, January 1921.

1 ♂ juv.; no data.

5. **Diphyllodes magnifica magnifica** (Penn.).

Paradisea magnifica Pennant, in Forster's *Ind. Zool.* p. 40 (Sp. Faun. Ind. p. 2) (1781).

Mr. Ogilvie Grant calls this *speciosa* Bodd. (nom. emen. for *speccosa*), as he says Pennant's name dates only from 1795, but he quite overlooks the fact that the first edition of Forster's book appeared in 1781, whereas Boddaert's only appeared in 1783.

1 ♂ ad., Wanggar District, south of Geelvink Bay, 20 miles inland, 2,000 ft. January 1921.

6. **Pteridophora alberti** Meyer.

Pteridophora alberti Meyer, *Bull. B.O.C.* vol. iv. p. 11 (1894).

The fine series of 26 specimens of this rare and extraordinary bird forms one of the gems of the collection.

In October 1918 Professor Reichenow exhibited and described at the Annual General Meeting of the "Deutsche Ornithologische Gesellschaft" some skins collected in the Sepik River district, which he considered were ♀♀ of *Pteridophora alberti*. In the present collection there are 16 specimens of young ♂♂ in first plumage and adult ♀♀, which differ conspicuously from a Sepik River bird exchanged with the Berlin Museum and now at Tring. The 10 adult ♂♂ (some in various stages of moult) in the present collection are typical *Pt. alberti*.

♀ ad. and ♂ juv. Upper side sooty grey brown; head and hindneck paler more ashy grey, the darker edging to the feathers producing a scale-like appearance; chin, throat, and foreneck pale grey, somewhat whitish on lower part, each feather with a dark subterminal bar, becoming more distinct towards breast. Breast, flanks, and abdomen white with broad crescentic black subterminal bands almost entirely encircling the feathers. Crissum orange-buff, some of the feathers with crescentic sooty-black subterminal bands. The young ♂♂ appear to have the bands on the feathers of the underside more strongly crescentic than the ♀♀. The Sepik River ♀ at Tring differs from the Weyland examples by being much browner above, in having the chin, throat, and foreneck strongly suffused with buff, in the white of the breast and abdomen being suffused

with cream colour, and the subterminal dark bands of the feathers of the underside being broader and less crescentic.

As described by Professor Reichenow, it is a most interesting fact that the ♀♀ have an elongated narrow stiff feather behind the ear, where in the adult ♂♂ the long blue plume is situated.

10 ♂♂ ad. (5 in full moult), 11 ♂♂ juv., 4 ♀♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

1 ♂ juv., without data, is also in the collection.

7. **Paradigalla brevicauda** Rothsch. & Hart.

Paradigalla brevicauda Rothschild & Hartert, *Novit. Zool.* vol. xx. p. 523 (1913) (Mt. Goliath).
Paradigalla intermedia W. R. Ogilvie Grant, *Bull. B.O.C.* vol. xxxi. p. 105 (1913) (Utakwa River).

The fine series of 26 examples from the Weyland Mts., of which 19 consist of immature examples of all ages, enables me to confirm a suspicion already conceived by Dr. Hartert and myself, that *P. intermedia* Grant is identical with *brevicauda* Rothsch. & Hart. The curious fact of the tail being longer in the young birds than in the adult accounts for Mr. Grant's error ; the erratic moults in the Birds of Paradise and their taking from 5 to 7 years before becoming fully adult in plumage, explains the discrepancy in the tail of the Utakwa type-specimen.

3 ♂♂, 3 ♀♀ ad., 11 ♂♂, 8 ♀♀ imm. and juv., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

8. **Parotia carolae carolae** Meyer.

Parotia carolae Meyer, *Bull. B.O.C.* vol. iv. p. 6 (1894).

In the collection are 3 ♀♀ from Mt. Kunupi and 1 without data, which agree exactly with 2 skins of native make which came with typical *carolae carolae* to Renesse van Duivenbode. All these 6 examples agree in their differences from *P. carolae meeki* ♀ and from the 2 ♀♀ from Mt. Goliath. As 3 adult ♂♂, without data, came with the 1 ♀, I have no doubt that these are true ♀♀ of *carolae carolae*. Whether, therefore, as we know the ♀♀ of *c. carolae* and *c. meeki*, the 2 Mt. Goliath specimens are the ♀♀ of *c. berlepschi*, cannot be settled till full-plumaged ♂♂ from that mountain can be compared.

♀ ad. Differs from that of *c. meeki* in the somewhat darker, more umber-brown colour above, and the much broader bands on the feathers below.

3 ♀♀, Mt. Kunupi, Weyland Mts., 6,000 ft., November—December 1920.

3 ♂♂ ad., 1 ♀; no data.

9. **Lophorina superba latipennis** Rothsch.

Lophorina minor latipennis Rothschild, *Bull. B.O.C.* vol. xix. p. 92 (1907) (Rawlinson Mts.).
Lophorina superba feminina Ogilvie Grant, *Ibis*, Jubilee Suppl., No. 2. p. 27 (1915) (Utakwa River).

Since describing this race I have received several more ♂♂ from the Rawlinson Mts., but no ♀♀. In 1915, in the Jubilee volume of the *Ibis*, Mr. Ogilvie Grant described a bird under the name of *L. superba feminina* from both ♂♂ and ♀♀ ad. He apparently, however, never compared it with my *latipennis* ! The series

of 3 ♂♂ and 3 ♀♀ from Mt. Kunupi enable me to prove that Mr. Grant's *feminina* is identical with my *latipennis*.

3 ♂♂ ad. (2 in moult); 3 ♀♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

10. **Loboparadisea sericea** Rothsch.

Loboparadisea sericea Rothschild, *Bull. B.O.C.* vol. vi. p. xvi. (1896).

This remarkable bird has been got on the south side of the main range, and now much to the north of that range.

1 ♂ ad., 1 ♂ juv., Mt. Kunupi, 6,000 ft., Weyland Range, November—December 1920.

11. **Amblyornis inornatus inornatus** (Schleg.).

Ptilonorhynchus inornatus Schlegel, *Nederl. Tijdschr. Dierk.* vol. iv. p. 51 (1871) (Arfak).

The Weyland Mts. birds belong to the typical race. The differences between *in. inornatus* and *in. musgravii* are very peculiar. In the ♂♂ the brown of the upper side in *in. inornatus* is darker, more rufous, and less olive than in *in. musgravii*; while in the ♀♀ it is the opposite, for the ♀♀ of *A. in. musgravii* are very strongly washed with rufous, while the ♀♀ of *in. inornata* are much browner.

2 ♂♂, 3 ♀♀, Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

1 ♂; no data.

12. **Loria loriae** Salvad.

Loria loriae Salvadori, *Ann. Mus. Civ. Gen.* vol. xxxiv. p. 151 (1894) (Moroka).

There is apparently no difference between the examples of *Loria* from all parts of New Guinea.

7 ♂♂ ad., 2 ♀♀ juv., 4 ♀♀, Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

3 ♂♂; no data.

Here follow the species not included above, being only represented by native skins without localities and data.

1. **Ptilorhis magnifica** (Vieill.).

2. **Falcinellus meyeri albescens** Van Oort.

This is the only skin known with the exception of the type material in the Leyden Museum. Unfortunately, it has no legs and no locality.

3. **Falcinellus striatus striatus** (Bodd.).

4. **Paradisea apoda novaeguineae** Dalb. & Salvad.

5. **Schlegelia wilsoni** (Cass.).

6. **Diphyllodes magnifica rothschildi** Grant.

7. **Astrapia nigra** (Gmel.).

8. **Parotia sefilata** (Penn.).

9. **Lophorina superba superba** (Penn.).

10. **Xanthomelus aureus** (Linn.).

11. **Aeluroedus buccoides** (Temm.).

STURNIDAE.

13. **Mino dumonti** Less.

Mino dumonti Lesson, *Voy. Coq. Zool.* vol. i. p. 652. pl. 25 (1826).

2 ad., Wanggar River, 15 miles above mouth, south of Geelvink Bay, 600 ft., October 1920.

14. **Melanopyrrhus orientalis orientalis** (Schleg.).

Gracula anais orientalis Schlegel, *Ned. Tijdschr. Dierk.* vol. iv. p. 52 (1871) (Geelvink Bay).

The status of the 3 forms of the genus *Melanopyrrhus*, viz. *anais*, *orientalis*, and *robertsoni*, has always been a stumbling-block to ornithologists. That *anais* is a good form, easily recognised, has never been in doubt; but *orientalis* and *robertsoni* are a very different proposition in two respects.

(1) Are they, or are they not, subspecies of *anais*?

(2) Are they distinct from one another?

As regards the first, the localities published seem to point to *anais* not being found in the same area as *orientalis*, but we have at Tring specimens of both collected by W. Doherty at Kapaur, so that they must be kept as separate species.

As regards the second, Mr. Ogilvie Grant, who was the last person to investigate this subject in the Jubilee Supplement of the *Ibis*, No. 2, pp. 38–40, says emphatically that fully adult *orientalis* always have a black occiput, while fully adult *robertsoni* never have any black on the crown or nape. I have too few examples to decide this question finally, although among the British New Guinea *robertsoni* at Tring with entirely yellow heads, is a perfectly adult bird with as black an occiput as any *orientalis*. According to Grant, *orientalis* extends from west to east of New Guinea north of the main range, while *robertsoni* extends in the same way south of the main range.

Until it can be established that the proportion of black-naped and pure yellow-headed birds is the same north and south of the main range, and therefore *orientalis* and *robertsoni* are one and the same, they must be treated as two local races. The solitary example sent by the Pratts is undoubtedly typical *orientalis*.

1 ad., Wanggar River, 15 miles from mouth, 600 ft., south of Geelvink Bay, January 1921.

DICRURIDAE.

15. **Chaetorhynchus papuensis** Meyer.

Chaetorhynchus papuensis Meyer, *Sitz. k. Ak. Wissensch. Wien*, vol. lxix. p. 493 (1874) (Arfak Mts.).

The 2 ♂♂ run rather large in the wing 122 mm.

The ♀ has a wing of 109 mm.

2 ♂♂, 1 ♀, Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

ORIOLIDAE.

16. **Oriolus striatus** Quoy & Gaim.

Oriolus striatus Quoy & Gaimard, *Voy. Astrol.* vol. i. p. 191. pl. ix. f. 2 (1830) (Dorey).

1 ad., Wanggar, south of Geelvink Bay, January 1921.

MOTACILLIDAE.

17. **Motacilla boarula melanope** Pall.

Motacilla melanope Pallas, *Reis. Russ. Reichs*, vol. iii. p. 696. No. 16 (1776) (Asiatic Russia).

1 ♀, Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

MELIPHAGIDAE.

18. **Myzomela rosenbergi** Schleg.

Myzomela rosenbergi Schlegel, *Ned. Tijdschr. Dierk.* vol. iv. p. 38 (1871) (Berau Peninsula).

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

19. **Melipotes fumigatus goliathi** Rothsch. & Hart.

Melipotes gymnops goliathi Rothschild & Hartert, *Novit. Zool.* vol. xx. p. 515 (1913) (Mt. Goliath).

The 5 examples from Mt. Kunupi are very dark on the upper breast, and the upper side is intense black. I feel sure that when we have this species from its entire range, the Weyland form and several others will have to be separated. At present, however, I prefer to retain this form as *goliathi* from lack of material for comparison.

4 ♂♂, 1 ♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

20. **Melirrhophetes ochromelas ochromelas** Meyer.

Melirrhophetes ochromelas Meyer, *Sitz. k. Ak. Wissensch. Wien*, vol. lxx. p. 111 (1874) (Arfak).

It is extremely doubtful if Sharpe's *batesi* can be maintained even as a subspecies, but this cannot be finally decided until we can compare a good series from Arfak with S.E. New Guinea examples.

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

21. **Melirrhophetes belfordi joiceyi** subsp. nov.

This new form differs from *M. b. belfordi* by the green edging to the feathers of the back, by the more strongly curved bill, and by the much smaller size.

♂♂, wing 126–133 mm.; ♀♀, 108–115 mm.; as opposed to *b. belfordi* ♂♂, 135–142 mm.; ♀♀. 120–133 mm.

5 ♂♂, 2 ♀♀. Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

Type: No. 579. ♂.

22. **Xanthotis salvadorii salvadorii** Hartert.

Ptilotis salvadorii Hartert, *Novit. Zool.* vol. iii. p. 531 (1896) (Owen Stanley Range).

I am listing this bird as typical *salvadorii*, as it agrees exactly with our series, including Hartert's type.

1 ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

DICAEIDAE.

23. **Urocharis longicauda** (Salvad.).

Melanocharis longicauda Salvadori, *Ann. Mus. Civ. Gen.* vol. vii. p. 942 (1875) (Arfak Mts.).

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

LANIIDAE.

24. **Pachycephala pectoralis klossi** Grant.

Pachycephala klossi Ogilvie Grant, *Ibis*, Jubilee Suppl. ii. p. 88 (1915) (Utakwa Valley).

1 ♂, 1 ♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

25. **Pachycephala aurea** Reichen.

Pachycephala aurea Reichenow, *Ornith. Monatsb.* vol. vii. p. 131 (1899) (Ramu River).

1 ♂ ad., Menoo Valley, Weyland Mts., 1,000 ft., November 1920.

26. **Pachycephala schlegeli schlegeli** Rosenb.

Pachycephala schlegeli Rosenberg, in Schlegel, *Ned. Tijdschr. Dierk.* vol. iv. p. 43 (1871) (Arfak Peninsula).

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

27. **Pachycephala hattamensis** Meyer.

Pachycephala hattamensis Meyer, *Sitz. k. Ak. Wissensch. Wien*, vol. lxix. p. 391 (1874) (Hatam).

2 ad. (1 sexed ♀?), Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

28. **Pachycephala tenebrosa** Rothsch.

Pachycephala tenebrosa Rothschild, *Bull. B.O.C.* vol. xxix. p. 20 (1911) (Mt. Goliath).

One example of this rare species is in the collection, unfortunately minus its tail. Known only from the 9 specimens collected by Meek. This example differs in having the breast and underside deeper rufous-brown, but I dare not separate it on the material extant.

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

29. **Pitohui ferrugineus ferrugineus** (Bonap.).

Rectes ferrugineus Bonaparte, *Compt. Rend. Paris*, vol. xxxi. p. 563 (1850) (Lobo).

1 ♂ ad., Wanggar District, 20 miles from coast, 2,000 ft., south of Geelvink Bay, January 1921.

30. **Pitohui nigrescens meeki** Rothsch. & Hart.

Pitohui meeki Rothschild & Hartert, *Novit. Zool.* vol. xx. p. 507. No. 158 (1913) (Mt. Goliath).

It is very interesting to find this race of *nigrescens* north of the main range, a further proof of the isolated character of the avifauna of the Berau (Arfak) Peninsula, from where typical *nigrescens* came.

2 ♀♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

SYLVIIDAE.

31. **Malurus alboscapulatus alboscapulatus** Meyer.

Malurus alboscapulatus Meyer, *Sitz. k. Akad. Wissensch. Wien*, vol. lxix. p. 496 (1874) (Arfak).

This species of Wren-Warbler is very puzzling. It occurs in 3 local races, at least, all over New Guinea. The points to be elucidated are whether the fully adult ♀♀ of all 3 races are like the ♂♂, black above and below, though less glossy, or whether in the case of the race found south of the Snow Mountains the ♀♀ always have a white breast. Should the former prove to be the case, then it is the young ♀ and not the adult ♀ which is mimicked by the ♂ in eclipse plumage.

The 3 races so far described are :

(1) **Malurus alboscapulatus alboscapulatus** Meyer (Arfak).

(2) **M. alboscapulatus naimii** D'Alb. & Salvad. (S.E. New Guinea).

(3) **M. alboscapulatus lorentzii** Van Oort. (Charles Louis and Snow Mts.).

The form from Takar (i.e. North Coast) has the ♀♀ entirely black like the ♂♂, but we do not know ♀♀ from Arfak, so it is only tentatively that I put them down as *alb. alboscapulatus*, including the present specimen.

1 ♂ ad., Mt. Kunupi, Weyland Mts., 6,000 ft , November—December 1920.

TIMELIIDAE.

32. **Pomatorhinus isidori** Less.

Pomatorhinus isidori Lesson, *Voy. Coq. Zool.* p. 680. pl. 29. f. 2 (1826-1828) (Dorey).

1 ad., Wanggar, south of Geelvink Bay, January 1921.

33. **Eupetes leucostictus leucostictus** Sclat.

Eupetes leucostictus Sclater, *Proc. Zool. Soc. Lond.* 1873, p. 690. pl. lii. (Hatam).

The subspecies *E. l. loriae* Salvad. from S.E. New Guinea will probably have to be sunk when we know this species from more localities.

2 ♀♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

34. **Heteromyias armiti** (De Vis).

Poecilodryas armiti De Vis, *Report Brit. New Guin., Birds*, p. 3. No. 33 (1894) (Mt. Maneao).

1 ad. ; no data (Pratt skin).

PITTIDAE.

35. **Pitta mackloti** Temm.

Pitta mackloti Temminck, *Pl. Col.* 547 (1834) (New Guinea).

1 ♀ ad., 1 juv., no data, Wanggar River, 15 miles above mouth, south of Geelvink Bay, January 1921.

CUCULIDAE.

36. **Calliechthrus leucolophus** (Müll.).

Cuculus leucolophus Müller, *Verh. Land. en Volkenk.* p. 22. note 1 (1839–1844) (Lobo).

1 ♂ ad., Wanggar District, 20 miles inland, south of Geelvink Bay, 2,000 ft., January 1921.

37. **Cuculus optatus** Gould.

Cuculus optatus Gould, *Proc. Zool. Soc. Lond.* 1845, p. 18 (Port Essington).

1 ♂ juv., Wanggar River, 15 miles above mouth, south of Geelvink Bay, 600 ft., October 1920.

38. **Cacomantis castaneiventris castaneiventris** Gould.

Cacomantis castaneiventris Gould, *Ann. Mag. Nat. Hist.* (3). xx. p. 269 (1867) (Cape York).

1 ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

PODARGIDAE.

39. **Aegotheles pulcher** Hart.

Aegotheles pulcher Hartert, *Bull. B.O.C.* vol. viii. p. vii. (1898) (Mts. British N. Guinea).

The single ♀ sent is of the dark phase and darker than any at Tring.
1 ♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

ALCEDINIDAE.

40. **Sauromarptis gaudichaud** (Quoy & Gaim.).

Dacelo gaudichaud Quoy & Gaimard, *Voy. Uranie Zool.* p. 112. pl. 25 (1824) (Papuasia).

1 ad., Wanggar, south of Geelvink Bay, January 1921.

41. **Tanysiptera nympha** Gray.

Tanysiptera nympha Gray, *Ann. Mag. Nat. Hist.* (I). vi. p. 238 (1841) (Philippine Islands ! ! !).

One immature specimen of this exceedingly rare bird was sent. The 2 or 3 specimens at Tring from the Sattleberg, N.E. New Guinea, are slightly larger

than those from N.W. New Guinea, but too few examples from both habitats are known as yet to enable it to be settled if there are two races or not.

1 imm., Wanggar District, 20 miles inland, 2,000 ft., south of Geelvink Bay, January 1921.

42. **Tanysiptera galatea** Gray.

Tanysiptera galatea Gray, *Proc. Zool. Soc. Lond.* 1859, p. 154 (Dorey, Waigin).

1 ad., 1 juv., Wanggar River, 15 miles above mouth, 600 ft., south of Geelvink Bay, January 1921.

PSITTACIDAE.

LORIIDAE.

43. **Lorius lory rubiensis** Meyer.

Lorius erythrothorax rubiensis Meyer, *Abh. Mus. Dresd.* 1892–1893, Abh. 3. p. 10 (1893) (Rubi).

This extremely rare subspecies of *L. lory* has hitherto only been known from Dr. Meyer's Rubi examples in the Dresden Museum.

Rubi and Wanggar are probably synonymous. This form differs from *L. l. lory* by its much brighter blue under-tail coverts and smaller size; in fact, it is the smallest of all the 7 subspecies of *lory*.

Wing of specimen here listed: 156 mm.

1 ad., Wanggar District, 20 miles inland, 2,000 ft., south of Geelvink Bay, January 1921.

44. **Charmosyna stellae goliathina** Rothsch. & Hart.

Charmosyna stellae goliathina Rothschild & Hartert, *Novit. Zool.* vol. xviii. p. 160 (1911) (Mt. Goliath).

The fine series of this handsome species proves that it is *st. goliathina* and not *st. stellae*, but a few of the specimens have less green and more red in the longer upper-tail coverts than the type.

3 ♂♂, 4 ♀♀ ad., 1 ♀ juv. (a few with moulting tails), Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

This is the first time *Ch. stellae* has been found to the west of the Fly River on the north of the main range, only the red-tailed *Ch. josephinae* having been recorded. However, the recent discovery of the latter species on the southern slopes of the Snow Mountains made the idea of *Ch. stellae* north of the range a possibility.

45. **Charmosyna atrata** Rothsch.

Charmosyna atrata Rothschild, *Bull. B.O.C.* vol. vii. p. liv. (1898) (Mt. Scratchley).

This is a most extraordinary bird, and its status, now we have for comparison examples from all the localities whence *Ch. stellae* is known, is more than doubtful. The point at issue is whether *Ch. atrata* is a distinct species occurring alongside of *Ch. stellae*, or whether it is merely a dimorphic melanistic form of the latter. (I say advisedly "dimorphic," for melanistic examples of any bird are very

rare in nature, while "*Ch. atrata*" appears fairly numerous. In the present instance, 4 *Ch. atrata* to 8 *Ch. stellae goliathina*.)

In favour of its being a species and not a melanistic form are the following points:

(1) In the ♀ there is no trace of any yellow on the rump, which is always dark green with a blue band in the adults. The ♀ Mt. Goliath bird has a few crimson spots on the rump, which are evidently a sign of immaturity.

(2) In the bird from Huon Gulf in the Tring Museum, there is absolutely no trace of the yellow pectoral band characteristic of the subspecies *Ch. stellae wahnesi* which I described from there.

(3) The comparative abundance of individuals.

On the other hand, the following facts point to this bird being only a dimorphic melanistic form:

(1) The occasional presence of single red feathers in the black plumage in 2 individuals.

(2) The large amount of red on the under-tail coverts and red on the flanks in the 2 ♂♂ of the present series.

(3) The fact that both Mt. Goliath and Weyland Mts. examples show purer green, not deep bronzy green, upper tail-coverts, pointing to the green, not red, upper tail-coverts of *Ch. st. goliathina*.

It is, however, impossible at present to decide definitely; this can only be done when we get specimens with more red on them and this red unevenly distributed.

2 ♂♂, 2 ♀♀, Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

46. **Oreopsittacus arfaki major** Grant.

Oreopsittacus arfaki major Grant, *Bull. B.O.C.* vol. xxxv. p. 11 (1914) (Utakwa River).

The ♂ listed below is the only example known beyond the 5 specimens in the British Museum; also it is the only specimen obtained from north of the main range.

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920. (Wing-measurement, 83 mm.)

If, as our present knowledge of the different forms of this genus suggests, it is proved that no 2 forms inhabit the same area, all the 4 described races of *Oreopsittacus* must be treated as subspecies. Mr. Ogilvie Grant suggests that Reichenow's *Oreopsittacus arfaki intermedius* from the Sepik River is *O. a. frontalis* Reichen. This proves he either never read the description, or else could not understand it, for Reichenow clearly states that it is like *O. a. grandis*, but much smaller.

Reichenow gives as wing-measurement of his *intermedius* 80 mm. Reichenow evidently took Grant's published wing-measurement of the type, viz. 3·5 inches = 89 mm., as his standard of comparison, in which case *intermedius* is much smaller; but the examination of our Tring material upsets this calculation altogether. The wing-measurement of 10 ♂♂ from British New Guinea is 78–88 mm., and of 4 ♀♀ 82–83 mm. The net result, therefore, is that Reichenow's *O. a. intermedius* (1915) = Grant's *O. a. grandis* (1895).

As regards *O. a. frontalis* Reichen., Ogilvie Grant (*Ibis*, Jubilee Supplement,

pp. 234, 235) says that this is a very distinct form from *O. a. grandis*; I differ from him about this, for I believe that the type (♂) of *frontalis* is only a younger ♂ of *grandis*, in which the red of the crown, instead of appearing in irregular patches as in 2 at Tring, occurs only on the frons and thus seems to be a very good character. Further material from the Upper Aroa River is required, however, before we can definitely settle this point. For the present, therefore, I shall maintain *O. a. frontalis* as a local race, and the 4 races work out as follows:

Key.

1. With red band on abdomen, 2.
   Without red band on abdomen, 3.
2. Smaller wing, ♂: 73–76 mm. *O. arfaki arfaki.*
   Larger wing, ♂: 83–87 mm. *O. arfaki major.*
3. Whole crown red in ♂. *O. arfaki grandis.*
   Frons only red in ♂. *O. arfaki frontalis.*

The distribution of the 4 forms is as follows:

Oreopsittacus arfaki arfaki (Meyer). Arfak (or Berau) Peninsula.
O. arfaki major Grant. Western New Guinea.
O. arfaki frontalis Reichen. Upper Aroa River.
O. arfaki grandis Grant. Owen Stanley Mts.; and Sepik River Distr.

47. **Neopsittacus muschenbroeki muschenbroeki** (Schleg.).

Nanodes muschenbroeki Schlegel, *Ned. Tijdschr. Dierk.* vol. iv. p. 34 (1871) (Arfak Mts.).

It is curious that although the Pratts worked at 6,000 ft. on Mt. Kunupi, yet they got the typical *m. muschenbroeki* and not the mountain form *m. pullicauda* Hartert.

4 ♂♂ ad., 1 ♂ juv., 1 (sexed ♀), Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

Mr. Grant has described in the Jubilee Supplement, *Ibis*, p. 236, a form of this species as *N. muschenbroeki alpinus*, and he distinguishes it from *N. m. pullicauda* by the orange, NOT scarlet, upper breast. We have at Tring 2 such orange-breasted birds collected by A. S. Anthony on Mt. Knutsford, together with scarlet-breasted birds, which proves that *N. m. alpinus* Grant (1915) = *N. m. pullicauda* Hartert (1896).

PSITTACIDAE.

48. **Geoffroyus personatus pucherani** Bp.

Geofroyus pucherani Bonaparte, *Naumannia*, 1856 (Triton Bay).

1 ♂, 1 ♀ ad., Wanggar District, 20 miles inland, south of Geelvink Bay, 2,000 ft., January 1921.

49. **Aprosmictus amboinensis dorsalis** (Quoy & Gaim.).

Psittacus (*Platycercus*) *dorsalis* Quoy & Gaimard, *Voy. Astrol. Zool.* i. p. 234. pl. xxi. f. 3 (1830) (Dorey).

1 ♂ ad., 1 ♀ juv., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

50. **Nasiterna bruijni** Salvad.

Nasiterna bruijnii Salvadori, *Ann. Mus. Civ. Gen.* vol. vii. p. 715 (1875) (Arfak).

1 ♂, 2 ♀♀, Mt., Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

This species ought to have preceded No. 49, *Geoffroyus p. pucherani.*

51. **Psittacella brehmi pallida** Meyer.

Psittacella pallida Meyer, *Zeitschr. f. ges. Ornith.* 1886, p. 3 (S.E. New Guinea).

1 ♂ ad., 1 ♂ juv., 1 ♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

There is one native skin of

Eos fuscata Blyth

FALCONIDAE.

52. **Accipiter melanochlamys melanochlamys** (Salvad.).

Urospizias melanochlamys Salvadori, *Ann. Mus. Civ. Gen.* vol. vii. p. 905. No. 4 (1875) (Arfak, Hatam).

Although the adult ♀ sent has no label it is a Pratt skin.

1 ♀ ad., south of Geelvink Bay ?

In the Jubilee Supplement, *Ibis*, p. 259, Mr. Grant declares that *A. m. schistacinus* Rothsch. & Hart. is not different from *A. m. melanochlamys.* Until we get similar birds from Arfak and S.E. New Guinea, I shall uphold it as a good subspecies.

53. **Henicopernis longicauda** (Garn.).

Falco longicauda Garnot, *Voy. Coq. Zool.* p. 588. pl. x (1828) (Dorey).

1 ♀, Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

CHARADRIIDAE.

54. **Charadrius dominicus fulvus** Gmel.

Charadrius fulvus Gmelin, *Syst. Nat.* i. 2. p. 687 (1789) (Tahiti).

1 ad., Wanggar, south of Geelvink Bay, February 1921.

RALLIDAE.

55. **Rallicula rubra** Schleg.

Rallicula rubra Schlegel, *Ned. Tijdschr. Dierk.* vol. iv. p. 55 (1871) (Arfak Mts.).

When Mr. Grant described his *Rallicula klossi* (*Bull. B.O.C.*, vol. xxxi. p. 104 [1913] [Utakwa River]), he evidently did not compare it with *rubra* at all but only with *forbesi.* The pair obtained on Mt. Kunupi prove conclusively that *klossi* Grant is nothing else but *rubra* of Schlegel, for the ♂ is absolutely like Arfak *rubra*, while the ♀ is absolutely like the ♀ of *klossi.*

1 ♂, 1 ♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

COLUMBIDAE.

56. **Ptilinopus pulchellus** (Temm.).

Columba pulchellus Temmink, *Pl. Col.* livr. 95. No. 564 (1835) (Lobo).

This pretty little pigeon does not vary in any part of its range as far as we know at present.

1 ♂, 1 ♀, Wanggar, south of Geelvink Bay, February 1921.

57. **Ptilinopus coronulatus geminus** Salvad.

Ptilinopus geminus Salvadori, *Ann. Mus. Civ. Gen.* vol. vii. pp. 786–7 (1875) (Ansus Jobi).

1 ♂ ad., Wanggar, south of Geelvink Bay, February 1921.

58. **Ptilinopus rivolii bellus** (Sclat.).

Ptilopus bellus Sclater, *Proc. Zool. Soc. Lond.* 1873, p. 696. pl. lvii (Arfak).

4 ♂♂, 1 ♀, Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

59. **Carpophaga chalconota** Salvad.

Carpophaga chalconota Salvadori, *Ann. Mus. Civ. Gen.* vol. vi. p. 87 (1874) (Hatam).

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

60. **Reinwardtoenas reinwardti griseotincta** Hartert.

Reinwardtoenas reinwardti griseotincta Hartert, *Novit. Zool.* vol. iii. p. 18 (1896) (Papua).

1 ♂ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

61. **Phlegoenas rufigula rufigula** Bp.

Phlegoenas rufigula Bonaparte, *Consp. Av.* vol. ii. p. 89 (1854) (New Guinea).

1 ♂ ad., Wanggar River, 15 miles above mouth, south of Geelvink Bay, 600 ft., January 1921.

62. **Phlegoenas margarithae** (D'Alb. & Salvad.).

Chalcophaps margarithae D'Albertis & Salvadori, *Ann. Mus. Civ. Gen.* vol. vii. p. 836. No. 80 (1875) (Hall Bay).

1 ♀ ad., Mt. Kunupi, 6,000 ft., Weyland Mts., November—December 1920.

63. **Eutrygon terrestris terrestris** (Gray).

Trugon terrestris Gray, *Gen. Birds App.* p. 24 (1849) (New Guinea).

1 ♂, 1 ♀, Wanggar District, 20 miles inland, south of Geelvink Bay, 2,000 ft., January 1921.

64. **Otidiphaps nobilis** Gould.

Otidiphaps nobilis Gould, *Ann. Mag. Nat. Hist.* (4), v. p. 62 (1870) (New Guinea).

1 ♂ ad., Wanggar District, 20 miles inland, 2,000 ft. 1 ♀ ad., Wanggar River, 15 miles from mouth, 600 ft., south of Geelvink Bay, January 1921.

65. **Goura coronata** (Linn.).

Columba coronata Linnaeus, *Syst. Nat.* edit. xii. vol. i. p. 282. No. 17 (1766).

1 ♂ ad., Wanggar River, 15 miles above mouth, south of Geelvink Bay, January 1921.

This concludes the list of the collection, which consists of 66 species and subspecies in 221 specimens, collected by the brothers Pratt on the Weyland Mountains; and 17 species and subspecies in 35 examples consisting of native trade skins.

The great interest of even this small number of species shows that there must be many unknown forms still to be found in this mountain range.

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