



*W. S. Hooper*

# THE IBIS,

A

## QUARTERLY JOURNAL OF ORNITHOLOGY.

EDITED BY

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SECRETARY TO THE ZOOLOGICAL SOCIETY OF LONDON.



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## PREFACE.

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A PREFACE is, we suppose, necessary for the thirty-second, as for the preceding volumes of 'THE IBIS,' but we need not detain our readers long on the present occasion.

It will perhaps be observed that the second volume of the Sixth Series of this Journal is not quite so bulky as those which immediately precede it; but it will be allowed, we trust, that it does not fall behind them in interest or variety. By the list of contributors it will be seen that the Editor has received valuable support from many of the older members of the British Ornithologists' Union, for which he begs leave to tender them his most hearty thanks. He would, however, venture to suggest that some of the younger members, by whose names the roll of the B. O. U. is annually increased, should take a more decided interest in our favourite subject. It is difficult, no doubt, and becomes every year more difficult, to find new ground to work and new birds to describe; but in the Anatomy, Osteology, and Pterylography of Birds there is still an ample field open, and one which will yield abundant fruits to energy and experience. It should be always recollected that, of the twelve thousand birds known to science, eleven thousand or

more are only known to us by their dried skins, their beaks, and their feet. These organs, although affording valuable help towards a preliminary arrangement, are, as we are now beginning to discover, by no means sufficient to establish the correct place of any bird in the Natural System.

It may also be added, for the benefit of those who are not well qualified for the examination of the above-named structures, that much still remains to be done in the study of the habits and nidification of exotic species. Field-notes on this subject, based on personal observation, are always most valuable. As regards the birds of many parts of the world, such information is still sadly deficient, although great advances have recently been made in this direction.

P. L. S.

3 Hanover Square, London, W.

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 10 1890. COUNT TOMMASO SALVADORI, M.D., C.M.Z.S.; Zoological Museum, *Turin*.

*Foreign Members.*

1890. JOEL ASAPH ALLEN, C.M.Z.S.; American Museum of Natural History, Central Park, *New York*.  
 1872. PROF. J. V. BARBOZA DU BOCAGE, C.M.Z.S.; Royal Museum, *Lisbon*.  
 1880. LOUIS BUREAU, M.D.; Ecole de médecine, *Nantes*.  
 1873. PROF. ROBERT COLLETT, C.M.Z.S.; Zoological Museum, *Christiania*.  
 5 1872. DR. ELLIOTT COUES, C.M.Z.S.; Smithsonian Institution, *Washington, D.C.*  
 1875. MARCHESI GIACOMO DORIA, C.M.Z.S., *Genoa*.  
 1890. DR. EMIN, PASHA, C.M.Z.S.; *Bagamoyo, East Africa*.  
 1872. DR. VICTOR FATIO, C.M.Z.S., *Geneva*.  
 1872. DR. HENRY HILLYER GIGLIOLI, C.M.Z.S.; Real Instituto di Studii Superiori, *Florence*.  
 10 1872. GEORGE N. LAWRENCE, C.M.Z.S.; 45 East 21st Street, *New York*.  
 1872. BARRON DE SELYS LONGCHAMPS, *Liège*.  
 1866. DR. JULIUS VON MADARÁSZ; National Museum, *Buda-Pesth*.  
 1872. DR. A. J. MALMGREN, *Helsingfors*.  
 1883. PROF. OTHNIEL CHARLES MARSH, C.M.Z.S.; Yale College, *New-haven, U.S.A.*  
 15 1881. DR. ADOLPH BERNARD MEYER, C.M.Z.S., Director of the Royal Museum, *Dresden*.  
 1872. DR. A. VON MIDDENDORFF, *Dorpat*.  
 1872. PROF. ALPHONSE MILNE-EDWARDS, C.M.Z.S.; Jardin des Plantes, *Paris*.  
 1890. M. EMILE OUSTALET, C.M.Z.S.; Muséum d'Histoire Naturelle, Jardin des Plantes, *Paris*.  
 1872. PROF. GUSTAV RADDE, C.M.Z.S., *Tiflis*.  
 20 1880. ROBERT RIDGWAY, C.M.Z.S.; Smithsonian Institution, *Washington, D.C.*

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# THE IBIS.

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## Order PSITTACI.

### 194. PALÆORNIS LONGICAUDA.

*Palæornis longicauda* (Bodd.); Salvad. Ucc. Born. p. 22; Sharpe, Ibis, 1877, p. 9; id. P. Z. S. 1879, p. 325; Brüggem. Abhandl. Bremen, v. p. 454; Blasius, Verh. zool.-bot. Ges. Wien, xxxiii. p. 23 (1883).

a. ♂ juv. Benkoka, Nov. 1, 1885.

[Common in the lower reaches of rivers, especially near the higher swampy growth.

I have seen these birds settle in large flocks in the high trees, and but for the continual shower of falling leaves, which they were nipping off, should not have known they were there. Not met with at any distance inland.

Native name "Bian."]

### 194 a. LORICULUS GALGULUS.

*Loriculus galgulus* (L.); Salvad. t. c. p. 26; Sharpe, Ibis, 1876, p. 36; id. P. Z. S. 1879, p. 325, 1881, p. 791; Brüggem. t. c. p. 454; Blasius, t. c. p. 24.

\* Continued from 'The Ibis,' 1889, p. 443.



Acno 526  
dt. 13/12/06

- a. ♀ ad. Labuan, July 2, 1885.  
 b. ♀ ad. Sandakan, April 22, 1885.  
 [Common in Labuan, frequenting fruit-gardens.  
 Native name "Trepas."]

## Order PICARLÆ.

## Fam. TROGONIDÆ.

195. *HARPACTES WHITEHEADI*.

*Harpactes whiteheadi*, Sharpe, Ibis, 1888, p. 395, pl. xii.

- a, b. ♂ ♀ ad. Kina Balu, March 19-24, 1888.  
 c. ♂ ad. Kina Balu, April 2, 1888.

[This beautiful Trogon was met with on my second expedition, at 4000 feet, where it frequented the dark and wet patches of old forest. These birds generally sit in the higher branches of the lower forest trees, and seldom move, except to take short flights from perch to perch. They generally keep their dull-coloured backs to the hunter, thus rendering themselves more like a bunch of dead leaves, for which they may often be mistaken. The plumage is so soft that if the birds fall from any height they are spoilt as specimens, bunches of feathers coming out of these soft "puff-balls."]

On the 4th of April, whilst I was taking shelter from the rain under some palm-leaves, one of these Trogons settled on a tree quite close to me; it uttered every now and then a peculiar growling note, swaying its tail backwards and forwards, spreading out the feathers with each movement, and every now and then making a short flight to capture some insect, and settling on another perch.

The young birds in nestling-plumage are similar to the female, but there is little or no distinction in colour between the throat, breast, and the rest of the lower parts. The pencilling of the wing-coverts is not nearly so fine, the yellow and black stripes being broader. The colour of the back is not so bright, being mixed with greyish down. I have a young male, in which the crimson feathers of the back and breast are mixed with the brown nestling-plumage. The soft parts are as figured in 'The Ibis' (*l. c.*), having been taken from my sketches made from the freshly killed bird.

Native name for all Trogons "Burong angi," or the "Omen bird."]

196. *HARPACTES KASUMBA.*

*Harpactes kasumba* (Raffl.).

*Pyrotrogon kasumba*, Salvad. t. c. p. 29; Blasius, t. c. p. 24; Sharpe, P. Z. S. 1881, p. 791.

a. ♂ ad. Benkoka, Oct. 12, 1885.

197. *HARPACTES DIARDI.*

*Harpactes diardi* (T.); Sharpe, Ibis, 1879, p. 239; id. P. Z. S. 1881, p. 791.

*Pyrotrogon diardi*, Salvad. t. c. p. 29.

a. ♀ ad. Benkoka, Sept. 11, 1885.

b, c. ♂ ad. Benkoka, Oct. 1885.

198. *HARPACTES DUVAUCELI.*

*Harpactes duvauceli* (T.); Sharpe, Ibis, 1879, p. 239; id. P. Z. S. 1881, p. 792; Brüggem. t. c. p. 454.

*Pyrotrogon duvauceli*, Salvad. t. c. p. 29; Blasius, t. c. p. 25.

a. ♂ ad. Benkoka, Oct. 13, 1885.

b. ♀ ad. Benkoka, Nov. 5, 1885.

199. *HARPACTES ORESCIUS.*

*Harpactes orescius* (T.); Sharpe, Ibis, 1888, p. 395.

*Orescius gouldi* (Sw.); Salvad. t. c. p. 31.

a. ♂ ad. Kina Balu, Jan. 18, 1888.

b. ♂ ad. Kina Balu, Feb. 3, 1888.

c. ♂ ad. Kina Balu, April 19, 1888.

d. ♀ ad. Kina Balu, May 20, 1888.

A specimen in the British Museum was the sole authority for the occurrence of this species in Borneo before Mr. Whitehead's ascent of Kina Balu. The specimen in question was purchased at the sale of Baron Laugier's collection in 1837, and it is doubtful whether the locality is authentic; but Mr. Whitehead has now placed the Bornean habitat of the species beyond a doubt.

[Met with on Kina Balu, from 1000 to 3000 feet, but nowhere common, frequenting shady spots in old forest. I have noticed that all Trogons are more active in the early

morning and evening ; during the rest of the day they are seldom seen. Iris black ; gape cobalt-blue, darker at base of bill and on lower mandible ; skin round eye whitish blue, feet slaty blue. I procured a brown Trogon on Kina Balu on the 23rd of March, 1887, which is possibly the young of this species ; but the markings seem to me to be too coarse, and it may be the immature stage of some Trogon which inhabits the mountain and is yet undescribed.]

## Fam. CAPITONIDÆ.

## 200. MEGALÆMA CHRYSOPSIS.

*Megalæma chrysopsis*, Goffin ; Sharpe, Ibis, 1877, p. 8.

*Chotorhea chrysopsis* (Goffin) ; Salvad. t. c. p. 32.

a. ♂ ad. Benkoka, Sept. 1, 1885.

b. ♂ juv. Benkoka, Sept. 22, 1885.

## 201. MEGALÆMA VERSICOLOR.

*Megalæma versicolor* (Raffl.) ; Sharpe, Ibis, 1876, p. 35 ;  
id. P. Z. S. 1879, pp. 245, 326 ; id. Ibis, 1879, p. 239 ;  
Brüggem. t. c. p. 454.

*Chotorhea versicolor*, Salvad. t. c. p. 33.

*Chotorhea versicolor*, var. *borneensis*, Blasius, t. c. p. 25.

a. ♀ ad. Lawas River, March 23, 1886.

b. ♂ ad. Lawas River, April 5, 1886.

[Iris and bill black ; feet dull greenish blue.]

## 202. MEGALÆMA MYSTACOPHANES.

*Megalæma mystacophanus* (T.) ; Sharpe, Ibis, 1876, p. 35,  
1879, p. 239.

*Chotorhea mystacophanus*, Salvad. t. c. p. 34.

a. ♀ imm. Benkoka, Sept. 1, 1885.

b. ♂ ad. Benkoka, Sept. 5, 1885.

c, d. ♂ ad. et juv. Kina Balu, March 6, 1887.

e. ♀ juv. Kina Balu, Feb. 28, 1887.

f. ♀ juv. Kina Balu, March 19, 1888.

[The commonest Bornean Barbet, frequenting the higher branches of forest trees. I have often seen these birds holding on to a tree and pecking like a Woodpecker.

It has a peculiar note, which it utters when perched high up in the tree, "Pooh pooh lentogok lentogok."

Native name "Lentogok." Found on Kina Balu up to 3000 feet.]

203. *CYANOPS PULCHERRIMA*.

*Megalæma pulcherrima*, Sharpe, Ibis, 1888, p. 393, pl. xi. fig. 2.

a. ♀ ad. Kina Balu, Jan. 29, 1888.

b, c. ♂ ad. Kina Balu, Feb. 16, 20, 1888.

[I discovered this fine Barbet at 5000 feet in high forest, but it is, perhaps, more at home on the mountain at about 8000 feet. It has a hooting-note rather like that of the last species. An immature bird is of a much less vivid green, and has the blue on the throat and head duller and greener than in the adults, and the golden collar is absent. The soft parts were given in 'The Ibis' (*l. c.*).]

204. *CYANOPS MONTICOLA*.

*Cyanops monticola*, Sharpe, Ann. & Mag. Nat. Hist. (6) iii. p. 424 (1888).

a. ♂ ad. Kina Balu, March 24, 1888.

b. ♀ ad. Kina Balu, March 28, 1887.

[Met with on my first expedition at about 3000 feet, and again during my second at the same altitude. This bird at first sight bears a strong resemblance to the young of *M. mystacophanes*, so much so that it has remained nearly two years undescribed, though I had little doubt that it was a good species, the bill being quite distinct from that of *M. mystacophanes*, to say nothing of the colour. I was glad to find that Mr. Sharpe, at last, took my view as to its distinctness.]

205. *XANTHOLEMA DUVAUCELI*.

*Xantholema duvauceli* (Less.); Salvad. t. c. p. 38; Sharpe, Ibis, 1879, p. 240; id. P. Z. S. 1881, p. 792; Blasius, t. c. p. 26.

*Megalæma duvauceli*, Sharpe, Ibis, 1876, p. 35, 1877, p. 9; Brüggem. t. c. p. 454.

a, b. ♂ ♀ ad. Lawas River, Feb. 28, 1886.

c, d. ♂ ♀ ad. Lawas River, Feb. 26, 1886.

[Met with in numbers on some fruit-bearing forest trees. Iris and bill black; feet slaty green.]

## 206. CALORHAMPHUS FULIGINOSUS.

*Calorhamphus fuliginosus* (T.); Salvad. t. c. p. 39; Sharpe, Ibis, 1876, p. 34, 1877, p. 9, 1879, p. 240; id. P. Z. S. 1881, p. 792.

a. ♂ ad. Kina Balu, Feb. 15, 1887.

b. ♂ ad. Kina Balu, March 1887.

c, d. ♂ ♀ ad. Kina Balu, April 1888.

[Common, frequenting the lower slopes of Kina Balu up to 1000 feet. It is found in old forest in small flocks, feeding high in the trees.]

## Fam. PICIDÆ.

## 207. IYNGIPICUS AURANTIIVENTRIS.

*Iyngipicus aurantiiventris*, Salvad. t. c. p. 41, tav. iv. fig. 2; Sharpe, Ibis, 1879, p. 240; id. P. Z. S. 1881, p. 792; Hargitt, Ibis, 1882, p. 29; Blasius, t. c. p. 27.

a. ♀ ad. Kina Balu, Feb. 13, 1887.

b. ♂ ad. Kina Balu, March 25, 1887.

c, d. ♂ ♀ ad. Kina Balu, April 15, 1888.

[Met with on Kina Balu from 2000 to 3000 feet, but by no means common. Seems to prefer the Casuarina trees. Iris white; bill slaty blue; feet dull green, soles yellow.]

## 208. IYNGIPICUS AURITUS.

*Iyngipicus auritus* (Eyton); Hargitt, Ibis, 1882, p. 42.

*Iyngipicus fusco-albidus*, Salvad. t. c. p. 42; Sharpe, P. Z. S. 1879, p. 326; id. Ibis, 1879, p. 240.

a, b. ♀ ad. Labuan, July 1885.

c. ♂ ad. Labuan, Dec. 15, 1885.

[Iris hazel; bill and feet greyish black. Fairly common in Labuan, frequenting gardens and other open places. Nests in dead trees in the beginning of June.]

## 209. XYLOLEPES VALIDUS.

*Xylolepes validus* (Reinw.); Salvad. t. c. p. 43; Sharpe, Ibis, 1876, p. 36, 1877, p. 9, 1879, p. 240; id. P. Z. S. 1879, p. 326, 1881, p. 792; Blasius, t. c. p. 27.

a. ♂ ad. Benkoka, Sept. 15, 1885.

b. ♀ ad. Benkoka, Oct. 11, 1885.

[Iris dark lake.]

## 210. HEMICERCUS SORDIDUS.

*Hemicercus sordidus* (Eyton); Salvad. t. c. p. 46; Sharpe, Ibis, 1879, p. 240; Hargitt, Ibis, 1884, p. 247.

a. ♂ ad. Benkoka, Sept. 22, 1885.

b. ♂ ad. Benkoka, Nov. 2, 1885.

[Iris claret-colour; bill and feet slaty black.]

## 211. LEPOCESTES PORPHYROMELAS.

*Lepocestes porphyromelas* (Boie); Salvad. t. c. p. 48; Sharpe, Ibis, 1877, p. 9, 1879, p. 242.

a. ♂ ad. Kina Balu, Feb. 21, 1887.

b. ♀ ad. Kina Balu, March 23, 1887.

[Reaches an altitude of 5000 feet on Kina Balu. Iris claret-colour; bill straw-yellow; feet greenish brown.]

## 212. GECINUS PUNICEUS.

*Callolophus puniceus* (Horsf.); Salvad. t. c. p. 49; Sharpe, Ibis, 1876, p. 36, 1879, p. 242; id. P. Z. S. 1881, p. 792; Blasius, t. c. p. 28.

*Gecinus puniceus*, Brüggem. t. c. p. 454; Hargitt, Ibis, 1888, p. 176.

a. ♂ ad. Kina Balu, March 27, 1888.

b. ♀ ad. Benkoka, Oct. 15, 1885.

[Found up to 2000 feet on Kina Balu. Iris claret-colour; bare skin round eye pale blue; upper mandible black, lower mandible straw-yellow; feet brownish yellow.]

## 213. CHRYSOPHLEGMA HUMII.

*Chrysophlegma humii*, Hargitt, Ibis, 1889, p. 231.

*Callolophus mentalis* (T.); Salvad. t. c. p. 49; Sharpe, Ibis, 1877, p. 9, 1879, p. 242.

a, b. ♂ ♀ ad. Benkoka, Oct. 14, 1885.

c. ♂ ad. Lawas River, March 29, 1886.

d. ♀ ad. Kina Balu, March 14, 1887.

[Found up to 2000 feet on Kina Balu. Iris dark lake; bill greyish blue; feet dull green.]

## 214. CHRYSOPHLEGMA MALACCENSE.

*Callolophus malaccensis* (Lath.); Salvad. t. c. p. 50; Sharpe, Ibis, 1876, p. 35, 1879, p. 242.

*Gecinus malaccensis*, Brüggem. t. c. p. 454.

*Chrysophlegma malaccense*, Hargitt, Ibis, 1886, p. 276.

a. ♂ ad. Lawas River, April 9, 1886.

b. ♀ ad. Benkoka, Sept. 15, 1885.

[Iris dark lake.]

215. ALOPHONERPES PULVERULENTUS.

*Alophonerpes pulverulentus* (T.); Salvad. t. c. p. 51; Sharpe, P. Z. S. 1879, p. 326; id. Ibis, 1879, p. 242; id. P. Z. S. 1881, p. 792.

a. ♂ ad. Padas River, May 1, 1886.

b. ♂ ad. Lawas River, April 5, 1886.

c. ♀ ad. Benkoka, Sept. 27, 1885.

[Fond of frequenting forest on the borders of swamps. Iris black; feet and bill dull bluish white.]

216. THRIPONAX JAVENSIS.

*Thriponax javensis* (Horsf.); Salvad. t. c. p. 52; Sharpe, P. Z. S. 1879, p. 326; id. Ibis, 1879, p. 243; id. P. Z. S. 1881, p. 792; Hargitt, Ibis, 1885, p. 145; Blasius, t. c. p. 28.

a. ♂ ad. Benkoka, Oct. 25, 1885.

b. ♀ ad. Labuan, Dec. 13, 1885.

c. ♀ ad. Labuan, Aug. 10, 1885.

217. TIGA JAVANENSIS.

*Tiga javanensis* (Ljung.); Salvad. t. c. p. 54; Sharpe, Ibis, 1877, p. 9, 1879, p. 243; id. P. Z. S. 1879, p. 326, 1881, p. 792.

a, b. ♂ ♀ ad. Labuan, July 12, 1885.

[Most common near the coast. Iris black; bill bluish white; feet dull green.]

218. GAUROPICOIDES RAFFLESII.

*Gauropicoides rafflesii* (Vig.); Salvad. t. c. p. 54; Sharpe, 1879, p. 243.

*Tiga rafflesii*, Brüggem. t. c. p. 455.

a, b. ♂ ♀ ad. Kina Balu, May 6, 1888.

Reaches an elevation of 2000 feet on Kina Balu.

219. MIGLYPTES GRAMMITHORAX.

*Miglyptes tristis* (Horsf.); Salvad. t. c. p. 56; Sharpe, Ibis, 1876, p. 36, 1879, p. 243; id. P. Z. S. 1881, p. 792; Brüggem. t. c. p. 455; Blasius, t. c. p. 29.

*Miglyptes grammithorax*, Malh. ; Hargitt, Ibis, 1884, p. 191.

a. ♀ ad. Padas River, June 6, 1885.

[Iris lake; feet dull greenish brown.]

220. MIGLYPTES TUKKI.

*Miglyptes tukki* (Less.) ; Salvad. t. c. p. 57 ; Sharpe, Ibis, 1876, p. 36, 1879, p. 243 ; id. P. Z. S. 1881, p. 792 ; Hargitt, Ibis, 1884, p. 193 ; Brüggem. t. c. p. 455 ; Blasius, t. c. p. 29.

a. ♂ ad. Kina Balu, Sept. 5, 1885.

[Iris dark lake ; bill greyish black ; feet brown.]

221. MICROPTERNUS BADIUSUS.

*Micropternus badiusus* (T.) ; Salvad. t. c. p. 58 ; Sharpe, Ibis, 1879, p. 243 ; id. P. Z. S. 1881, p. 792 ; Hargitt, Ibis, 1885, p. 6 ; Blasius, t. c. p. 30.

a, b. ♂ ♀ ad. Benkoka, Sept. 9, 1885.

222. SASIA ABNORMIS.

*Sasia abnormis* (T.) ; Salvad. t. c. p. 60 ; Sharpe, Ibis, 1889, p. 243 ; Brüggem. t. c. p. 455.

a. ♂ ad. Kina Balu, March 25, 1887.

b. ♂ ad. Kina Balu, Jan. 13, 1888.

[This peculiar little bird is found sparingly in old forest, where it frequents the smaller trees and low growth. Reaches up to 1000 feet on Kina Balu. Iris lake-red ; bare skin on face dull pink ; bill black ; feet orange-brown. Native name "Tickbaden."]

FAM. INDICATORIDÆ.

223. INDICATOR ARCHIPELAGICUS.

*Indicator archipelagicus*, T. ; Salvad. t. c. p. 61 ; Sharpe, Ibis, 1877, p. 8, 1879, p. 244.

a. ♂ ad. Benkoka, Sept. 22, 1885.

FAM. CUCULIDÆ.

224. CHRYSOCOCCYX XANTHORHYNCHUS.

*Chrysococcyx xanthorhynchus* (Horsf.) ; Salvad. t. c. p. 62 ; Sharpe, P. Z. S. 1879, p. 327, 1881, p. 792.

*Cuculus xanthorhynchus*, Sharpe, Ibis, 1879, p. 244.

a. ♀ ad. Abai, Dec. 29, 1887.

[Not common in Northern Borneo, where it frequents the tops of the highest trees, making it difficult to obtain specimens. Its note is "Kievik, kievik," by which name the natives call it. Iris lake; bare skin round eye and bill vermilion; feet dull green; bill in the female dark brown, more reddish at base.]

225. *SURNICULUS LUGUBRIS.*

*Surniculus lugubris* (Horsf.); Salvad. t. c. p. 63; Sharpe, Ibis, 1877, p. 8, 1879, p. 244; id. P. Z. S. 1879, p. 328, 1881, p. 792; Blasius, t. c. p. 30.

a, b. ♂ ♀ ad. Lawas River, April 5, 1886.

c. ♂ ad. Kina Balu, March 1887.

[I met with this species in numbers on the Lawas River: they frequent the tops of low trees, and utter a loud whistling note. Iris hazel; feet and bill black.]

226. *PENTHOCERYX PRAVATUS.*

*Penthoceryx pravatus* (Horsf.); Salvad. t. c. p. 63; Sharpe, Ibis, 1879, p. 244.

a. ♂ ad. Benkoka, Sept. 21, 1885.

227. *CACOMANTIS MERULINUS.*

*Cacomantis merulinus* (Scop.); Salvad. t. c. p. 64; Sharpe, Ibis, 1876, p. 34, 1877, p. 7, 1879, p. 244; id. P. Z. S. 1879, p. 328, 1881, p. 792.

a. Ad. Labuan, May 1886.

228. *HIEROCOCCYX FUGAX.*

*Hierococcyx fugax* (Horsf.); Salvad. t. c. p. 65; Sharpe, Ibis, 1877, p. 7, 1879, p. 245.

a, b. ♂ ad. Kina Balu, April 1888.

c. ♂ ad. Kina Balu, April 26, 1888.

d. ♀ juv. Kina Balu, April 23, 1888.

[Met with on Kina Balu, about 3000 feet. I found this species laying in the nest of *Culicicapa ceylonensis*, on the 29th April. The egg was creamy white, slightly spotted with pale yellowish brown and grey, forming a complete zone at the larger end: axis 0.9 inch, diam. 0.65. Iris and bill light brown; feet and skin round eye bright yellow; base of bill yellowish green.]

229. *HIEROCOCCYX NANA.**Hierococcyx nanus*, Hume, Str. F. v. p. 490 (1877).

a. ♀ ad. Benkoka, Nov. 2, 1885.

The first recorded occurrence of this species in Borneo. The specimen has been identified by Captain Shelley.

[Only one specimen seen. Iris black; skin round the eye bright straw-yellow; feet king's yellow.]

230. *HIEROCOCCYX BOCKI.**Hierococcyx bocki*, Wardlaw-Ramsay, Ibis, 1886, p. 157; Sharpe, Ibis, 1888, p. 394.

a. ♂ ad. Kina Balu, Feb. 28, 1888.

b, c. ♂ ♀ ad. Kina Balu, March 1888.

d. ♂ ad. Kina Balu, April 20, 1888.

The occurrence of this species on Kina Balu is interesting, as showing a very distinct relation between the avifauna of the mountain and that of High Sumatra.

[This rare Cuckoo frequented Kina Balu at about 4000 feet. It was evidently the pairing-season in March, as they were then very noisy, whistling a good deal in the tops of the trees, especially towards evening.]

231. *HIEROCOCCYX SPARVERIOIDES.**Hierococcyx strenuus*, Sharpe, P. Z. S. 1879, p. 327.

a. Juv. Labuan, Nov. 7, 1887.

[One specimen shot, evidently on migration. Iris light brown; feet and skin round eye pale yellow.]

232. *CUCULUS MICROPTERUS.**Cuculus micropterus*, Gould; Oates, Handb. B. Burm. ii. p. 104 (1883).

a. ♂ ad. Lawas River, March 29, 1886.

b. ♂ ad. Lawas River, April 7, 1886.

[Apparently new to Borneo. Only two specimens seen, frequenting the banks of the river. This species has a loud whistling note. Iris black; skin round eye bright yellow.]

233. *CUCULUS POLIOCEPHALUS.**Cuculus poliocephalus*, Lath. Ind. Orn. i. p. 214; Sharpe, Ibis, 1879, p. 394.i. ? *Cuculus himalayanus*, Sharpe, P. Z. S. 1879, p. 327.

a, b. ♂ ♀ ad. Kina Balu, Feb. 1888.

c. ♀ ad. Kina Balu, March 13, 1888.

[This Cuckoo frequented the higher ranges of Kina Balu up to 9000 feet, and I saw one specimen much higher. The note is exactly like that of *Cyanops pulcherrima*, and I have often stalked the supposed Barbet and shot a Cuckoo. Iris brown; legs, gape, and skin round eye king's yellow.

I have a young bird which has the throat and upper part of the breast rich brown instead of grey like the adults. There is a ring of brown round the back of the neck. The wing-feathers and back are also much barred with the same colour.]

234. COCCYSTES COROMANDUS.

*Coccytes coromandus* (L.); Salvad. t. c. p. 67.

a. ♀ ad. Labuan, Dec. 29, 1885.

[Apparently rare. I have only met with two specimens during my visit to Borneo.]

235. EUDYNAMIS MALAYANA.

*Eudynamis malayana*, Cab. & Heine, Salvad. t. c. p. 68; Sharpe, Ibis, 1876, p. 34, 1879, p. 245; id. P. Z. S. 1879, p. 328.

a. ♂ ad. Labuan, Nov. 30, 1885.

236. RHOPODYTES ERYTHROGNATHUS.

*Rhopodytes erythrognathus*, Sharpe, Ibis, 1877, p. 8; id. P. Z. S. 1879, p. 246; id. Ibis, 1879, p. 245; id. P. Z. S. 1881, p. 793.

*Rhamphococcyx erythrognathus* (Hartl.); Salvad. t. c. p. 74.

*Phanicochaes erythrognathus*, Brüggem. t. c. p. 455.

a. ♂ ad. Kina Balu, April 1888.

b. ♂ ad. Kina Balu, March 15, 1888.

[Common throughout Northern Borneo, ranging on Kina Balu up to 1000 feet. They frequent the lower branches of high and the tops of low trees, especially where the jungle is thick and tangled. They hop slowly through the jungle, the tail being kept horizontal with the body. Iris king's yellow; upper mandible and half the lower one pea-green,

the rest dull reddish; feet dull leaden blue; bare skin on face scarlet.

Native name "Nampak."]

237. RHINORTHA CHLOROPHÆA.

*Rhinortha chlorophæa* (Raffl.); Salvad. t. c. p. 69; Sharpe, Ibis, 1876, p. 34, 1879, p. 245, 1881, p. 792; Brüggem. t. c. p. 455; Blasius, t. c. p. 32.

a. ♂ ad. Benkoka, Sept. 5, 1885.

b. ♀ ad. Kina Balu, April 1, 1887.

[In habits similar to *Rhopodytes erythrognathus*, with the same peculiar quiet and skulking manner. Iris dark brown; bill pea-green; bare skin on face emerald-green; feet dull cobalt-blue.]

238. POLIOCOCCYX SUMATRANUS.

*Rhopodytes sumatranus* (Raffl.); Salvad. t. c. p. 73; Sharpe, Ibis, 1879, p. 245; Blasius, t. c. p. 32.

*Zanclostomus sumatranus*, Brüggem. t. c. p. 455.

[I also saw this species at Abai, frequenting a patch of jungle on the coast, but did not obtain a specimen.]

239. ZANCLOSTOMUS JAVANICUS.

*Zanclostomus javanicus* (Horsf.); Salvad. t. c. p. 75; Sharpe, Ibis, 1879, p. 245; id. P. Z. S. 1881, p. 793; Blasius, t. c. p. 33.

a. ♂ ad. Kina Balu, March 1887.

[Not so common as the last two species, though similar in habits. This bird has a higher range than the last two species, for I met with one on Mt. Ophir, in Malacca, at 3000 feet. This species has a peculiar note like "kick kick." Iris black; bill coral-red; feet brownish black.]

240. CENTROCOCCYX EURYCERCUS.

*Centrococcyx eurycercus* (Hay); Salvad. t. c. p. 78; Sharpe, Ibis, 1877, p. 8; id. P. Z. S. 1879, p. 328, 1880, p. 793; Blasius, t. c. p. 39.

a, b. ♂ ♀ ad. Labuan, Jan. 1886.

c, d. ♂ ♀ ad. Labuan, June 1886.

[This large and powerful Cuckoo frequents the small

tangled patches of forest, being rarely met with in the larger stretches of old forest. The natives say that it often feeds upon flesh, killing and eating birds that have been snared, if left long in the traps. I have no doubt that it would take the young from nests, and have watched two little Flycatchers (*Rhipidura javanica*) very busy attacking and trying to drive this Cuckoo from a tree where they probably had a nest.

The note is loud, "būh būh," uttered many times, as the bird sits, generally towards the evening, in some prominent position.

Native name "Bubut," probably from the note.

Iris, feet, and bill black.]

241. *CENTROCOCYX JAVANENSIS*.

*Centrococcyx javanensis* (Dumont.); Salvad. t. c. p. 76; Sharpe, Ibis, 1876, p. 34.

*Centropus javanensis*, Sharpe, P. Z. S. 1879, p. 328; id. Ibis, 1879, p. 246.

a. ♀ imm. Labuan, May 1885.

b. Juv. Labuan, Aug. 18, 1885.

[This species, unlike the last, is seldom seen except in the "llang"-grass plains near the edges of clearings.

This Cuckoo may often be turned up in the coarse grass plains within a few yards, when it rises with a slow flapping flight, often soaring long distances, seldom more than a few feet above the grass, and then dropping suddenly out of sight.

It is plentiful in Labuan, and, like *C. eurycercus*, is most often heard towards evening as it perches on some low post or bunch of beaten-down grass.

I had an egg given me, supposed to be of this species, which was white; it was found on the ground under some tangled growth.

Native name "Bubut."

Iris brown; bill and feet black.]

Fam. BUCEROTIDÆ.

242. *BUCEROS RHINOCEROS*.

*Buceros rhinoceros*, L.; Sharpe, Ibis, 1879, p. 246; Elliot, Monogr. Bucerot. pl. iv.

*Buceros rhinocerosoides* (T.) ; Salvad. t. c. p. 87.

a. ♂ ad. Benkoka, Oct. 6, 1885.

[Iris dark lake ; bill red and yellow ; feet dull yellow.

This large Hornbill is fairly common, frequenting the high fruit-bearing forest trees. I have seen eleven flying in one flock, when they could be heard a great distance off, the noise they make with their wings being very loud.

Native name "Sungung."]

#### 243. RHINOPLAX VIGIL.

*Rhinoplax vigil* (Forst.) ; Elliot, Monogr. Bucerot. pl. x. ; Sharpe, Ibis, 1879, p. 248.

*Rhinoplax scutatus* (Bodd.) ; Salvad. t. c. p. 88.

a. Ad. Benkoka, Oct. 9, 1885.

[Fairly common in most old forests, frequenting the tops of high trees. It utters a loud deep cry, "Lentodoon" (from which it gets its native name), and then goes off into a fit of laughter, which may be heard at a great distance.

I saw them on Kina Balu up to 3000 feet.

The native idea is that the heavy knob on the bill is used for hammering the gutta and gum round the hole when it closes up the female in the nest.]

#### 244. ANTHRACOCEROS CONVEXUS.

*Anthracoceros convexus* (T.) ; Sharpe, P. Z. S. 1879, p. 329 ; id. Ibis, 1879, p. 246 ; Elliot, Monogr. Bucerot. pl. xii.

*Hydrocissa convexa* (T.) ; Salvad. t. c. p. 80 ; Sharpe, Ibis, 1877, p. 7, 1879, p. 246.

a, b. ♂ ♀. Labuan, May 28, 1885.

c. ♀ juv. Pulo Gaya Island.

[Young birds have the bill dull pea-green ; feet dull cobalt ; eye not so dark as the old birds.

Adults have the bill light yellow, with a black mark on end of casque ; eye lake ; skin at base of bill light blue.

Common on most small islands near the sea-coast ; I have never met with this Hornbill far inland. It has a curious screaming cry, which is frequently uttered.

Native name "Lēkup."]

## 245. ANTHRACOCEROS MALAYANUS.

*Anthracoceros malayanus* (Raffl.); Elliot, Monogr. Bucerot. pl. xv.

*Hydrocissa malayana* (Raffl.); Salvad. t. c. p. 83.

*Hydrocissa albirostris* (Shaw); Sharpe, Ibis, 1879, p. 246.

a, b. ♂ ♀. Benkoka, Oct. 2, 1885.

c. ♂. Kina Balu, April 20, 1887.

[♂. Bill white; feet black; iris dark lake.

♀. Bill, iris, and feet black.

Fairly common in old forest. Met with on Kina Balu at 1000 feet. The small black-billed bird is doubtless the hen of the white-billed bird, as they are generally seen together, and the sexing also proves it.]

## 246. ANORRHINUS COMATUS.

*Anorrhinus comatus* (Raffl.); Elliot, Monogr. Bucerot. pl. xxxix.

a. ♂ ad. Benkoka River, Sept. 12, 1885.

b. ♀. Benkoka River, Nov. 13, 1885.

Recorded from Borneo for the first time.

[Iris dull greenish yellow; skin on face pale cobalt; bill white, blackish at tip; feet black.

Met with in a forest on the Benkoka River. Unlike the other species mentioned, this Hornbill frequently settles on the ground.

Some birds have white and others black tails. This is apparently only a difference of age, as the British Museum contains Malayan specimens with black and with white tails from the same locality.]

## 247. ANORRHINUS GALERITUS.

*Anorrhinus galeritus* (T.); Salvad. t. c. p. 79; Sharpe, Ibis, 1879, p. 246; id. P. Z. S. 1881, p. 793; Elliot, Monogr. Bucerot. pl. 42.

a. Ad. Kina Balu, April 23, 1887.

b. Ad. Sandakan, April 14, 1885.

c, d. ♀ ♀ ad. Benkoka, Oct. 11, 1885.

*Adult.* Iris lake; bill black, sometimes white-striped; feet black; skin on face pale blue.

*Jr.* Iris blue; bill dull red at tip, pea-green at base; skin on face bright king's yellow.

[Fairly common. Also occurs on Kina Balu up to 1000 feet. I found a nest of this species in an old tree, the female and a young one being securely fastened in by gums and resins. The curious part, however, was that there were no less than five other Hornbills feeding her, including males and females. I shot three birds at the tree on the first day, before I discovered the nest, which had evidently been used many times, judging by the excrement at the foot of the tree; and on the following day there were two other birds feeding the imprisoned hen. The Hornbills build up the hen in a tree, leaving only a small hole through which to feed her: this is done for defensive purposes against large tree-lizards and monkeys.

The young bird taken was well feathered and lived a long time, feeding voraciously on boiled rice and fruit; but the little fellow made such an incessant noise (like a wet cork rubbed on a bottle) that I had frequently to send him to some distance from my hut. This one day caused his death, through my boy putting the basket in a place where the bird got too much sun, which killed it. The hen bird was so weak after her imprisonment that for a long time she was unable to fly. The curious change of colour in the soft parts which the young bird undergoes before becoming adult is interesting.]

#### Fam. MEROPIDÆ.

##### 248. MEROPS SUMATRANUS.

*Merops sumatranus*, Raffl.; Sharpe, P. Z. S. 1879, p. 329; id. Ibis, 1879, p. 248; id. P. Z. S. 1881, p. 793.

*Merops bicolor*, Salvad. t. c. p. 90; Sharpe, Ibis, 1876, p. 33, 1877, p. 5.

*a, b.* ♂ ♀ ad. Abai, March 2, 1883.

*c.* ♂ ad. Benkoka, Oct. 21, 1885.

[Fairly common in open places. In habits similar to all the rest of the family. Nests in holes in the ground, laying

four or five round white eggs about the beginning of June.  
Axis 0.95 inch, diam. 0.9.

Native name "Tampa-Kuro."]

249. NYCTIORNIS AMICTA.

*Nyctiornis amicta* (T.); Salvad. t. c. p. 91; Sharpe, Ibis, 1877, p. 6, 1879, p. 248; id. P. Z. S. 1881, p. 793.

a. ♂ ad. Kina Balu, April 1888.

b. ♂ ad. Benkoka, Sept. 14, 1885.

[Fairly common, frequenting high forest, where it sits solitary on the lower boughs of trees, making short flights after insects. It has a peculiar loud cry which I have often mistaken for the cackling of geese, wondering where the latter could be, and quite expecting to see some in one of the native campongs. Native name "Darah leihier," *i. e.* "blood-neck." Iris straw-yellow.]

Fam. ALCEDINIDÆ.

250. ALCEDO BENGALENSIS.

*Alcedo bengalensis*, Gm.; Salvad. t. c. p. 92; Sharpe, Ibis, 1877, p. 6; id. P. Z. S. 1879, p. 329.

a. ♀ ad. Benkoka, Sept. 12, 1885.

[Only a winter visitor to Borneo, arriving in Palawan on its way south about the middle of September. Native name "Mantis."]

251. ALCEDO MENINTING.

*Alcedo meninting*, Horsf.; Salvad. t. c. p. 93; Sharpe, P. Z. S. 1879, p. 329; id. Ibis, 1879, p. 248.

a, b. ♂ ♀ ad. Labuan, Dec. 1885.

c. ♂ juv. Labuan, May 1886.

d. ♀ ad. Benkoka, Oct. 19, 1885.

[Fairly common about large rivers near the sea-coast.]

252. ALCEDO EURYZONA.

*Alcedo euryzona*, T.; Salvad. t. c. p. 95; Sharpe, Ibis, 1879, p. 248.

a, b. ♂ ♀ ad. Kina Balu, March 1887.

c, d. ♂ ♀ ad. Kina Balu, April 12, 1888.

[Iris dark hazel. In the female the upper mandible is

black, the lower one dull vermilion; feet also vermilion. The young male has the bill black, with a pinkish tinge; feet dull black. Met with sparingly on the rocky streams which come from Kina Balu.

At one of my camps a pair used to pass up-stream in the dusk of early morn, piping as they flew. In an hour or so the birds would return down-stream, flying a few feet above the water and cutting off bends by going into the forest. They were very shy, and it was a long time before I obtained a specimen.]

253. PELARGOPSIS LEUCOCEPHALA.

*Pelargopsis leucocephala* (Gm.); Salvad. t. c. p. 95; Sharpe, Ibis, 1876, p. 33, 1879, p. 249; id. P. Z. S. 1879, p. 329, 1881, p. 793.

a. ♀ ad. Lawas River, April 16, 1886.

b. ♂ ad. Benkoka, Nov. 20, 1885.

[Iris black; bill and feet coral-red.

Common on the tideways of rivers, and I do not think it goes for any great distance inland from the coast. It has a disagreeable harsh note, which it utters when perched, stretching out its neck and cocking its tail to give full force to its music. I watched one of these birds in Palawan which had perched on the top of a tree, making flights at some fishes swimming on the surface some distance out at sea.]

254. CEYX DILLWYNNI.

*Ceyx dillwynni*, Sharpe; Salvad. t. c. p. 99; Sharpe, Ibis, 1879, p. 249; id. P. Z. S. 1879, p. 330, 1881, p. 793.

a. ♂ ad. Lawas River, April 5, 1886.

b, c. ♂ ♀ ad. Sandakan, April 24, 1885.

d. ♂ ad. Kina Balu, Aug. 20, 1887.

[Iris black; feet and bill coral-red.

Common. Often will the traveller see a small bright yellow bird pass him in the forest like a little express train, whistling as though it were important to let every one know it was coming. Then suddenly the whistling ceases and the bird has perched, often at some distance away, where it sits motionless until again disturbed. It often frequents small

forest-streams, but I should doubt if it ever feeds on fish. This is one of the Bornean "Burong angi," or "omen birds." Met with on Kina Balu up to nearly 3000 feet.

On the 5th April I found a nest of this Kingfisher which was in a hole in a bank in the forest; it contained two eggs, which were nearly hatched. The whole nest was swarming with ants. Egg white; axis 0.9, diam. 0.75. I have often noticed that when large forest-trees become uprooted, and have a large quantity of earth held by the roots, the earth has been bored for nesting-holes, probably by this bird.]

255. HALCYON COROMANDA.

*Halcyon coromanda* (Lath.); Sharpe, Ibis, 1879, p. 249; id. P. Z. S. 1879, p. 331, 1881, p. 793.

*Callialcyon coromanda*, Salvad. t. c. p. 101.

a, b. ♂ ♀ ad. Labuan, May 1886.

c. Juv. Labuan, May 1886.

[A swamp-loving species, frequenting the beds of "Nippa" palms near the coast.]

256. HALCYON PILEATA.

*Halcyon pileata* (Bodd.); Sharpe, Ibis, 1876, p. 33, 1879, p. 249; id. P. Z. S. 1879, p. 331.

*Entomobia pileata*, Salvad. t. c. p. 102.

a. ♂ ad. Lawas, April 5, 1886.

[Iris black; feet and bill coral-red.

A winter migrant to Borneo, arriving in Palawan on its way south about the 24th September. It frequents the open patches of swamp-rice, perching on the forest-trees which surround them, making short flights at anything that it can see in the swamp around.]

257. HALCYON CHLORIS.

*Halcyon chloris* (Bodd.); Sharpe, P. Z. S. 1879, pp. 246, 332, 1881, p. 793.

*Sauropatis chloris*, Salvad. t. c. p. 103.

a. ♂ ad. Labuan, July 5, 1885.

[Iris dark brown; upper mandible black, lower one dull white; feet dull pink.

Common along the sea-coast, perching on some elevated spot, from which it makes short darting flights on its prey, which is exposed at low tide. This bird has a peculiar harsh cry, which is "Kang kang." The head is thrust forward and the tail cocked at right angles to the back. They nest in holes in trees, and are generally met with in pairs. Native name "Kang kang."]

## 258. HALCYON CONCRETA.

*Halcyon concreta* (T.); Sharpe, P. Z. S. 1881, p. 793.

*Caridagrus concreta*, Salvad. t. c. p. 102.

- a. ♀ ad. Benkoka, Sept. 13, 1885.
- b. ♂ ad. Benkoka, Oct. 10, 1885.
- c. ♀ ad. Benkoka, Oct. 22, 1885.

[Met with in true forest, where it sits motionless on some branch, generally only a few feet from the ground. Iris black; bill king's yellow; feet paler yellow.]

## 259. CARCINEUTES MELANOPS.

*Carcineutes melanops* (T.); Sharpe, Ibis, 1879, p. 249; id. P. Z. S. 1881, p. 793.

*Lacedo melanops*, Salvad. t. c. p. 104.

- a, b. ♂ ad. Benkoka, Oct. 1885.
- c. ♀ ad. Benkoka, Oct. 12, 1885.
- d. ♀ ad. Kina Balu, March 1887.

[Fairly common, frequenting true forest. Met with on Kina Balu up to 2000 feet. Iris stone-grey; bill coral-red; feet dull yellow.]

## Fam. CORACIIDEÆ.

## 260. EURYSTOMUS ORIENTALIS.

*Eurystomus orientalis* (L.); Salvad. t. c. p. 105; Sharpe, Ibis, 1877, p. 7, 1879, p. 249; id. P. Z. S. 1879, p. 332, 1881, p. 793.

- a. ♂ ad. Lawas River, April 9, 1886.
- b. ♀ ad. Kina Balu, April 1888.
- c. ♀ ad. Kina Balu, March 14, 1888.

[Iris dark hazel; feet and bill orange-red. Common, frequenting open places, especially dead trees that have been

left standing after forest fires. It perches on some high branch, from which it makes short flights at insects, returning often to the same perch.

The note is "Kick kick," sounding somewhat like the noise made by coachmen to horses.

Native name "Lahi."]

FAM. CAPRIMULGIDÆ.

261. CAPRIMULGUS MACRURUS.

*Caprimulgus macrurus*, Horsf. ; Salvad. t. c. p. 117 ; Sharpe, P. Z. S. 1879, p. 332 ; id. Ibis, 1879, p. 250.

*Caprimulgus salvadorii*, Sharpe, Ibis, 1877, p. 4.

a. ♀ ad. Kina Balu, April 1888.

b. ♂ ad. Abai, Dec. 11, 1886.

c. ♂ ad. Labuan, Aug. 14, 1888.

[Common in open places and on the edges of forest. In the evenings it may be seen on Labuan plain in numbers sitting on the ground, making short flights from place to place. The name of "Ice-bird" mentioned in Jerdon, and derived from its peculiar note, which sounds exactly like a stone thrown on thick ice, is the best description of the sound it utters. It is met with on Kina Balu up to 2000 feet. It generally nests in open places, and I have seen a nest on the sea-shore under the shelter of a tree just above high-water mark. The eggs are two in number, laid in April and other months, of a pale creamy yellow, with a slight pinkish tinge, blotched all over with pale grey, and less so with pale brown. None of these spots and blotches are distinct. Axis 1.25, diam. 0.9. Native name "Tampa-Kampa."

There is another species of *Caprimulgus* in Borneo which I failed to obtain, but which is, I believe, *Lyncornis temmincki*, a species common in Malacca, but only observed by myself about the foot of Kina Balu. This species has a very peculiar habit of flying high in the heavens just as the last rays of the setting sun are fading away, with wings held well above the body, uttering a pretty whistling note "Teta bōw, teta bōw." This Nightjar may be seen by the dozen exactly at 6.10 P.M. So well timed was their flight that I could set my watch by

them. After ten minutes' flight the bird comes to the earth, and may be seen flitting over the rice-fields, now and then soaring up after some insect, often settling on some dead branch or post, where its pretty note becomes changed to a frog-like croak. A few minutes before sunrise the bird takes another flight high in the sky, and "Teta bōw" may be heard for a few minutes, when it drops to the earth, on which it rests, remaining silent and sleepy during the heat of the day until a few minutes past 6 P.M.]

## Fam. CYPSELIDÆ.

## 262. CYPSELUS INFUMATUS.

*Cypselus infumatus*, Scl.; Salvad. t. c. p. 119; Sharpe, P. Z. S. 1879, p. 333.

a, b. ♂ ♀ ad. Kina Balu, Jan. 18, 1888.

[Fairly common.]

## 263. COLLOCALIA FUCIPHAGA.

*Collocalia fuciphaga* (Thunb.); Salvad. t. c. p. 120.

a. ♂ ad. Lawas River, July 13, 1885.

## 264. COLLOCALIA LINCHI.

*Collocalia linchi*, Horsf. & Moore; Salvad. t. c. p. 121; Sharpe, Ibis, 1879, p. 250; id. P. Z. S. 1881, p. 793.

a, b. ♂ ad. Kina Balu, March 2, 1887.

[Very plentiful wherever the rocks form small caves suitable for nesting in. The nests of this species are composed almost entirely of moss, a little saliva being used to fasten the structure to the rock. Eggs two, small, white, very often misshapen; laid in February. Axis 0·7, diam. 0·45.]

## 265. DENDROCHELIDON COMATA.

*Dendrochelidon comata* (T.); Salvad. t. c. p. 123; Sharpe, P. Z. S. 1879, p. 334; id. Ibis, 1879, p. 250.

*Macropterus comatus*, Sharpe, Ibis, 1876, p. 33.

a, b. ♂; c. ♀ ad. Lawas River, April 4, 1886.

[Only met with on the Lawas, where they frequented some dead trees at the water's edge.]

266. *DENDROCHELIDON LONGIPENNIS*.

*Dendrochelidon longipennis* (Rafin.) ; *Salvad. t. c.* p. 122 ; Sharpe, *P. Z. S.* 1879, pp. 246, 334 ; *id.* *Ibis*, 1879, p. 250.

*Macropteryx longipennis*, Sharpe, *Ibis*, 1876, p. 33.

a. ♂ ad. Benkoka, Sept. 15, 1885.

b. ♀ ad. Labuan, Aug. 19, 1885.

[This beautiful Swift is a common species, especially where the country is fairly open and old dead trees remain : these are its favourite perches.]

267. *CHÆTURA CORACINA*.

*Chætura coracina* (S. Müll.) ; *Salvad. t. c.* p. 124 ; Sharpe, *P. Z. S.* 1879, p. 335.

a. Ad. Pulo Gaya.

[Rather a local species, frequenting the vicinity of forests. I have noticed this Swift entering holes in trees, where no doubt they nest.]

268. *HIRUNDINAPUS GIGANTEUS*.

Several times seen flying high in Labuan.

[To be continued.]

II.—*On the supposed Occurrence of Strix parvissima, Ellman, in New Zealand.* By W. W. SMITH.

SIR WALTER BULLER, in concluding the histories of *Spiloglaux novæ-zealandiæ* and *Sceloglaux albifacies* (B. of N. Z. 2nd ed. vol. i. p. 205, 1888), writes: "The two forms of Strigidæ described above are the only ones inhabiting New Zealand of which we have, as yet, any positive knowledge." In a footnote on the same page, Sir Walter quotes from 'Out in the Open,' a series of papers by the late Mr. T. H. Potts, which have been published in several journals. Mr. Potts, referring to the occurrence of a "very small Owl" in New Zealand, says, "From the information that has been gleaned about this rare bird, it would appear that one of its habitats used to be the woods about the Rangitātā River; one was captured with the hand on the bank of a creek at no great distance from Mount-Peel forest." Having

lived five years near the gorge of the Rangitātā River, and having during the whole time collected and made lists of the birds of the district, and knowing all particulars regarding the two captures which Mr. Potts refers to as having occurred in the district, I think I am able to explain the matter clearly.

In May 1880, Mr. Mitton, then manager of Mount-Peel Station, brought me a small living Owl, which he desired me to stuff and mount for him. He stated that it had been captured with the hand the previous afternoon by one of the shepherds, on his way home from Peel forest. In handing it to me he remarked that it was "surely a different kind of Owl," as it was so much smaller than any he had seen. I, however, explained to him at the time that it was none other than an exceptionally small "Morepork" (*Spiloglaux novae-zealandiae*), and was no doubt a female, a fact which I subsequently verified while dissecting the specimen. It was an immature bird, the general plumage being slightly darker than many I have seen, and it lacked much of the distinct and neat markings of grey and white on the wings and breast peculiar to adult birds of that species. After being mounted, it was sent to some of Mr. Mitton's friends in Christchurch, but to whom I cannot at present say. A few weeks after the above-mentioned capture, the same gentleman brought me a slightly larger bird, which he had captured near the gorge. Since then I have taken two diminutive females in different localities and in similar plumage; but, excepting their smaller size, there was nothing to lead anyone with a slight knowledge of this little Owl and its variations to suppose them to belong to a smaller or distinct species.

Sir Walter Buller was careful to note that Mr. Potts "records the species on hearsay evidence"; but very little importance can be attached to such in the absence of a *bona fide* specimen captured in the colony, or at least some more positive proof of its existence here, as these birds belong to the most perfectly explored division of our fauna. I think, if such a species as the supposed *Strix parvissima* had existed in our country, it would have long ago come under the notice

of some of the many able collectors who have been long resident in New Zealand.

Sir Walter has explained (*op. cit.* p. 193) that there is "considerable variation in size" in *Spiloglaux novæ-zealandiæ*, and mentions one he received from Mr. W. T. L. Travers as "unusually small in all its proportions"; he also describes the specimen in the Leiden Museum as "equalling in size small examples of *Spiloglaux novæ-zealandiæ*"; indeed, the subject is so exhaustively treated in his great work, that no more need be added here. No New-Zealand colonist has ever had such facilities for collecting and studying the habits of our remarkable birds, and for examining collections in all parts of the world, as this distinguished ornithologist.

The fact of the specimen of the so-called *Scops novæ-zealandiæ* in the Leiden Museum being labelled "Nouvelle Zélande" without more definite authority, is, I think, sufficient to justify Sir Walter Buller in excluding the species from his work on the birds of New Zealand.

### III.—On the Coloration of the Young in the Psittacine Genus *Electus*. By Dr. A. B. MEYER.

(Plate I.)

THE colour of the young of those species of the genus *Electus* in which the males are green and the females red has often been discussed, and every possible opinion has been maintained by various writers. I myself have had at different times very different and erroneous notions on this question, which, however, I believe I have settled definitely in my paper "Ueber die Färbung der Nestjungen von *Electus*, Wagl." ('Zeitschrift für wissenschaftliche Zoologie,' vol. xxxvii. pp. 146-162). In this I proved that the young males are green and the young females red from the nest, as had been asserted by some authors before. In spite of this, Dr. Gadow (Bronn's 'Klassen und Ordnungen des Thierreichs,' vol. vi. pt. iv. Aves, p. 585) has even recently (1889) stated that the young ones are "reddish, but not yet green." This is, no doubt, a mistake.

Two young females of *E. roratus* were figured by me in

the year 1884 from a pair hatched in captivity ('*Zeitschrift für die gesammte Ornithologie*,' vol. i. p. 274, pl. xvi.), and I am now able to offer a figure (Plate I.) of a young male of the same species, hatched in captivity by the same gentleman whom I had to thank five years ago for the two females—Mr. P. Hieronymus, then of Karlsruhe, now of Blankenburg in the Harz.

I need not describe in detail the plumage of the young male (No. 12,000, Mus. Dresd.) now figured, as all its characteristics are clearly shown in the Plate, and as the plumage from the very beginning equals that of the adult in the brilliancy of its green, blue, and red. It is, however, remarkable that all these colours of the adult male appear in this early stage of development of the plumage of the nestlings.

The young bird figured was not quite seven weeks old when it died; it lived from the 24th of June till the 9th of August, and died from suffocation by accident. The dissection proved it to be a male. Its mate, still living, is, judging from its green colour, likewise a male.

I may draw attention to the fact that the pair hatched by Mr. Hieronymus in the year 1884 consisted of two females, and that the pair recently hatched consisted of two males. I suppose that this also may occur in a state of nature, but that just as often the pair may be composed of male and female. As to this point I am not aware that trustworthy observations have been made; the few as yet published will be found in my paper already quoted (*Z. f. wiss. Zool.* xxxvii. pp. 150, 151). Practical bird-breeders are of opinion that the first brood of the year are usually males and the second females. This may be the result of some observations, but I do not believe that it is a rule which can be relied upon. In a covey of Partridges there are said to be always more cocks than hens. The facts known as to the relative number of the two sexes in birds are very scanty and not at all to be relied upon. (See Darwin's '*Descent of Man*,' 1871, vol. i. p. 306; v. Hensen, '*Physiologie der Zeugung*,' 1881, p. 205; C. Düsing, '*Die Regulirung der Geschlechtsverhältnisse*,' 1884, p. 184, &c.)

Mr. Hieronymus has hatched since the year 1884 from the same female *Eclectus*, with two different males, a series of young ones, but, unfortunately, pairs were only reared on two occasions; besides these only single males were reared. In cases when the embryos died in the egg, the sex was not determined, though the embryos have been generally preserved. Nevertheless it may not be without interest to enumerate the whole series of eggs deposited:—

1884. First deposit, 2 embryos.  
 Second deposit, 2 *females*, which lived five and six weeks, and were figured by me (*Z. f. ges. Orn. i.* pl. xvi.).  
 Third deposit, 1 embryo and 1 *green male*, which was reared.
1885. First deposit, 1 embryo and 1 *green male*, which was reared, and which was given to me by Mr. Hieronymus in the 8th month of its life. It lived with me for three years, and was killed by accident.  
 Second deposit, 2 unimpregnated eggs.
1886. First deposit, 1 embryo and 1 *green male*.  
 Second deposit, 2 embryos.  
 Third deposit, 1 embryo and 1 *green male*, reared.
1887. First deposit, 2 embryos.  
 Second deposit, 2 embryos.
1888. First deposit, 2 embryos.  
 Second deposit, 2 embryos.  
 Third deposit, 1 embryo and 1 unimpregnated egg.  
 Fourth deposit, 2 unimpregnated eggs.  
 Fifth deposit, 2 unimpregnated eggs.
1889. First deposit, 2 unimpregnated eggs.—N.B. In these last cases the female paired with another male.  
 Second deposit, 2 *green males*, one of which is now figured (Plate I.) from the stuffed skin; the other is still living.

At the same time Mr. Hieronymus paired a female of *Eclectus cardinalis* (Bodd.) from Ceram with the male bird



ECLECTUS ROBATUS, ♂, PULL.

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1884.

1885.

1886.

1887.

1888.

1889.

At the same time Mr. [unclear]  
*Eclectus cardinalis* (Bonn.) [unclear]



which had been productive with the female of *E. roratus*, and got the following results:—

1888. First deposit, 2 embryos.  
Second deposit, 2 embryos.  
Third deposit, 2 unimpregnated eggs.  
Fourth deposit, 2 *young birds*, which died after one or two days.  
Fifth deposit, 1 *green male* (which was reared) and 1 embryo.
1889. First deposit, 2 embryos.  
Second deposit, 2 unimpregnated eggs.  
Third deposit, 2 unimpregnated eggs.

Therefore from all these deposits of eggs only two females and seven males have been reared and of these only four males are still living. The sex of these four males is only determined by the colour of the plumage, a character, however, which appears to be entirely trustworthy. As Mr. Hieronymus has placed nineteen of the embryos in my hands, ten of which are in pairs, I may, perhaps, still succeed by microscopical investigation in determining the sexes, and thus ascertain whether the male sex prevails or not, and whether a pair among them does not sometimes consist of male and female.

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IV.—*An Attempt to Diagnose the Pico-Passerine Group of Birds and the Suborders of which it consists.* By HENRY SEEBOHM, F.Z.S.

IN my investigations into the osteology of the Grallo-Galline and Ardeo-Anserine group of birds (Ibis, 1888, p. 415, and 1889, p. 92) I have found that however constant a character might be in one or more groups, there were almost sure to be other groups in which it broke down. In investigating the large group of birds consisting of the Passeres and the Picariæ, it seems as if osteological characters ceased to be entirely reliable, and required the assistance of other characters to make the diagnoses of the subdivisions complete.

It appears to be impossible to construct a diagnosis of the Passeres founded solely on osteological characters. All the Passeres are ægithognathous, but other birds, obviously not Passerine, are also ægithognathous. Most of the Passeres have only one notch on each side of the posterior margin of the sternum; but some Passeres have two, and many birds not at all Passerine have only one. In most Passeres the outer episternal process or manubrium is well developed and forked, but in some Passeres it is not forked, and in some birds not Passerine it is forked. It seems therefore to be necessary to call in some other characters, not osteological, to complete the diagnosis.

The deep plantar tendons are the muscles which, when contracted, close the foot, and enable the bird to grasp its perch or seize its prey. The different ways in which these plantars are arranged afford characters which appear to be of some value in the classification of birds. They run down the back of the tarsus, sometimes side by side, but generally crossing each other about the middle of that bone. The inner and, when they cross, always the front plantar, is named the *flexor perforans digitorum*; the outer and, when they cross, always the hind plantar, is named the *flexor longus hallucis*; but for the sake of brevity we may call the former the front plantar, because it generally moves the front toes, and the latter the hind plantar, because it generally closes the hind toe. The most common arrangement of the plantars is that found in the Common Fowl, and may therefore be called the Galline arrangement. In this bird, when the front plantar reaches the base of the tarsus it splits into three tendons, one of which leads to each of the three front toes. The hind plantar leads to the hind toe, but where it crosses the front plantar it sends down a branch (called the vinculum) to the front plantar, apparently to utilize its superfluous strength, which would otherwise be wasted on so feeble an organ as the hind toe of the Common Fowl and other similarly formed birds. The size of the vinculum varies according to the feebleness of the hallux. Where the hallux is absent or very small the vinculum absorbs the whole of

the hind plantar (or nearly so); but where the hallux is much used (as in the Herons) the vinculum becomes very small, and disappears altogether in the Bittern and in most of the Passeres. The Passerine arrangement of the plantars thus intergrades with the Galline arrangement, of which it may be regarded as a modification. Two other slight modifications of this arrangement appear in some of the Falconidæ.

In comparison with the Galline arrangement of the plantars and its modifications, the Picine arrangement appears to be quite distinct. It only occurs in zygodactyle birds, but not in all of them. In the typical Picine arrangement the front plantar leads to the outer front (or 3rd) toe only, the hind plantar dividing into three, to lead to the two hind (the 1st and 4th) and the inner front (or 2nd) toes. A slightly modified form of this arrangement occurs in the Trogonidæ, where the front plantar leads to the two front toes (the 3rd and 4th), and the hind plantar to the two hind toes (the 1st and 2nd). In the Picine arrangement, whether typical or Trogonine, the front plantar does not lead to the second toe.

There remains yet a third arrangement of the deep plantar tendons, which differs from either of the other two, or from any of their modifications, to such an extent that it seems to denote, in the birds which possess it, that it has been derived by inheritance from a common ancestor, and has not been independently acquired by any of them. It also appears in two slightly differing forms, which have been unitedly called synpelmous. In synpelmous birds the plantars do not cross each other at the back of the tarsus (as in all other birds), but coalesce at the point where they usually cross. The peculiarity of this arrangement consists in the remarkable fact that the hallux is contracted by a tendon from the front plantar (instead of the hind plantar, as in all other birds), sent down, in the Caprimulgidæ and their allies *after*, and in the Alcedinæ and their allies *before*, its coalescence with the hind plantar, the coalesced plantars splitting into three to contract the three front toes. In the

Caprimulgine arrangement, whether typical or Alcedine, the hallux is contracted by the front plantar.

I therefore propose to associate the synpelmous Picariæ in an Order by themselves, and consequently to exclude them from the Pico-Passeræ.

#### PICO-PASSERES.

The Pico-Passeræ contain nearly half the species of existing birds, and are, on the whole, the most highly developed. In the arrangement of their palatine bones they are generally ægithognathous, but some of the more aberrant families contain species which are schizognathous, desmognathous, or saurognathous. Of the innumerable characters which they all possess the following appear to be specially valuable for their diagnosis:—

1. They have no ambiens muscle.

This character excludes all birds except the Podicipes, the Striges, the Alcidiæ, the Syndactyli, and some of the Casuarii, the Psittaci, the Tubinares, the Columbæ, and the Herodiones.

2. The myological formula of the muscles of the thigh is AX or AXY (the accessory femoro-caudal is never present, whilst the femoro-caudal and the semitendinosus are never absent).

This character excludes the Casuarii, the Striges, the Podicipes, the Columbæ, and many other birds.

3. In their pterylosis the spinal feather-tract is never interrupted by a naked tract on the hind neck.

This character excludes the Herodiones.

4. In the arrangement of the deep plantars, the hallux is always in direct connection with the hind plantar.

This character excludes the synpelmous Picariæ, or Syndactyli.

5. The dorsal vertebræ are all heterocœlous.

This character excludes the Psittaci, the Gavio-Limicolæ (of which the Alcidiæ are a family), and some other birds.

6. They have no supraorbital fossæ for the reception of the nasal glands.

This character excludes the Tubinares.

Each of these six characters appears in every Pico-Passerine bird; each of them is also found in some bird which is not one of the Pico-Passerines; but the combination of the six characters is never found in any bird which is outside the limits of the Pico-Passerines.

The order to which we have restricted the name Pico-Passerines may be easily divided into five suborders, which appear to be natural groups.

#### *Passeres.*

There has been some difference of opinion as to the exact boundaries of this group. If the Passeres be diagnosed as *ægithognathous birds, with a cæcum and a nude oil-gland*, the Eurylæmidæ will be admitted and the Upupidæ will be excluded. If they be diagnosed as birds with *free plantar tendons, and a spinal feather-tract uninterrupted between the crown and the upper back*, the Upupidæ will be admitted and the Eurylæmidæ excluded. If they be diagnosed as *ægithognathous birds with free plantars*, both the Eurylæmidæ and the Upupidæ will be excluded. The last-named diagnosis is so incomparably the best, the two characters accepted being so very much more exclusively Passerine than the two rejected, that it seems wisest to adopt it, with all its consequences. The Passeres may therefore be diagnosed as follows:—

1. They are *ægithognathous*.
2. The hind plantar is free from the front plantar.

The division of the Passeres into families is a complicated question, which must be deferred to a future paper.

#### *Eurylæmi.*

If the Broadbills be regarded as too aberrant a family to be admitted into the suborder Passeres, they must be allowed to constitute a suborder by themselves. They are unquestionably very nearly allied to the Passeres; they possess cæca, the oil-gland is nude, and in their pterylosis they agree with *Hirundo* and other aberrant Passerine birds.

They have only one notch on each side of the posterior margin of the sternum, but their manubrium is not forked. Neither of these characters is, however, exclusively Passerine, or universally so. They are syndactyle, by no means a Passerine character. They are very easily diagnosed.

1. They are ægithognathous.
2. They have Galline plantars.
3. The oil-gland is nude.

It is necessary to add the last character in order to exclude the Turnicidæ and the Thinocoridæ, which possess the first two characters.

#### *Upupæ.*

The *Upupæ* (including the *Irrisoridæ*) differ from all existing birds in combining two characters.

1. The hind plantar is free from the front plantar.

This character excludes, so far as is known, all birds except a few of the *Herodiones* and most of the *Passeres*.

2. The feet of the coracoids are bridged over by the union of an outer with an inner episternal process.

This character excludes, so far as is known, all birds except the *Meropidæ*, the *Bucerotidæ*, the *Gallinæ*, and a genus of *Cuculidæ*.

The question is, which of these two characters is the oldest in the *Upupæ*? It seems to me to be most probable that the *Passeres* and the *Herodiones* have independently lost the vinculum which connected the front plantar with the hind plantar in the feet of their common ancestors, and that the *Upupæ*, like the *Gallinæ*, have acquired an episternal bridge, independently of the *Meropidæ* and the *Bucerotidæ*; whilst the extremely exceptional arrangement of the plantars in the synpelmous *Picariæ* has been inherited from a common ancestor. These conclusions, if sound, make it necessary to remove the *Upupæ* from the *Picariæ* to the *Pico-Passeres*, and to transfer the *Cathartæ* from the *Raptores* to the synpelmous *Picariæ*.

The *Upupæ* are Passerine in having the hallux very large and in having only one notch (or fenestra, as the case may

be) on each side of the posterior margin of the sternum. The arrangement of their plantar tendons is precisely the same as that of the Passeres. The fact that, like the Bucconidæ, the Galbulidæ, the Rhamphastidæ, and many of the Capitonidæ, they are desmognathous, cannot be regarded as of much importance; but it must be admitted that they are not at all Passerine in their pterylosis. The spinal feather-tract has an interscapular fork, as in *Cypselus*, *Caprimulgus*, *Coracias*, &c.; and the inferior tract is completely forked on each side of the breast, as in most of the Scansores. To find a combination similar to that of *Upupa*, it would probably be necessary to descend as low as the Gaviæ or Limicolæ.

#### Scansores.

The Scansores are a clearly defined group of birds, perhaps nearest allied to the Trogons, but having so many characters in common with the Upupæ, the Eurylæmi, and the Passeres, that they may be associated with them in an Order.

So far as is known, the Scansores are the only birds in which the front plantar (*flexor perforans digitorum*) leads only to the third digit (the middle toe of anisodactyle birds, or the outer front toe of zygodactyle birds). This character alone is therefore sufficient to diagnose the Scansores; but the further character may be added that they are zygodactyle (*i. e.* the outer front toe, or fourth digit, is reversed, and becomes the outer hind toe). The latter character, however, is not confined to the Scansores, but is also found in the Pseudo-Scansores (Coccyges, Musophagi, Striges, and Psittaci), and to some extent in *Pandion* and *Leptosomus*.

In the arrangement of their palatal bones the Scansores vary in a remarkable manner. The Indicatoridæ resemble the Passeres in being ægithognathous; the Capitonidæ are, some of them, ægithognathous and some desmognathous; the Picidæ are schizognathous, but the split vomer and small maxillo-palatines are so peculiar that they have been called saurognathous; whilst the Rhamphastidæ, Galbulidæ, and Bucconidæ are desmognathous.

The femoro-caudal and semitendinosus muscles are always present, but the ambiens and accessory femoro-caudal are always absent. The accessory semitendinosus is nearly always present, but is absent in some of the Picidæ.

The Galbulidæ and the Bucconidæ have cæca and a nude oil-gland. The Rhamphastidæ, the Capitonidæ, and the Indicatoridæ have no cæca and a tufted oil-gland. The Picidæ have also a tufted oil-gland, and the cæca are either absent or only rudimentary.

In the arrangement of their feather-tracts these families do not differ very much from each other. In none of them is there an interscapular fork to the spinal tract, as there is in *Upupa*; but in all of them there is a post-scapular bare spinal space, as in *Eurylæmus* and *Hirundo*. In the Indicatoridæ, the Galbulidæ, and the Bucconidæ the spinal tract passes between the scapulars and then divides into two branches, one of which passes on each side of this bare space; but in the Picidæ, the Rhamphastidæ, and the Capitonidæ this fork is omitted, and the spinal tract suddenly ends in a bare dorsal space. The arrangement of the feather-tracts on the rump varies, but that on the underparts is remarkably constant. There are two distinct feather-tracts on each side of the breast, coalescing on the shoulder (as in *Upupa*), except in the Galbulidæ, where they coalesce along the whole line. The Galbulidæ are also abnormal in having a transverse clavicular feather-tract on each side of the breast.

From these characters the suborder Scansores and the six families it contains may be diagnosed as follows:—

1. The fourth digit is reversed.
2. The front plantar leads to the third digit only.

The Scansores may be subdivided into two groups:—

A. Passerine Scansores, with cæca and with a nude oil-gland.

*Bucconidæ*: vomer absent; a clavicular feather-tract on each side of breast.

*Galbulidæ*: vomer present; no clavicular feather-tract on each side of breast.

B. Picine Scansores, without cæca and with a tufted oil-gland.

*Picidæ*: vomer slender, pointed, split; maxillo-palatines free.

*Indicatoridæ*: vomer bifid; maxillo-palatines free; spinal feather-tract surrounding a post-scapular naked space, but otherwise continuous.

*Capitonidæ*: vomer bifid; maxillo-palatines sometimes free, sometimes coalesced; spinal feather-tract interrupted by the absence of the anterior postscapular fork.

*Rhamphastidæ*: vomer truncated; maxillo-palatines coalesced.

### *Heterodactyli.*

The Trogons are very curious birds. They agree with the Scansores and the Pseudo-Scansores in having two toes in front and two behind; but they differ from both those groups (and from all other birds) in having the second digit (the inner front toe of anisodactyle birds) reversed. In a heterodactyle bird the hallux is the outer of the two hind toes, whereas in a zygodactyle bird the hallux is the inner one. This perfectly unique arrangement of the toes is correlated with a perfectly unique arrangement of the deep plantar tendons. The front plantar leads to the two front toes, and the hind plantar to the two hind toes. This arrangement (apparently so simple and natural) is in strong contrast with those of the two zygodactylé groups. In the Scansores the front plantar leads to the third digit only, whilst in the Pseudo-Scansores the hind plantar leads to the first digit (the hallux) only.

In other respects the Trogons are also remarkable. They combine the cranial characters of *Caprimulgus* with the pterylosis of *Motacilla*, and the thigh-muscles and sternum of *Alcedo*. They are schizognathous and holorrhinal; and they are the only birds in the Order of Pico-Passeres which permanently retain their basipterygoid processes.

The Heterodactyli consist of one family only, the Trogonidæ.

V.—*Notes on the Birds of Palawan.* By JOHN WHITEHEAD.

(Plate II.)

I LEFT Labuan on 18th June, 1887, in a small trading-steamer belonging to a Chinaman who had several stores on the southern end of Palawan. The steamer landed us at Taguso, on the S.E. coast (many miles south of Puerto Princesa), promising to return in two and a half months; but as she did not turn up until nearly four, I was unable to change my collecting-ground to the N.W. coast, as I had intended. When we landed in Taguso there were no Spaniards there, and the natives were doing much as they liked. Palawan is notorious for the bad characters which have taken refuge there from the Sulu and other islands; and twice since I have been in the "Far East" have the Sulus murdered the Chinese and sacked their stores.

In the interior of Palawan is another race, nearly related to the Bornean Dusans and Muruts; these people are under the thumb of the coast Sulus. The Sulus will not allow a Dusan to sell any jungle-produce to the Chinese, but oblige the Chinese to buy from them, as middle men. As one Sulu said to me, when I asked questions on this subject, "How was he to get a living if things were otherwise?"

All my attempts to make friends with the Dusans failed; the Sulus, though promising to help me, were all the time, I believe, influencing the Dusans against me, they thinking, no doubt, that my real object was to trade direct with the natives inland. After two weeks' palavering, I went some miles inland to visit a chief, but he would give me no assistance. A few days later I went to the mountains, my own men carrying sufficient provisions for three days; but the natives we met were very uncivil, refusing even to show us the right paths.

A few days after my return to the coast some fifty Dusans came to the store and threatened to attack us if we went inland again. As my party only numbered nine, and there was nothing to be gained by such short expeditions, I did not attempt the interior again in that direction.

Some weeks afterwards I made friends with a Dusan chief some distance off, and spent a week on a mountain about 2000 feet high. On this hill I collected *Cryptolopha montis*, but no other mountain-species. I should rather doubt if an island like Palawan, which has no land above 6000 feet in altitude, has a very numerous highland fauna.

The continued rain during the first months of my sojourn in Palawan made preserving large specimens very difficult, most of my birds being obliged to be dried before the fire.

The accommodation we had to put up with was very bad, the store being placed on the edge of a mud-swamp. I built my bed up with empty oil-cases and planks. At high water the sand inside the shed became quite soft. Numbers of disgusting land-crabs would heave up heaps of wet, stinking, black mud during the night all over the store, and often enough you would find a small eruption within a few feet of your bed in the morning. Then there was a peculiar red boiled-looking lobster, which made great heaps all over the place.

The Chinese smoked opium during a greater part of the day and were all ill with fever; this was only to be expected from the position of their house. All my men and I myself suffered from this several months after we had left the island.

I will now try to give some account of our collecting-grounds. The coast is fringed with high forest, reaching inland about half a mile; this fringe is probably left by the natives to break the wind and to shelter their rice-crops. In this forest *Megapodes* abound, *Pittas* and *Jungle-fowl* are plentiful, and, more rarely, that prince of birds, *Polyplectron*. In the trees above the most numerous are the various species of *Pigeons* and screaming *Parrots*, but nearly all the small species in the following list may be met with.

Behind this band of forest are plains of coarse grass, inhabited by two species of *Quails*, *Cisticolæ*, and *Centrococcyges*; a few white *Egrets* attend the *Sulu* cattle. This sort of scenery continues until you reach the foot of the mountains, no great distance from the coast. When the great rush of

birds from the far north takes place these plains have a much more lively aspect; hundreds of Wagtails, Pipits, Snipes, and other small Waders are continually flying up on your approach.

The swamps at the river-mouths have also their occupants—Sunbirds, Rhipiduras, and several species of Herons and Kingfishers, which are not met with elsewhere.

Towards the middle of September, after we had collected all the resident species within our reach, the sea-coast, with its rocky points and estuaries, was by far the most attractive hunting-ground; for about that time the great winter migration from the north reaches the coasts and forests of Palawan. Most Waders passed between 5 and 6 P.M., all in one direction, S.W.; if a small flock settled and was disturbed, never did the birds return, but still hurried on their southward course. By continuing this line of flight they would touch Balabac, and then turn due south down to the coast of Borneo, where some remain for the winter, but most seem to travel further still. When the wind was blowing gales from the S.W., bringing up heavy clouds loaded with rain, then was the liveliest time for moving; on calm, and even moderate days, it was seldom worth while to visit the coast. All these great travellers were as fat as butter, and in no state for a bird-collector.

The number of species as yet recorded from the island of Palawan is 157, of which 36 are peculiar to that island, 19 are found only in the Philippines, 36 in the Malayan, but not in the Philippine region, and 13 are common to both regions. Then there are no less than 49 migrants, which distribute themselves over the Eastern Archipelago during the northern winter. One species (*Cryptolopha montis*) is Bornean and not Malayan, one (*Dendrophila frontalis*) is Malayan but not Bornean, and one (*Ægithina viridis*) has been hitherto only found in Borneo and Sumatra. Lastly comes *Gallus bankiva*, which is found throughout the Malayan and Philippine regions, but of which I believe no specimens are as yet known from Borneo.

Of 36 species peculiar to the island, 5 only have their

allies in the Philippines; 4 others are forms distinct from those of either the Malayan or Philippine regions.

The Malayan forms predominate by 36, as against 19 from the Philippines; but there is a curious absence of several weak-winged Malayan genera, such as Trogons and Barbets, in the list. The Timeline birds are all peculiar to Palawan, and the two Pittas arrive from the Philippines; so that if there ever was any connexion between Palawan and Borneo, or with any other Malayan territory now more remote, it must have existed for only a short period of time. As yet, I believe, no species of *Merops* has been met with in Palawan, which is curious, as in the large adjacent islands this genus is very plentiful.

The species in the following list peculiar to Palawan are marked thus †.

Migrants \*.

P. = Philippine region only.

M. = Malay region only.

The nomenclature is mostly taken from Mr. Sharpe's article on my collection from Palawan published in this Journal in 1888 (p. 193).

1. *CACATUA HÆMATUROPYGIA*. P.

Common; generally met with in pairs; has a slow flapping flight, and often screams when on the wing. During the heat of the day Cockatoos rest in the shade high up in the trees, where they carry on their flirtations, screaming and erecting their crests and performing many antics. Towards evening they fly in flocks to the rice-fields, doing much harm before the harvest.

Eye black, orbit white; bill pale blue, white at the tip; feet dull blue. Sulu, "Agi."

2. *TANYGNATHUS LUZONENSIS*. P.

Very common. This Parrot is one of the first birds that attracts the traveller's attention in Palawan, as it flies swiftly from forest to forest in small flocks, screaming loudly. In flight the wings are often kept much below the level of the body. This species frequents the tops of high trees, feeding

on various jungle fruits, but often during the heat of the day they hide amongst thick-foliaged trees only a few feet from the ground, from which they dash out with loud screams when disturbed.

Bill rosy red; feet horny green; the pupil black, with a small black ring round it.

3. *PRIONITURUS CYANEICEPS*. †.

This beautiful little Parrakeet is nearly as common as the last species, but it was some time before I could make them out to be different birds, owing to the swift flight of both species; then, again, the curious racket tail-feathers were not visible, nearly all the birds being in full moult. In August, however, I collected some beautiful specimens of both sexes whilst they were feeding on some fruit-bearing trees only a few feet from the ground.

The racket tail-feathers apparently grow without the web on the shaft, as in some immature feathers the stem was still buried in the sheath and bare, whilst in the young of both sexes the short shafts are slightly webbed; so that it would seem that the bird does not itself destroy the web of the two centre tail-feathers, as the Motmots are known to do.

Eye black; bill dull white; feet greenish.

4. *ASTUR TRIVIRGATUS*. M., P.

Only one young bird shot.

5. *SPIZAETUS LIMNAETUS*. M.

Scarce.

6. *SPIZAETUS PHILIPPINENSIS*. P.

Obtained by Dr. Platen.

7. *BUTASTER INDICUS*. \*.

8. *HALIAETUS LEUCOGASTER*. M., P.

9. *SPILORNIS BACHA*. P.

A specimen of this species shot by me, in a rice-field, fell from a high tree, and the crown of its head struck on a log, completely cutting every feather off. As it seemed to me a bird I had met with in Borneo, I did not preserve it.



J. G. Keenan del. et lith.

Minnert Bros. imp.

BAZA LEUCOPAIS

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7

... .. which was probably of this species  
... .. (Arnold), on the 12th September.

... ..  
... ..  
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... ..

... .. to state that his name of *isegopsis*  
... .. (was a child) was misprinted *isegopsis*, and  
... .. changed back to his original spelling.

... WHITEHEAD. ♀.

"hoo, hoo," of this fine Owl first attracted my  
... .. one evening when returning to the  
... .. being quite startled by the loudness  
... .. several times saw these birds during the day  
... .. as they had probably been disturbed from  
... .. On the mountains inland I heard

... ..

... .. of Mexico, who described  
... .. (cf. *Ibid.*, 1888, p. 372). As  
... .. of name, I have written to



J. G. Keuleu

BAZA LEUCOPAIS

10. *PERNIS PTILONORHYNCHUS*. M.

Only one specimen procured.

11. *FALCO PEREGRINUS*. \*

A winter migrant, arriving about the middle of September.

12. *HYPOTRIORCHIS SEVERUS*. \*

I met with this little Hawk several times on the sea-coast, and often started before daylight to a point on the coast where it used to pass, but unfortunately never got within shot. X

13. *CIRCUS SPILONOTUS*. \*

I saw a white Harrier, which was probably of this species (as it is very common in Borneo), on the 12th September.

14. *PANDION HALIAETUS*. \*

One or two seen on the coast.

15. *BAZA LEUCOPAIS*. †. (Plate II.)

*Baza leucopias*, Sharpe, Ibis, 1888, p. 195.

If this species is confined to Palawan, it will be interesting to find a strong-winged bird keeping to such a limited area. I rather expect it will be met with in the Philippines, which are so near to the eastern parts of Palawan.

Mr. Sharpe begs me to state that his name of *leucopais* (λευκός, white; παις, a child) was misprinted *leucopias*, and he wishes it changed back to his original spelling.

16. *SYRNIUM WHITEHEADI*. †.

The loud "hoo, hoo," of this fine Owl first attracted my attention, I remember, one evening when returning to the shed under which we lived, being quite startled by the loudness of its note. I several times saw these birds during the day in the swamps, but they had probably been disturbed from the forests close at hand. On the mountains inland I heard several.

Orbit pink; eye and bill black.

This is the *Syrnium wiepkeni* of Blasius, who described Platen's Palawan collection (*cf.* Ibis, 1888, p. 372). As to the question of priority of names, I have written to

Mr. Bowdler Sharpe and add his reply:—"It is certainly unfortunate that both you and Dr. Platen collected at the same time in Palawan, and that the names given by Dr. Blasius and myself should clash. I do not think, however, that the priority of titles claimed by Dr. Blasius can be maintained for a moment. I might have described your collection many weeks before I did publish the paper, but I was glad to accept the offer of the Editors of 'The Ibis' to illustrate it with two plates. I therefore kept it back till the April number of that Journal, and I contented myself with putting a notice in 'Nature' to the effect that I had described your collection, and that the account would appear in April. Dr. Blasius appears to have published his descriptions of the new species in the laudable desire to procure credit for his countryman, Dr. Platen; and if these descriptions had appeared in 'Ornis' in anything like reasonable time, we might have had some difficulty in determining the question of priority. I find, however, that the April number of 'Ornis,' with Dr. Blasius's paper in it, was delivered in London in the middle of June, and allowing liberally for delay in receiving the number, there can be little doubt that 'The Ibis' appeared long before it. As to the preliminary descriptions in a Brunswick newspaper, on which Dr. Blasius bases his priority of names, I should never think of allowing such a title to take precedence of one published in a regular manner, and I think you are quite right in adopting all the names which I gave to your species."

17. SCOPS EVERETTI. †.

I find that Mr. Sharpe has not much faith in his *Scops fuliginosa*, which in all probability is only the young of *S. everetti*.

18. NINOX SCUTULATA. \*.

Met with by Dr. Platen only.

19. THRIPONAX HARGITTI. †.

This fine Woodpecker was met with in some of the forests

in fair numbers, but was very rare in other localities, keeping high up in the trees.

Eye pale yellow.

20. *CHRYSOCOLAPTES ERYTHROCEPHALUS*. †.

Fairly common in certain localities.

Eye lake-red; feet greenish olive; bill pale yellow at the tip, then deeper; at the base dull greenish.

21. *TIGA EVERETTI*. †.

22. *MULLERIPICUS PULVERULENTUS*. M.

23. *EURYSTOMUS ORIENTALIS*. M., P.

Only a few met with.

24. *ALCEDO BENGALENSIS*. \*.

A winter visitant to Palawan, arriving about the 20th September.

25. *ALCEDO ASIATICA*. M.

Scarce.

26. *PELARGOPSIS GOULDI*. P.

Scarce, frequenting the mangrove-swamps near the coast.

27. *CEYX RUFIDORSA*. M.

Scarce.

28. *HALCYON PILEATA*. \*.

A winter migrant, arriving about 23rd September.

29. *HALCYON COROMANDA*. M., P.

Scarce.

30. *HALCYON CHLORIS*. M., P.

This species was more common in July than in other months, but by September had entirely disappeared, probably having left for Borneo.

31. *ANTHRACOCEROS LEMPRERI*. †.

This interesting Hornbill is by no means rare, but is difficult to shoot, frequenting high trees.

32. *CHÆTURA GIGANTEA*. M.

Fairly common, but requires a good shot to bring it down, flying swiftly and very high.

33. CALLOCALIA TROGLODYTES. P.  
Met with on the north-west coast.
34. CALLOCALIA FUCIPHAGA. M., P.  
Common.
35. BATRACHOSTOMUS CORNUTUS. M.  
Only one specimen collected.
36. CAPRIMULGUS MACRURUS. M.  
Fairly common.
37. CAPRIMULGUS MANILLENSIS. P.  
Met with by Dr. Platen only.
38. CUCULUS SONNERATI. \*.  
I believe only a winter visitor.
39. CUCULUS CANOROIDES. \*.  
Met with by Dr. Platen only.
40. CACOMANTIS MERULINUS. M., P.  
Fairly common, frequenting the grass plains.
41. HIEROCOCYX STRENUUS. \*.  
Met with by Dr. Platen only.
42. CHRYSOCOCCYX XANTHORHYNCHUS. M.  
A few seen.
43. SURNICULUS LUGUBRIS. M.  
Scarce.
44. EUDYNAMIS MINDANENSIS. P.  
See my note on this species ('Ibis,' 1888, p. 409). The Palawan species is the true *E. mindanensis* and not *E. malayana*. The young female has a greenish gloss on the plumage, while that of the male is blue.
45. DRYOCOCCYX HARRINGTONI. †.  
Fairly common; habits similar to those of *Rhamphococcyx erythrognaethus* of Borneo.
46. CENTROCOCCYX EURYCERCUS. M.  
Scarce.

47. *CENTROCOCYX AFFINIS*. M.

Fairly common.

48. *LANIUS LUZONENSIS*. \*.

A winter visitor, arriving about 25th September.

49. *GRAUCALUS SUMATRENSIS*. M.

Fairly common.

50. *LALAGE DOMINICA*. M.

Met with by Dr. Platen only.

51. *ARTAMUS LEUCOGASTER*. M.

Met with by Dr. Platen only.

52. *PERICROCOTUS IGNEUS*. M.

Fairly common.

53. *PERICROCOTUS CINEREUS*. \*.

A winter visitor, arriving about the 19th September, in small flocks. They frequent the jungle trees that fringe the coast and migrate south-west.

Eye, feet, and bill black.

54. *HYLOTERPE WHITEHEADI*. †.

Scarce; met with in old forest.

55. *CHIBIA PALAWANENSIS*. †.

Fairly common, frequenting the edges of forest.

56. *BUCHANGA PALAWANENSIS*, sp. nov. †.

This species is not *B. leucophæa*, being a smaller and much darker bird, and having a jet-black patch of feathers over the nostrils. The eye in *B. leucophæa* is brick-red, and in this new species dark grey, so I venture to describe it under the name of *Buchanga palawanensis*.

*Adult male.* General colour above dark steel-grey. Wings darker and with a greenish gloss; quills black; inner web of primaries sooty black. Tail near the base slightly lighter than the back, but deepening to sooty black at the end, with a slight greenish gloss. Nasal bristles and a small part of the forehead next the bill black; feathers round eye and ear-coverts sooty black. Under surface dark steel-grey, without much gloss on the throat; under wing-coverts sooty

grey, with steel-grey edgings. Bill and legs black; iris dark grey.

Total length 9·5 inches; tail to tip of outer feather 4·8; wing 5·2.

*Female.* Like the male, but slightly smaller.

57. HEMICHELIDON SIBIRICA. \*.

Met with by Dr. Platen only.

58. RHIPIDURA NIGRITORQUIS. P.

Fairly common, frequenting the mangrove-swamps on the coast.

59. SIPHIA LEMPRIERI. †.

Fairly common, frequenting the low growth in the old forest.

60. SIPHIA ERITHACUS. †.

Fairly common, frequenting the low and tangled growth near the ground in old forest. I found a nest of this species on the lower slopes of one of the mountains; it was placed amongst some dead palm-leaves, about three feet from the ground, and composed of the same leaves, but lined with fine plant-stalks. The eggs were two in number, of a pale blue colour, slightly spotted at the larger end with red.

Eye black; mandible black, lower light cobalt; feet white.

61. XANTHOLESTES PANAYENSIS. P.

Frequents the old forest.

62. CRYPTOLOPHA MONTIS.

This, perhaps the most interesting discovery of my expedition to Palawan, throws a light on what may be expected from the highlands of that island, that they will probably be found to have an ornithology similar to that of the highlands of Borneo. I discovered this little Flycatcher first as a new species on Kina Balu (Borneo), and then met with it again for the first time in Palawan. It was shot on the top of a small mountain about 2000 feet high, and is the only highland form as yet procured in Palawan.

63. MUSCICAPA GRISEISTICTA (Swinhoe). \*

A winter migrant to Palawan, arriving about the 10th September.

64. HYPOTHYMIS AZUREA. M., P.

Fairly common.

65. ZEOCEPHALUS CYANESCENS. †.

Fairly common in the forests, frequenting the lower branches of high trees.

Eye black; bill and legs cobalt-blue; inside of mouth bright green.

The adult female differs from the male in having a greyish-brown back, light brown wings, each feather being centred with dull black, tail reddish brown, dusky brown at the tip. Some are light brown on back and wings, with rusty brown flanks and white abdomen. Young males are like the females.

66. ACROCEPHALUS ORIENTALIS. \*.

Met with by Dr. Platen only.

67. HIRUNDO RUSTICA. \*.

A winter visitor, arriving in September.

68. HIRUNDO JAVANICA. M., P.

Fairly common.

69. ORIOLUS PALAWANENSIS. †.

Fairly common, frequenting high trees in old forest.

70. ORIOLUS XANTHONOTUS. M.

Scarce.

71. PITTA SORDIDA. P.

Found in fair numbers in the forest near the coast.

Young different from the adults. Above dull brownish green; rump bright blue; head rusty brown; cheeks, nape, and sides of head rusty black, forming a distinct ring round the back of the head; throat dusky black, with broad white band stretching across to the sides of the neck; chest rusty brown; abdomen and under tail-coverts pale pink. Wings as in the adult, but without the bright shoulder-patch, which is greenish

blue, with the outermost feathers centred with white, forming a distinct band.

72. *PITTA ERYTHROGASTRA*. P.

Fairly common, like the last species, and met with on the mountains inland up to 2000 feet. The Sulu name for this bird is "Wou wā," which, when whistled, is similar to this Pitta's note.

Eye hazel; legs slate-blue; bill black.

The young are quite different from the adults, being of a dark brown above, with slate-blue tails and pinkish-brown breasts, running into pale pink on the abdomen; neck and upper breast-feathers edged with brown; bill orange-red at tip and base, rest black.

73. *TURDINUS RUFIFRONS*. †.

Common, but difficult to shoot, owing to its habits, frequenting, as it does, the tangled masses of herbage near the ground.

Eye almost white; legs and lower mandible pale blue, upper mandible black.

74. *MIXORNIS WOODI*. †.

Fairly common, frequenting the thick forest-growth near the ground.

Eye dull yellow.

I found a nest of this species, which was placed in a creeping bamboo, about three feet from the ground, and contained two eggs, which were white spotted with red. The nest is a loose ball of leaves slightly lined with fine stalks.

75. *ANUROPSIS CINEREICEPS*. †.

Scarce, frequenting the thick tangled masses of jungle. I took a nest of this species on 2nd September. The nest, which was placed close to the ground and made of bamboo-leaves, contained two blue eggs thickly speckled with dark brown.

76. *PTILOCICHLA FALCATA*. †.

Fairly common in certain localities, frequenting the tangled growth on the ground.

Eye hazel; legs horny brown; beak black, lower mandible dull white at the base.

77. *IRENA TWEEDDALII*. †.

Fairly common, though local, feeding on fruits and berries. Eye brick-red in male, brown in female; feet and bill black.

78. *PYCNONOTUS CINEREIFRONS*. †.

79. *PHYLLORNIS PALAWANENSIS*. †.

Fairly common, frequenting the more open spots in the forest.

80. *ÆGITHINA VIRIDIS*. Borneo and Sumatra only.

81. *MICROPUS MELANOCEPHALUS*. M.

82. *IOLE STRIATICEPS*. †.

83. *CRINIGER PRATER*. †.

84. *CRINIGER PALAWANENSIS*. †.

It is very difficult to distinguish these last three species when in the forest.

85. *MONTICOLA SOLITARIUS*. \*.

A winter migrant, arriving about the 26th September.

86. *CITTOCINCLA NIGRA*. †.

Rather local, not easily shot, frequenting the thick low growth close to the coast and generally keeping well out of harm's way. The note is a "chick, chick," sharply uttered. The young were fully fledged by the end of June. They are spotted with brown above and on the throat and wings, like the young of the Robin; the primaries are edged with brown; abdomen white.

Adults: eye, feet, and bill black. Young: feet and bill bluish white.

87. *PHYLLOSCOPUS BOREALIS*. \*.

A winter visitor, arriving about 16th September.

88. *CISTICOLA CISTICOLA*. M.

Eye hazel; legs and lower mandible flesh-colour, upper light brown.

Fairly common on the grass-plains, but difficult to collect, as you never know exactly where the bird is in the long grass. It suddenly starts up within a few yards, and flies with a jerky flight for about fifty yards, when it is again lost sight of in the long grass. But it will settle at times on the lower branches of the small trees which stud these plains, and may then be easily approached.

89. ORTHOTOMUS RUFICEPS. M.

Scarce.

90. MOTACILLA FLAVA. \*.

A winter visitor, first seen on 13th September, when the vanguard passed in a south-westerly direction. In October they were still migrating in hundreds, but were mostly young birds.

91. ANTHUS GUSTAVI. \*.

Mixed up with the flocks of *Motacilla flava*; first seen about 20th September.

92. ANTHUS MACULATUS. \*.

Obtained by Mr. A. H. Everett.

93. PARUS AMABILIS. †.

This beautiful little Titmouse is fairly common in the forest, frequenting the high trees in small parties, probably families. The young were fully fledged in the beginning of September.

I do not believe that *Parus elegans* was found in Palawan by Professor Steere, though a skin of *P. elegans* in the British Museum is labelled as from that island. But the date it bears is too near to the dates on other specimens of the same species from Luzon, to make it at all doubtful where the bird really came from. All specimens of *Parus* collected by Dr. Platen and myself in Palawan are *P. amabilis*.

Eye and bill black; bill at base bluish; feet dull cobalt-blue.

The description of the adult female (in B. M. Catalogue, vol. viii. p. 22) from typical specimens collected by Professor

Steere really applies to the adult male only, so I take it that they were wrongly sexed.

*Adult female.* Head greenish black, slightly greener on throat; a pale yellow collar at the back of the neck; back olive-green, slightly grey on the rump. Upper tail-coverts greenish black; tail brownish black, tipped and marked as in the male, but to a very much less degree. Wings dark brown, marked as in the male, but not nearly so pronounced; primaries externally washed with greenish yellow, but quills not tipped with white; rest of the under surface slightly duller than in the male.

The young are brown above, more greenish on the lower back, with a distinct yellow collar, as in the female; beneath pale yellow, with a slightly greyish tinge on the throat. Some young males have the adult plumage on the throat and breast, but the back is much mingled with immature feathers, which have faded into rusty brown. The white spots on the wings and tail often become worn off.

94. *DENDROPHILA FRONTALIS*. M. (but not Bornean).

This Nuthatch is fairly common in the more open country, especially amongst the dead trees, which are left standing, often in numbers, in the rice-fields. This, curiously enough, is not the Bornean species, *D. corallipes* (which has bright-red legs, and is of a richer colour in plumage), but is the true *D. frontalis* of Java, Sumatra, and other islands. Thus it is doubtful whether *Dendrophila frontalis* reached Palawan *via* Borneo. *D. aenochlamys* of the Philippines is more like the Bornean species, both being more brightly coloured than *D. frontalis*, but the Philippine bird is brown-legged like *D. frontalis*. The orbital skin of the typical *D. frontalis* is lemon-yellow, that of the Palawan *D. frontalis* grey.

Sulu, "Baltelik."

Eye straw-yellow; bill vermilion; orbital skin grey; legs light brown.

95. *MYZANTHE PYGMEA*. P.

Scarce, feeding on small fruits and berries.

## 96. PRIONOCHILUS JOHANNÆ. †.

Fairly common, frequenting open places in the forests, feeding on small fruits.

In Mr. Sharpe's paper on my Palawan collection, he did not describe the female, so I add a description:—General colour above olive-green, with a bright yellow patch on the rump; head slightly grey, with a dull yellow patch on the crown; wing-coverts and tail brownish black, edged with greenish yellow; primaries edged with grey; sides of face and ear-coverts greyish brown, with a distinct white cheek-stripe, followed by a brown line along the side of the throat; under surface bright yellow, slightly deeper on the fore neck; throat almost white, slightly mingled with yellow; flanks dull greyish yellow.

This species has a longer bill than *P. xanthopygius* of Borneo, its nearest ally.

## 97. CINNYRIS SPERATA. P.

This little Flower-pecker was rather scarce; most of my specimens were collected in a large swamp, where the trees at the time were in flower, and were frequented by nearly all the other Sun-birds found in Palawan. The females, however, are very difficult to obtain; during four months I only procured one specimen.

## 98. CINNYRIS AURORA. †.

Fairly common in certain localities, where the country is open enough; in habits and note exactly resembling *C. pectoralis*. On a large plain, studded here and there with clumps of bamboo and low trees, I collected a few pairs, all of which had nests, on the 29th June. The nests hang from the ends of the boughs, often in a very exposed position. The eggs are two in number, and are similar to those of *C. pectoralis*.

## 99. CHALCOSTETHA INSIGNIS. M.

Very common in the mangrove-swamps.

## 100. ÆTHOPYGA SHELLEYI. †.

Fairly common, frequenting the edges of old forest.

The female is, I believe, undescribed, and is above bright

olive-green, greyer on head and rump; wings brown outwardly, edged with reddish brown. Two centre tail-feathers olive-green, with a black blotch near the tip, which in certain lights is metallic green; rest of tail black, tipped with olive-yellow, edged outwardly near the base with reddish yellow. Under surface greyish olive on the sides of the face, throat, and breast; abdomen pale yellow, deepening on the under tail-coverts.

Faded females are dull brown above; pale greyish brown on the throat, breast, and flanks.

101. *ANTHREPTES MALACCENSIS*. M.

Scarce.

102. *ARACHNOTHERA DILUTIOR*. †.

Plentiful in the mangrove-swamps, feeding amongst the flowers.

Eye hazel; orbit sulphur-yellow; feet dull blue.

103. *CORONE FUSILLA*. †.

Plentiful in all old jungle, feeding entirely on fruit. This species never seems to settle on the ground or to visit the vicinity of native villages, and I never saw it near the Sulu cattle. Here we find in Palawan an interesting member of the Crow family which has attained none of the pernicious habits that make his more civilized brethren in other parts of the globe so renowned. It will be interesting to see if, when Palawan becomes opened up for planting and its forests destroyed, its Crow will become more civilized too, and change its present mode of life into that of a garbage-eating pilferer. I am afraid civilization will benefit the Crow as little as it does the native, so that our philanthropic European race will improve them both, as it generally does, off the face of the earth.

But to return to the Crow: it is, no doubt, one of the most interesting birds in Palawan, and may often be noticed making flights from forest to forest, with neck outstretched, and uttering a peculiar "Ka-ka-gug-gug" note. During flight the wings are often held below the body, the primary feathers only being used with a quick fluttering motion.

Eye, bill, and feet black.

104. *STERNIA VIOLACEA*. \*.  
Met with by Dr. Platen only.
105. *CALORNIS PANAYENSIS*. P.  
Scarce.
106. *EULABES PALAWANENSIS*. †.  
Fairly common.
107. *OXYCERCA EVERETTI*. †.  
A few collected; feeding on rice or grass-seeds.
108. *MUNIA JAGORI*. P.  
Common on the native rice-fields.
109. *OSMOTRERON VERNANS*. M.  
Common on the more open spaces, frequenting the small clumps of trees found on the plains.
110. *TREERON NASICA*. M.  
Habits as of the last species.
111. *CARPOPHAGA ÆNEA*. M.  
Very plentiful, frequenting the swamps during the heat, and the jungle fruit-trees early and late in the day.
112. *CARPOPHAGA BICOLOR*. M.  
Common on all the small islands round Palawan.
113. *LEUCOTRERON LECLANCHERI*. P.  
Met with by Dr. Platen only.
114. *TURTUR DUSSUMIERI*. P.  
Met with by Dr. Platen only.
115. *CALENAS NICOBARICA*. M.  
Met with by Dr. Platen only.
116. *PTILOPUS MELANOCEPHALUS*. M.  
Fairly common, mingling in flocks with *Osmotreron vernans*, and in like localities.
117. *CHALCOPHAPS INDICA*. \*.  
A migrant to Palawan, I believe, as it was very common when we first arrived in the island, but by September none were to be met with.

118. *TURTUR TIGRINA*. M.

Scarce and very local.

119. *MACROPYGIA TENUIROSTRIS*. P.

Fairly common, frequenting thick undergrowth and low jungle.

120. *POLYPLECTRON NAPOLEONIS*. †.

This splendid little Pheasant is scarce and local, all my specimens having been collected in one forest, and although my men set hundreds of snares in other forests we never met with another during three months. One female was eaten by a wild cat in one of the traps, and I rather expect this little tiger destroys numbers of this beautiful bird.

This species, like the Argus Pheasant, has its "showing-off" arena, a neatly-swept patch some three or four feet in diameter; the chosen spot is generally in some unfrequented part of the forest. I often noticed that this ring had a small hump of earth in the middle, where no doubt the male birds show off their splendid plumage and perhaps do battle. Their battles, if they have any, must be very short and decisive, as the double spurs of the cock would be sufficient to cut his adversary into bits.

I am inclined to think that the birds pair and are not polygamous, as we collected three pairs; but that was not during the nesting-season, which is probably in the months of December and January.

Eye dark hazel; skin round eye and patch on cheek of the male reddish pink; legs blackish brown.

Mr. A. H. Everett gives the name as "Tandikan"; but the natives of Palawan call it "Sulu Malāk" and "Dusan Bērtik."

121. *GALLUS BANKIVA*. M., P.; but, as yet, not found in Borneo.

Common in the forests. I captured a cock and two hens, which soon became tame.

122. *EXCALFACTORIA CHINENSIS*. M.

Fairly common on the open plains.

123. *TURNIX NIGRESCENS*. P.

Mr. Ogilvie Grant (*vide* Ibis, 1889, p. 459) has shown me *T. nigrescens* of Tweeddale, from which it is impossible to separate the Palawan bird; but Professor Blasius has named a species from this island, *T. haynaldi*, which may be different from those collected by myself.

This species is fairly common on the coarse grass plains, especially in dry localities, where the grass is poor. If flushed more than once it would often fly straight into the forests which bordered these plains, thus rendering further pursuit impossible.

On the 3rd of September I found a nest containing three eggs hard set. The birds had made a decided nest of grass-stems amongst some tufts of grass and low-growing shrubs in a stony place. The eggs are of a dull greenish grey, finely speckled all over with black. The male was sitting.

Legs pale yellow. Bill at base king's yellow, tip black. Feet yellow, with a slight greenish shade.

123 *a*. *MEGALODIUS CUMINGI*. See my notes, Ibis, 1888, p. 411.

124. *ÆGIALITIS GEOFFROYI*. \*

Arrives in flocks about the middle of August, and seemed to have taken up its quarters, not moving on so rapidly as other species.

125. *ÆGIALITIS DUBIA*. \*

First seen on 30th July, singly or in pairs.

126. *ÆGIALITIS CANTIANA*. \*

Arrives about 17th September.

127. *ÆGIALITIS MONGOLICA*. \*

Only one shot, on 25th September.

128. *ÆGIALITIS VEREDA*. \*

Met with by Dr. Platen only.

129. *ÆGIALITIS PERONI*. M.

The only resident species.

## 130. CHARADRIUS FULVUS. \*.

Begins to arrive in small flocks about 20th September; generally rests but a short time, and flies far out to sea only a few feet above the water.

## 131. CHARADRIUS HELVETICUS. \*.

Only one specimen obtained on 3rd of October; apparently much later than *C. fulvus* in its southward movement.

## 132. STREPSILAS INTERPRES. \*.

First seen on 19th September, rapidly passing S.W., generally in pairs.

## 133. ESACUS MAGNIROSTRIS. \*.

Only one obtained.

## 134. GLAREOLA ORIENTALIS. \*.

## 135. LIMICOLA PLATYRHYNCHA. \*.

Met with by Dr. Platen only.

## 136. NUMENIUS LINEATUS. \*.

Only a few seen, singly, on and after September 3rd.

Whimbrels were more plentiful, migrating in small flocks; but I failed to obtain one.

## 137. TRINGOIDES HYPOLEUCUS. \*.

Plentiful after 30th of July.

## 138. TOTANUS CALIDRIS. \*.

First seen on 17th September, plentiful a few days later, migrating quickly in small flocks.

## 139. TOTANUS BREVIPES. \*.

A few seen on and after September 10th.

## 140. TOTANUS GLAREOLA. \*.

First seen on July 30th.

## 141. TEREKIA CINEREA. \*.

Only one shot, on 20th September, feeding in company with other small Waders.

## 142. TRINGA RUFICOLLIS. \*.

First seen on 17th September. This little Stint did not seem to be in such a hurry to get south as most of the other

species, spending a few days about the same place, migrating in pairs or in small flocks.

143. *GALLINAGO MEGALA*. \*

First seen on 30th September.

144. *AMAURORNIS PHŒNICURA*. M.

Met with by Dr. Platen only.

145. *RALLINA FASCIATA*. M., P.

Fairly common and resident, frequenting the jungles and hills far inland. The young are covered with black down, and were fully fledged in the middle of July.

Eye brick-red. Legs pink. Upper mandible black, lower greyish blue.

146. *HERODIAS INTERMEDIA*. \*

A winter migrant, arriving about the 10th September.

147. *BUBULCUS COROMANDUS*. \*

A few noticed with the Sulu cattle in July, but their numbers were greatly increased during September.

148. *DEMIEGRETTA NIGRA*. \*

In numbers on the north-west coast in the beginning of October.

149. *ARDEA SUMATRANA*. M.

A scarce but, I believe, a resident species.

150. *BUTORIDES JAVANICA*. M., P.

Scarce.

151. *GORSACHIUS MELANOLOPHUS*. M., P.

Rather rare. For description of its eggs see the continuation of my Bornean notes, which will appear shortly.

152. *STERNA BERGII*. All over the east.

A few seen.

153. *STERNA SINENSIS*. \*

A winter migrant, arriving about the 20th September, mixed with flocks of the next species.

154. *ANOUS STOLIDUS*. M.

155. STERNA MELANAUCHEN. M.

Met with by Dr. Platen only.

156. HYDROCHELIDON HYBRIDA. \*.

A winter migrant, arriving in small flocks about the 20th September.

157. FREGATA MINOR. \*.

Fairly common, frequenting the coast during rough weather.

VI.—On the Alimentary Canal of the *Martineta Tinamou* (*Calodromas elegans*)\*. By FRANK E. BEDDARD, M.A.,  
 Prosector to the Zoological Society of London, Lecturer  
 on Biology at Guy's Hospital.

MR. W. H. HUDSON, in a paper upon the habits of certain South-American birds †, makes the following observations upon a remarkable point in the anatomy of the *Martineta Tinamou*:—"The structure of the intestinal canal in the *Martineta* [i. e. *Calodromas elegans*] is most extraordinary, and totally unlike that of any other bird I have ever dissected; the canal divides near the stomach into a pair of great ducts that extend almost the entire length of the abdominal cavity, and are thickly set with rows of large membranous clam-shaped protuberances."

This passage, as well as a general account of the bird, is repeated in the recently published 'Argentine Ornithology' of Messrs. Sclater and Hudson, where, however, the wording has been slightly altered, as in the latter work "claw"-shaped is written instead of clam-shaped. It is perfectly evident from the quotation that Mr. Hudson had noticed some remarkable divergence from the normal structure of birds in dissecting the "*Martineta*," but it would be difficult to surmise what this peculiarity is from reading

\* This paper was communicated to the Meeting of the British Association at Newcastle in September last.

† "On the Birds of the Rio Negro of Patagonia," P. Z. S. 1872, p. 546. See also Sclater and Hudson, Argent. Orn. ii. p. 214.

Mr. Hudson's remarks. I am, however, through the kindness of Mr. Sclater, able to set this question at rest. Mr. Sclater received a number of specimens of this Tinamou from

Fig. 1.



Cæca of *Nothura maculosa*, distended with alcohol, nat. size.

L.I., large intestine; S.I., small intestine.

Mr. D. A. Shennan, F.Z.S., of Negretti, Villa Nueva, Buenos Ayres, whose attention he had specially drawn to this curious point in its structure. These specimens, carefully preserved

and packed in several large glass bottles placed in a case, were, with great liberality, handed over to me by Mr. Selater for study and description.

On opening the first individual, I saw directly that Mr. Hudson had not in any way exaggerated the remarkable appearance presented by a part of the alimentary canal; but that instead of being diverticula of the stomach, as might possibly be inferred from Mr. Hudson's description, the two tubes in question are simply the cæca, which, in this bird, as in so many others, lie across the abdominal cavity and reach as far as the gizzard.

So far, then, there is nothing abnormal about the anatomy of *Calodromas elegans*; it would be abnormal, in fact, if it did not possess cæca: these appendages of the alimentary tract are invariably (so far as our present knowledge goes) found in the Crypturi; they are proportionately of large size, and like those of Gallinaceous birds in being rather thin. This will be seen by the figure of the cæca of *Nothura maculosa* (fig. 1, p. 62), taken from those of a fresh specimen which have been distended by alcohol.

It was an extremely difficult task to distend the cæca of *Calodromas*; they were tolerably full of semidigested food, among which was a great quantity of minute sharp-edged pebbles; these were forced against the walls of the cæca by the pressure of the water employed to clean out the alimentary tract, and easily cut their way through. In no case was it found possible to make a good permanent preparation of the cæca; but in one instance the cæca remained distended for a sufficiently long time to enable Mr. Smit to make the accurate drawing which is reproduced in the accompanying woodcut (fig. 2, p. 64).

From that drawing it will be at once seen that the cæca of *Calodromas elegans* not only differ from those of all other Crypturi, but that their form is quite unique among birds. Instead of being simple tubes, the cæca of *Calodromas* are furnished with numerous minute diverticula, which are crowded together and are particularly well developed in the lower part of the cæca. Towards the free extremities the

Fig. 2.



Cæca of *Calodromas elegans*, nat. size, inflated: L.I., large intestine; S.I., small intestine; c, caecum.

Fig. 3.



One of the cæca of *Calodromas elegans*, laid open to show the structure of the inner surface. (Letters as in fig. 2.)

diverticula get less and less marked until we arrive at the apex, which is quite smooth. These diverticula are the "claw-shaped protuberances" of Mr. Hudson, and this descriptive term was by no means badly chosen; each diverticulum tapers towards its extremity and is bent inwards, thus assuming a decidedly claw-like shape.

The appearance of the interior of the cæcum is illustrated in fig. 3, p. 65, and is not by any means unlike the reticulum of a ruminant's stomach. Each of the diverticula is marked off by a raised valvular ridge. Towards the apex of the cæcum, where the diverticula are less prominent as such, the valvular ridges are quite as well marked as they are posteriorly; they are, indeed, rather more conspicuous, though this is not very well shown in the figure, which, however, represents the cæcum flattened out. An interesting peculiarity about these valvular projections is, that towards the apex those running transversely, or nearly so, to the long axis of the cæcum get to prevail over those running longitudinally. The effect of this is to produce a spiral arrangement, and the last inch of the cæcum (at any rate in one specimen, where it was very obvious) was marked by a simple spiral valve, all trace of the connecting ridges marking the surface out into areas having vanished.

There is here an interesting resemblance to the Ostrich\*, which may possibly be more than a mere superficial likeness. In any case the remarkable form of the cæca of *Calodromas elegans* is due to the presence of these valve-like folds, which produce constrictions on the outer surface, between which the cæcum tends to bulge out. Posteriorly the intervals between the folds are so greatly produced into external protuberances that, until a dissection is made, one is tempted to regard the protuberances as regular diverticula of the cæcum, which they are, strictly speaking, not, any more than the intervals between the spiral valve of the Ostrich's cæcum, or the sacculations of the mammalian cæcum. It is perhaps a little difficult to make such a distinction, but I regard the folds as having appeared first and as having, in a way, caused the appearance of the diverticula.

\* See Sir Everard Home, 'Comparative Anatomy,' vol. i.

## VII.—Notes on the Island of Palma in the Canary Group.

By H. B. TRISTRAM, D.D., F.R.S.

(Plate III.)

MR. MEADE-WALDO concludes his interesting paper in the last 'Ibis,' on the "Birds of the Canary Islands," by expressing his surprise that he has found so much to tell after all that has been written upon them. I can only follow him by the confession that I feel he has exhausted the subject, and that were it not for the imperative order of our Editor, I should not have ventured to take up my pen. The island of Palma certainly claims especial notice at the hands of the ornithologist, from its peculiar features, from what it does possess in the way of bird-life, and from what it does not possess. The peculiarities of the avifauna of Fuerteventura and Lanzarote may be easily explained by the fact that they are, if not geologically (for they are as purely volcanic in their origin as the other members of the Canarian group), yet biologically simply western outliers of the Great Sahara, and have derived their forms of life from there across the narrow sea which separates them from the African coast. The comparatively low elevation of the volcanic rim which girds each of these islands, and which rarely rises above 2000 feet, has forbidden the growth of the evergreen forest which crowns, or has crowned, the heights of all the other islands above 3500 feet. This has acted and reacted by attracting the cloud-belt which always hangs on their north and north-eastern sides, securing plentiful supplies of water, and nourishing the forests, which thus attract and sustain a rich variety of animal and vegetable life. Consequently in Fuerteventura for certain, and in Lanzarote, so far as we know, there is no trace of what we may term the peculiar Canarian Avifauna. The Houbara Bustard, the Courser, the Trumpeter Bullfinch, the Sandgrouse are all manifestly immigrants from the Sahara. Mr. Meade-Waldo's new Chat (*Pratincola dacotie*) is certainly, so far as we know, peculiar; but we must bear in mind the fact that the opposite coast of

Africa is unexplored, and that quite possibly the scanty scrub of the African coast-line is its true motherland.

There is, however, one bird of Fuerteventura which deserves special notice, the Titmouse, rightly designated by Mr. Meade-Waldo *Parus ultramarinus*, though it seems to be invariably smaller than any Algerian specimens, and generally to have a broader white band on the forehead. We may easily trace its passage from the southern shores of the Mediterranean along the western coast-line of Morocco, till it crossed the narrow sea to Fuerteventura. Here it has remained unmodified, excepting for its slightly smaller size, a result not to be marvelled at in the barren desert plains and bare wadys of the island, with such scanty scrub as to render it difficult for even a Titmouse to find sustenance. Indeed, were it not for the occasional patches of cultivation, with a few palms and fig-trees, I do not see how the bird could long survive. But when crossing from the south end of Fuerteventura, it took up its abode in the wooded islands of Canaria, Tenerife, and Gomera, with their magnificent belts of evergreen forests, it found abundant food, and attained the full size of its Algerian progenitor, with a much darker back, and it lost entirely the white tips to the wing-coverts, which neither Mr. Meade-Waldo nor I have ever detected in a single specimen from any of the three above-mentioned islands. In another respect the Tenerife Tit differs from that of Palma. It is found in all localities and situations from the shore to the desolate cumbres, 5000 feet above the sea. It is equally at home on the house-roofs of Orotava, the gardens of country-houses, the evergreen forests, and the naked cliffs on the summit of the Paso del Croce of Canaria. Not so, as Mr. Meade-Waldo has shown, the *Parus palmensis*. I am certainly unable to explain why there should be such a contrast in several respects between the avifauna of Palma and that of its close neighbours, while these only differ among themselves in the presence or absence of certain species caused by the intervention of man.

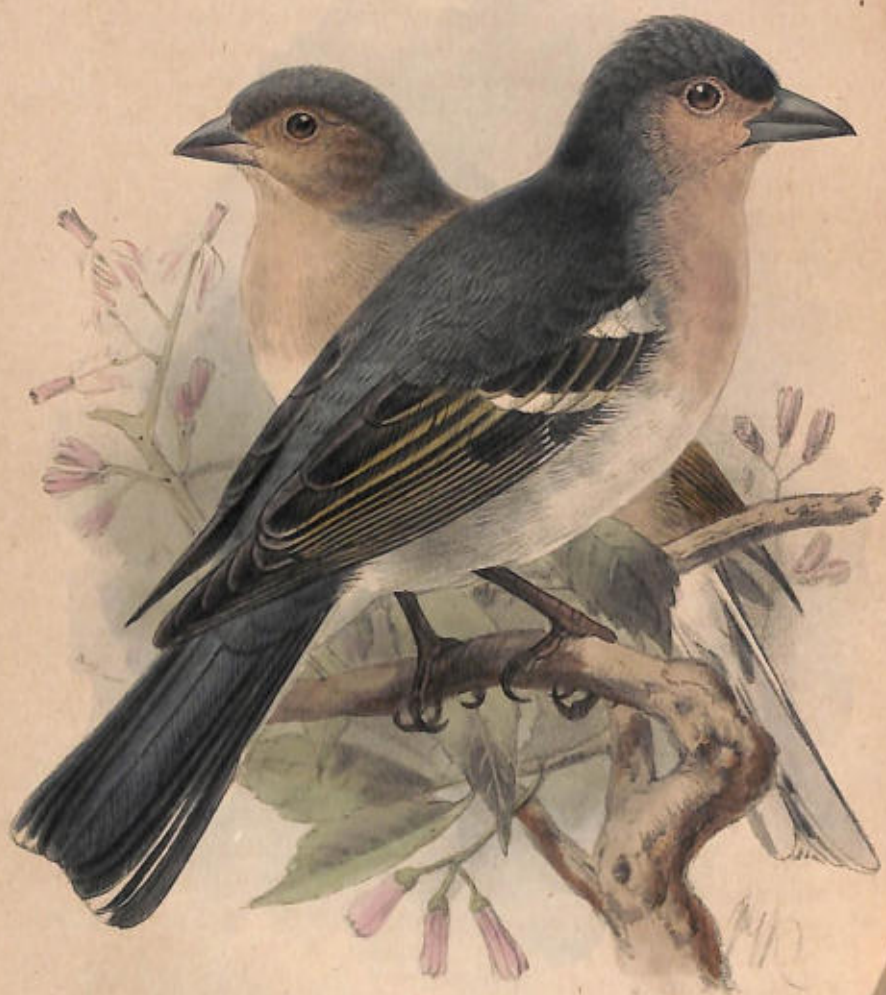
Palma is, to me, the most attractive member of the Canary group. Though more affected by human colonization than

Gomera, it possesses greater natural variety of soil and scenery and has some unique features. On the map it is laid down pear-shaped, with the narrow end pointing due south. As we approach it from the east its profile is again exactly like a pear, a bold round mountain-mass, with precipitous sides, but gradually sloping from the neck till its southern point is lost in the sea. Closer examination explains very simply this formation. Originally a circular volcanic mass of 7600 feet in height, with a central crater, Palma must have been a larger edition of what the far more ancient Gomera is to-day. During some convulsion the lava burst through the southern side of the crater, and poured forth its stream into the sea, thus forming the neck of the pear, and leaving in the centre of the island a vast hollow cup, known as the Caldera, or caldron, 7 miles in diameter from north to south, and 5 from east to west, with its inner sides sometimes 5200 feet deep, and that an absolutely sheer precipice, the bottom of the Caldera being 2400 feet above the sea-level. On the north-west of the island there is no available anchorage, even for the smallest craft; while the only anchorage on the east is a partially sheltered roadstead, with a small artificial harbour, at Ciudad de Santa Cruz. This is the metropolis of the island, and one of the best and most interesting cities of the whole Canary group, with a noble ancient church, and a handsome town-hall erected by the Emperor Charles V. There is a thoroughly old-world air about the place, with its clean streets, running one above the other, parallel to the shore, very much like a miniature Funchal, its well-stored and attractive-looking shops, and the quaint and bright costumes of both men and women, indicating at once whether they hail from the north-west or south of the island. There is a comfortable Spanish fonda, but foreign visitors are rare. Only one did we meet with—an intelligent and cultured Bavarian physician, bent on investigating the hygienic character of the country. There is no consul or consular agent, and until this year, when for the first time the interinsular steamers call once a week, thanks to the enterprise of Messrs. Forwood, Brothers, there

was no communication with the outer world, save by wretched little schooners ; and the only trade of any importance was that with Havana, chiefly consisting in the export of onions. Happy, bright, rather lotus-eating, troubled for the most part with neither poverty nor riches, the people of Palma might be taken for lineal descendants of the cultivators of the garden of the Hesperides.

The land rises steeply from the shore at Santa Cruz de Palma or, as it is universally called there, La Ciudad, and a finely engineered road, the only one of the kind in the island, zigzags up the hill for several miles, affording magnificent views at every turn, and then runs southwards through a sloping plain to Buenavista. Everywhere the land is carefully cultivated from the shore upwards. Every kind of fruit, from the pine-apple and orange to the cherry and the plum, thrives at one elevation or another. One of the staples of the island is a fine quality of silk, grown, spun, dyed, and woven on the spot ; its cigars pass as the choicest Havanas ; and its wines are the best in the Canaries. What can a reasonable man desire which he may not find in Palma ? And besides, there is or, perhaps I should say, there was, till yesterday, a chance of discovering a new species of bird. This latter, however, was not one of our pleasures of anticipation when we landed at Ciudad, though it was the most agreeable of the pleasures of surprise. We inquired after local naturalists on our arrival, but without success. However, in a country where visitors are few, news spread quickly, and soon we had a call from one gentleman who had been collecting the Lepidoptera of the island, and who brought his collection to show to us ; and from another, the editor of the local paper, who was really a botanist, and brought some specimens of a local subalpine plant (*Viola palmensis*), which only grows, at a height of 7000 feet, in two spots, where, from his information, we afterwards found it.

Our first day's expedition was to an evergreen forest, some four miles N.W. of Ciudad, where we had reason to believe we should meet with the "Turqueze" Pigeon, whatever species it might be. The first part of our ride was rugged and



J. G. Keulemans del. et lith.

FRINGILLA PALMÆ, ♂ et ♀.

Minster Bros imp.

bold, but through a comparatively bare country, zigzagging across tremendous barrancos, with their steep sides full of caverns, and fine Canary pines clinging to the cliffs wherever they could find a foothold. All these swarmed with Choughs (*Pyrrhocorax graculus*), now busily employed in domestic duties, and perching indiscriminately on the ledges and on the pines. The ridges between each barranco are carefully cultivated, and cottages and gardens bright with geraniums, roses, and fuchsias were scattered about in every possible spot, while the rugged track was fringed with the overhanging boughs of fast-ripening and tempting-looking peaches. The Choughs stalked about the little fields, like Rooks at home, and a couple of specimens were at once secured. The Swifts (*Cypselus unicolor* and *C. pallidus*) dashed up and down the barrancos, the latter more numerous lower down, the former affecting the higher parts of the mountain-sides. As we ascended, the barrancos became less deep, and at length we turned up a path on the crest between two gullies, and soon entered the forest, merely scrub at first. Half an hour's ride through the dense underwood brought us into the true forest, and under a magnificent pine-tree, which overshadowed a copious spring, we dismounted and picketed our horses. Here we were certain from several signs that the Pigeons must come to drink. Through the glen by our side flowed a little perennial stream, overshadowed with the dense foliage of the teil, the laurel, the viñatigo, the ebony, and many others. Meade-Waldo at once proceeded up the glen, and had not left me for many minutes, when a Chaffinch's note caught my ear, and soon I saw the white wing-bars of a bird which crossed from the other side to the pine under which I sat, followed immediately by another. They were evidently courting, and I secured my first pair of *Fringilla palmæ*\*, of which a figure (Pl. III.) is given herewith. Mr. Meade-Waldo observes that the note differs slightly but markedly from that of *Fr. tintillon*; and in this he is undoubtedly correct, though I found here, not for the first time, that my hearing is not so good as it was fifty years ago.

\* [Cf. Ibis, 1880, pp. 510, 511.—ED.]

Soon after I had secured my Chaffinches, I saw one and another *Columba laurivora*, with their unmistakable long tail, dash down the glen, but far out of shot, and I proceeded up the forest to rejoin my companion. Two more *C. laurivora*, two ineffectual shots; but I secured another Chaffinch, and the Robin, which in no way differs specifically from that of the Island of Tenerife. This, I observe, has been recently described by a German naturalist as distinct\*; but I cannot admit its validity, though certainly the coloration is more intense than in most, not all, British specimens, but not more so than in examples from Andalusia. I have examined the large series in the British Museum, and in Lord Lilford's, Mr. Seebohm's, and my own collections, and I cannot draw any line. In fact, there are British specimens which will exactly match every other. Still it is an interesting fact worthy of note, that all the Robins from Palma, Canaria, and Tenerife are of the deeper hue, those from Gomera of the paler. I soon met Meade-Waldo, who had also seen several *C. laurivora*, and had added the Chaffinch, Sparrow-Hawk, and various other birds to his bag. Later in the day he shot a Pigeon, which I marked down in the barranco; but so dense was the undergrowth, and so rugged the cliff-sides, that after an hour's vain attempts to retrieve it, we had to abandon the quest.

I may mention here that in Palma we frequently found scattered Canary pines mingled with the evergreen forest, an occurrence never noticed in Gomera, and very rare in Tenerife, where the pine begins about 5000 feet up, at the point where the laurel ceases.

Three days later, our appetites whetted by the discovery of the new Tit and Chaffinch, and the sight of the big Pigeon, we started on horseback for the circuit of the island—one of the most delightful rides I ever enjoyed. We took the south road from La Ciudad, and after passing Buenavista turned straight up the mountain, passing a straggling belt of chestnut well stocked with Chaffinches, and then at once entering the lovely laurel-forest. Here the Chaffinch was still not uncommon, and it seems to have a much wider per-

\* [*Erithacus superbus*, König, J. f. O. 1889, p. 183.—Ed.]

pendicular extension than its ally in the other islands; for I found it in the pines and shot my last specimen near Buena-vista, not 500 feet above the sea. The views as we climbed the mountain were magnificent and ever varying. At length we reached the summit of the pass, over 5000 feet above the sea. The laurels extend to the very crest; but there at once all is changed. We are standing on the rim of the Caldera, the mighty caldron, into which we look down, while we can see the eastern slopes to the sea on the other side. The rim is here notched to the depth of about 1000 feet, and has thus afforded a good pass for the mountaineer. The descent within is rapid, and instead of laurel we have scattered pines, which clothe both the slopes of débris and the perpendicular cliffs alike, and we have all the southern tongue of the island spread before us as far as the eye can reach, plainly showing where the lava had once burst through the walls of the crater. We had been keeping a keen look out for the Tit, of which Meade-Waldo had shot the type a few days before, in the laurel, but could find none, till we came to the pines. Here they were soon heard, and he secured several specimens. He has so fully and accurately described this bird, that I can add nothing. Here also I secured a Goldcrest from the top of a pine-tree, which fortunately fell to earth, instead of remaining, as they usually do, near the end of an inaccessible bough. It was exactly like those of Tenerife and Gomera, and quite distinct from the Madeiran bird, but is, in my belief, a thoroughly good species, which has been described by Mr. Seebohm ('Brit. Birds,' vol. i. p. 459) as *Regulus teneriffæ*. It approaches the Firecrest in some particulars, especially in having the black band on the sides of the crest continuous across the forehead, from which the black band is separated by a whitish band; but it differs from *Regulus ignicapillus* in having greyish-white lores like *R. cristatus*. I have examined large series of *R. cristatus* from every locality—Japan, Himalayas, Algeria, and Europe—and find no variation in these points, and the distinction holds good in every specimen obtained in the Canaries.

It is to be regretted that Mr. Seebohm has merely inci-

dentally described and named this bird, without anywhere giving a formal diagnosis, so that it has escaped general notice.

But to return to our ride. We skirted along the eastern side of the Caldera till at the southern end we climbed its rough broken walls for an hour, and descended by a gentle slope upon the southern plain of the island. The course of lava-streams could be easily traced in many directions. We put up at the clean little town of Los Llanos, where is a cigar-factory and some silk-weaving, and which was a convenient centre from which to work the inside of the Caldera. Our first day's expedition, and that from dawn till after sunset, was to the basin of the Caldera, which we entered over the ridge we had climbed yesterday, but several miles lower down, and then turned sharp to the north. The bottom of the crater has a diameter of less than five miles and contains several farms, the wine of which is in repute. But our object was the forest, sadly wrecked and destroyed by wasteful and reckless cutting. Were it not that the Canary pine, unlike any other species with which I am acquainted, sends up shoots from the stump or root of every felled tree, which become small timber in the course of a few years, I fear the pine would soon become extinct in Palma. A mountain-brook ran down the centre of the Caldera, but did not appear to attract any bird save the Grey Wagtail. We had hoped to find the new Tit in some numbers; but though scattered all over the inner sides of the Caldera, where there were pines, the number of individuals was few, and the labour of climbing these precipitous slopes with a gun was most exhausting. Though geologically the most interesting, this was our poorest ornithological day in Palma. There was evidently no harvest to be reaped in the south, so we determined to move quarters to the N.W. end of the island, where we heard of fine forests of pine facing the sea. This was a 14 hours' ride. We had to cross the ridge, still 1500 feet high, which forms the southern wall of the channel through which the lava poured, and then, crossing the bed, a width of two miles, to mount again to the crest of the northern wall,

3000 feet high. The soil all the way to the south point is rich and well cultivated, vines, fruit-trees of all kinds, tobacco, onion, and maize being the principal crops. But there were not the birds we wanted. Plenty of Ravens, Choughs, Rock Doves, Pipits, Canaries, Linnets, Buntings, and Goldfinches,—only the birds that accompany cultivation. And after we had reached the western crest, and rode for hours northwards along the heights, though we had a highly developed agricultural country stretching from the heights to the shore, its very richness became monotonous and uninteresting. At length, towards evening, as we were nearing the N.W. corner of the island, we saw in front of us the beginning of a real pine-forest, not straggling trees like those of the Caldera. Our destination was a straggling village of isolated farmsteads, each in the centre of its own vineyard. We were received by the village shopkeeper, who did his best for us and put us up tressel-beds behind the counter. The pine-forests extend for many miles on the higher part of the outer side of the Caldera, right round from the N.W. to the N.E. of the island; and here is the true home of the Palma Titmouse, though Mr. Meade-Waldo did twice find it beyond the limits of the pine.

The only other birds which seemed plentiful in the pine-forest were the Chiffchaff and the Goldcrest and, near its outskirts, the Blackbird. Our day's ride along the top of the Cumbre, skirting the pine-forest, in fact, on the rim of the old crater, was magnificent, though long, and I know nothing so grand in Tenerife as the view across the Caldera from one of the highest points of its rim, the Pico de Muchachio, 7600 feet above the sea. The rim looked very even all round, as though we were standing on the edge of a titanic boat. At first it was quite clear, and we looked down 5200 feet on to the farms and fields we had visited two days before. It required a young and cool head to look down that precipice from the saddle on a path not more than a yard wide. I preferred to dismount and lie down to peep. I am not aware that in any other part of the world have I ever looked down a cliff sheer for more than

5000 feet. But this is said to be the deepest crater in the world. It is only at this point that the wall of rock is absolutely perpendicular.

In a few minutes a volume of cloud came rolling up the southern gap in the crater, and filled it to within 1000 feet of the rim with what seemed a solid mass. Very wonderful it was to see the sharp rim on which we sat standing out in a perfect circle, with only a piece broken out to the south. We were able to tell exactly the height of the clouds, for we knew exactly the measurement of our position and that of the pass from the Ciudad opposite, which was just reached by the clouds. The top of Gomera peered up like a little island, and the Peak of Tenerife beyond, but not a trace of the Cañadas of Tenerife; all below 6000 feet was buried. There was not the slightest haze. There was not a ripple on that pavement of cloud. The crown of Gomera looked so close that at first we thought it must be a piece of the edge of our own crater, and Tenerife looked not twenty miles off. Of course the sea was equally covered with the drapery, and we had an unbroken panorama on all sides. Above us the Choughs soared in flocks till almost lost to sight in the empyrean, the Swifts dashed about us, but other life there was none. We were on the Cumbre, or barren heights, and could see how exactly the cloud-line is limited to the forest-zone or, perhaps, rather fixes its limits, while all above it is dreary, barren desolation. Nor does this daily-recurring cloud result in rain. On this, as on other occasions, we passed through the cloud to the coast, where rain had not fallen for weeks. It was in the northern laurel-forests, after we left the pines, that we had our most interesting rambles and scrambles after Pigeons, both White-tail and Bar-tail, which with their results have been so fully described by Mr. Meade-Waldo in the last number of 'The Ibis.'

VIII.—Remarks on the Fifth Cubital Remex of the Wing in the Carinatae. By P. L. SCLATER, Ph.D., F.R.S., &c.

ONE of the most remarkable discoveries in the ptilosis of birds that has been made of late years is that the fifth cubital remex (or fifth secondary) is entirely absent in many groups. This curious fact appears to have been first pointed out by M. Z. Gerbe in 1877, in a communication made to the Zoological Society of France\*.

M. Gerbe writes as follows:—

“Chez les Rapaces, les Pigeons, les Echassiers et les Palmipèdes, il y a atrophie complète de l'une des rémiges secondaires, et cette atrophie, qui paraît être originelle, porte invariablement sur la cinquième. Ses satellites, c'est-à-dire sa couverture supérieure et sa couverture inférieure, prennent un développement normal, et occupent leur place, respective, comme si elles accompagnaient la plume qui fait défaut.

“Ni les vrais Passereaux, ni les Zygodactyles (les Perroquets exceptés) ne présentent cette singulière anomalie.”

After a lapse of ten years, during which period no one seems to have alluded to the subject, Wray, in the course of his studies of the bird's wing, undertaken during the preparation of specimens for the Index-series in the British Museum of Natural History, rediscovered this phenomenon, and described it, in his valuable paper on the Morphology of the Wings of Birds, as follows †:—

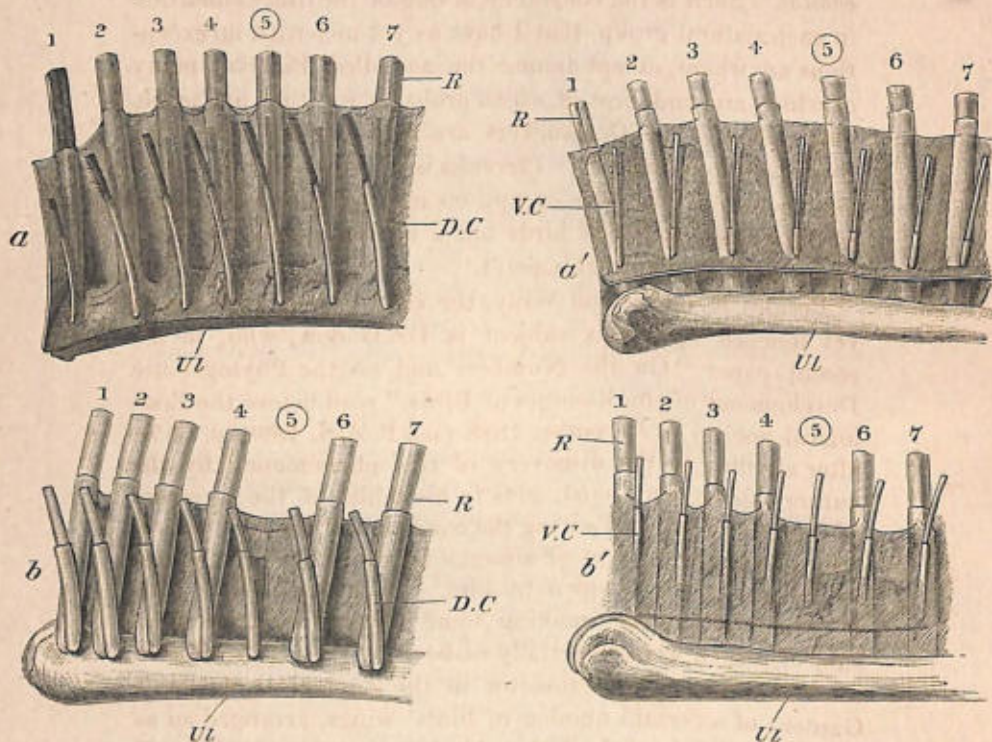
“The chief, most interesting, and most puzzling modification of the cubital feathers is that in a great many birds the fifth remex is always undeveloped, its coverts being normally developed and present. This occurs probably in all birds except *Phanicopterus* ‡, Gallinæ, Passeres, and a few Picariæ. Up to the present I have never met with a trace of this

\* Bull. Soc. Zool. de France, ii. p. 289 (1877).

† “On some Points in the Morphology of the Wings of Birds,” by Richard S. Wray, Proc. Zool. Soc. 1887, p. 343. I am much indebted to the Publication Committee of the Zoological Society of London for their permission to reproduce Wray's excellent illustrations of this subject.

‡ [This inclusion of *Phanicopterus* among the quincubital birds is an error. As will be shown below, *Phanicopterus* is aquincubital.—P. L. S.]

feather in a vestigial condition. If the figures of the preparation of the distal part of the cubitus of the Golden Eagle (see figs. *b, b'*) be compared with those of the Pheasant (see



*a, a'*. Drawings of preparations of the distal cubital remiges, with their attached tectrices majores, of the Pheasant (*Phasianus colchicus*).

*a*, Dorsal view; *a'*, ventral view. (This shows the "quincubital" condition.)

*b, b'*. Drawings of preparations of the distal cubital remiges, with their attached tectrices majores, of the Golden Eagle (*Aquila chrysaetos*).

*b*, Dorsal view; *b'*, ventral view. (This shows the "aquincubital" condition.)

1, 2, 3, &c. the remiges (*R*), numbered from the wrist-joint; *D.C.*, dorsal tectrix major; *V.C.*, ventral tectrix major; *Ul*, ulna.

(From P. Z. S. 1887, p. 346.)

figs. *a, a'*), the exact nature of this modification is at once apparent. In the Pheasant (*a, a'*) the fifth remex is present

with its coverts, showing all normal relations; in the Golden Eagle (*b, b'*) the coverts are present but no remex. The former condition may be termed *quincubital*, the latter *aquincubital*. Such is the constancy of one or the other condition in each natural group, that I have as yet met with no exceptions anywhere, except among the so-called Picariæ, many of which are, and most of which probably will turn out to be, *quincubital*. The Goatsuckers are *aquincubital*, while the Swifts are *quincubital*\*. *Pterocles* is *aquincubital*; *Goura* is *aquincubital*. Of course exceptions may turn up, seeing that of the whole number of birds but a comparatively few have as yet been tested for this point."

Besides M. Gerbe and Wray, the only author who has as yet touched upon this subject is Dr. Gadow, who, in his recent paper "On the Numbers and on the Phylogenetic Development of the Remiges of Birds," read before the Zoological Society in December 1888 (see P. Z. S. 1888, p. 655), after alluding to the discovery of this phenomenon by the authors above mentioned, adds to his tables of the numbers of remiges in the bird's wing the condition of the fifth cubital remex (whether present or absent) in the different groups, so far as it was known to him. Simultaneously with Dr. Gadow I had been making some researches on the same subject, which were materially assisted by the preparation in the laboratory of the Prosector in the Zoological Society's Gardens of a certain number of birds' wings, arranged so as to show the state of the fifth cubital remex very readily. It is a pity, I think, that any knowledge on this curious point once acquired should be lost, so that, although I cannot add much to the subject, I propose to run through the various orders of Carinate birds †, and to show in what cases yet known to us the fifth cubital remex is present or absent, or sometimes present and sometimes absent, and, in the case of variable groups where it is desirable to be quite positive, on what exact species the observations have been made.

\* [Some Swifts seem to be *aquincubital*. See below.—P. L. S.]

† As adopted in the arrangement given in my paper "On the present State of the 'Systema Avium'," *Ibis*, 1880, p. 410.

I. PASSERES. In all the true Passerine birds yet examined the fifth cubital remex is present. Gerbe, Wray, and Gadow alike agree to this. It is nevertheless very desirable that all the abnormal forms of Passeres should be examined with reference to this point.

II. PICARLÆ. The Picarian birds have not the same homogeneous structure as regards their cubital remiges as the Passeres. We will therefore consider their six divisions or suborders *seriatim*.

a. *Pici*. In all the Woodpeckers yet examined the fifth *c. r.* has been found present. I have before me prepared specimens of *Colaptes auratus*, *Picus major*, *Tiga shorei*, *Centurus striatus*, and *Iynx torquilla*.

b. *Cypseli*. In the Trochilidæ the fifth *c. r.* is apparently present, in the Caprimulgidæ it is absent, in the Cypselidæ it is sometimes present and sometimes absent.

In true *Cypselus*, as stated by Wray, the fifth *c. r.* is present, as it is also in the Tree Swift (*Dendrochelidon*). But I find it absent in a specimen of a species of *Collocalia*, which is certainly a member of this family.

c. *Anisodactylæ*. In the Anisodactylous Picarians, as a rule, the fifth *c. r.* is present. Out of the twelve families enumerated in my above-mentioned paper (see Ibis, 1880, p. 401), I have found the following genera, so far as they have been examined, to be quincubital:—*Colius*, *Buceros*, *Upupa*, *Merops*, *Todus*, *Podargus*, and *Steatornis*.

Dr. Gadow adds *Coracias* to the list. He also gives the fifth *c. r.* as present in *Alcedo* and *Halcyon*.

But my observations induce me to believe that there is a singular anomaly in this respect in the Alcedinidæ. I find the fifth *c. r.* present in *Alcedo ispida*, *Cittura sanguirensis*, and *Ceryle americana*, but absent in *Halcyon vagans* and *H. chloris*. What is still more remarkable, it seems to be absent in *Ceryle alcyon*, though it is certainly present in a specimen of *C. americana* now before me.

d. *Heterodactylæ*, e. *Zygodactylæ*, and f. *Coccyges*. In these three remaining suborders of the Picarians the fifth

*c. r.* appears to be always present. I have examined *Rhamphastos*, *Selenidera*, *Aulacorhamphus*, *Indicator*, *Megalæma*, and *Xantholæma*, and many genera of Cuculidæ\*, as also *Corythaix* and *Schizorhis*. Dr. Gadow's researches, so far as they go, show the same result, and he also gives it as present in *Trogon*.

Therefore, as a rule, we may say that the Picarians are quincubital, except the families Cypselidæ and Alcedinidæ, in which some forms are aquincubital.

III.-X. PSITTACI, STRIGES, ACCIPITRES, STEGANOPODES, HERODIONES, ODONTOGLOSSÆ, PALAMEDEÆ, and ANSERES. In all members of these eight classes yet examined the fifth *c. r.* is wanting. Dr. Gadow's tables agree with my observations on this subject. Wray (see above, p. 77) has stated that the fifth *c. r.* is present in *Phænicopterus*. But this is certainly not the case in examples of two species of this genus which I have examined (*P. antiquorum* and *P. ignipalliatus*), and I believe that Wray was in error on this point. Dr. Gadow agrees with me in registering *Phænicopterus* as having no fifth *c. r.*

XI. COLUMBÆ and XII. PTEROCLETES. In the Columbæ, as also in *Pterocles*, I believe the fifth *c. r.* to be absent. This is also stated by Dr. Gadow, but more observations are required upon these birds.

XIII. GALLINÆ. In the typical Gallinæ generally the fifth *c. r.* is fully developed (see illustrations of *Phasianus*, above, p. 78). But this is not, perhaps, the case in *Megapodius*, where Mr. Beddard found it *absent* in a specimen of *Megapodius rubrifrons*. The Cracidæ likewise require further

\* The species of Cuculidæ examined were:—

Rhinococcyx curvirostris.	Piaya cayana.
Pyrhocentor celebensis.	Coccyzus americanus.
Centropus, sp. inc.	Diplopterus nævius.
Eudynamis orientalis.	Saurothera dominicana.
— taitensis.	Geococcyx affinis.
Cacomantis sepulchralis.	Guira piriagua.
— lanceolatus.	Crotophaga ani.
Cuculus canorus.	— sulcirostris.

examination, but I find a fifth *c. r.* present in species of *Crax*, *Penelope*, *Pipile*, and *Ortalis*.

XIV. OPISTHOCOMI and XV. HEMIPODII. In *Opisthocomus*, which I have carefully examined, the fifth *c. r.* is present, as in the Gallinæ. It is likewise present in *Turnix*. I have examined *Turnix sykesi*.

XVI. FULICARIÆ. In the Rails, so far as they have yet been examined, the fifth *c. r.* is absent.

XVII. ALECTORIDES. The Cranes and their allies are not in unison as regards the fifth *c. r.* In *Grus*, *Aramus*, and *Eurypyga*, according to Dr. Gadow, this remex is absent, but present, according to the same authority, in *Psophia*, *Cariama*, and *Rhinochetus*. I can confirm this as regards *Psophia crepitans*.

XVIII. LIMICOLÆ. No true Limicolæ have the fifth cubital remex developed, so far as they have yet been examined. In *Parra* it is also absent.

XIX. GAVIÆ. As might have been expected, the Gaviæ imitate their close allies the Limicolæ in having no fifth *c. r.*

XX. TUBINARES and XXI. PYGOPODES. The same is, I believe, the case in the Tubinares and Pygopodes. The fifth *c. r.* is absent.

XXII. IMPENNES. In the Penguins the remiges are not sufficiently differentiated to enable us to come to any conclusion as to the fifth *c. r.*

XXIII. CRYPTURI. In the Tinamous, as in the Gallinæ, the fifth *c. r.* seems to be always present. Mr. Beddard has kindly ascertained for me that this is undoubtedly the case in the following species of this group:—*Nothoprocta perdicaria*, *Tinamus solitarius*, *Crypturus noctivagus*, and *Calodromas elegans*. Prepared wings of *Nothura maculosa* and *Rhynchotus rufescens* now before me show the fifth *c. r.* well developed.

Thus the Carinate birds may be divided into three categories as regards the presence or absence of the fifth cubital remex:—

I. Fifth cubital remex present.	II. Fifth cubital remex sometimes present, sometimes absent.	III. Fifth cubital remex absent.
I. Passeres.	II. Picariæ.	III. Pittaci.
		IV. Striges.
		V. Accipitres.
		VI. Steganopodes.
		VII. Herodiones.
		VIII. Odontoglossæ.
		IX. Palamedæ.
		X. Anseres.
		XI. Columbæ.
		XII. Pterocletes.
	XIII. Gallinæ.	
XIV. Opisthocomi.		
XV. Hemipodii.		
	XVII. Alectorides.	XVI. Fulicariæ.
		XVIII. Limicolæ.
		XIX. Gaviæ.
		XX. Tubinæ.
		XXI. Pygopodes.
XXIII. Crypturi.		

### Summary.

1. The fifth cubital remex of Carinate birds is abnormally absent, except in the Passeres, Opisthocomi, Hemipodii, and Crypturi, and in some Picariæ, Gallinæ, and Alectorides.

2. In the Picariæ it is generally present, except in some Cypselidæ and Alcedinidæ.

3. In all the Gallinæ it is present except in the Megapodes.

4. In the Alectorides it is generally absent, except in *Psophia*, *Cariama*, and *Rhinochetus*.

5. Both the dorsal and the ventral *tectrix major* of the fifth cubital remex, when it is absent, are fully developed.

6. We know of no intermediate stage between the full development of the fifth cubital remex and its entire absence.

IX.—*A List of the Birds of the Islands of the Coast of Yucatan and of the Bay of Honduras.* By OSBERT SALVIN, M.A., F.R.S., &c.

[Conclusion\*.]

ADDENDA.

BEFORE proceeding to analyse the foregoing lists, I have to add the names of the following species accidentally omitted therefrom :—

147 A. BUTEOLA BRACHYURA.

*Buteola brachyura* (Vieill.); Sharpe, Cat. B. Brit. Mus. i. p. 201.

*Buteo brachyura*, Ridgw. Proc. U.S. Nat. Mus. viii. p. 578. Cozumel I.

Included by Mr. Ridgway in his list, but not represented in Mr. Gaumer's collection. The species has a wide range in tropical America, but is rare on the mainland of Central America.

147 B. ICTINIA PLUMBEA.

*Ictinia plumbea* (Gm.); Sharpe, Cat. B. Brit. Mus. i. p. 364.

Ruatan I.

A species of wide range in tropical America and not uncommon in Central America, especially in the pine-forests of the lowlands.

I have further to state that, until recently, I have always looked upon *Vireo olivaceus* as a winter visitor to Mexico and Central America. We have, however, recently received, both from Mr. W. B. Richardson and Mr. Blancaneaux, eggs of this species along with the parent birds; so that its residence in Eastern Mexico and British Honduras is proved, and almost certainly extends to the Bay Islands, whence skins have been sent us.

\* For preceding parts see 'Ibis,' 1888, pp. 241-265; 1889, pp. 359-379.

## SUMMARY.

The apparent number of species found in the islands under consideration thus becomes 215, but from these must be deducted No. 52, *Hirundo erythrogaster* × *swainsoni*, to all appearance a hybrid; the total thus becomes 214.

In the list of 214 species, as thus amended, we find the names of 79 which belong to birds which annually migrate from North America to Mexico, Central or South America, or the West-Indian Islands, and either reside during the winter months on the islands now under consideration, or rest there during passage in autumn and spring. The only point which I propose to notice in connexion with these migratory species is that we find several that occur here at almost, if not quite, the western limit of their range. The following species come under this category:—*Turdus fuscescens*, *T. alicia*, *Protonotaria citrea*, *Dendroca cærulescens*, *D. discolor*, *D. palmarum*, and *Perissoglossa tigrina*. The remaining migratory species are birds of wider range, which spread much further westwards in their spring and autumn flight; their presence therefore on these islands is of no special interest.

Of the remaining 135 species, 27 are birds which frequent the sea-coast or marshes adjoining, and are of very wide range, so that their presence also is of no special significance.

This leaves 108 species, belonging to no less than 84 genera, the distribution of which I propose to examine. They are given in the annexed table (pp. 86–89).

Before analysing the list in detail, it is necessary to examine the 32 birds which form the resident fauna of Meco Island. In the first place we find here no less than 9 genera, represented by as many species, which are not found on any of the other islands. All of these genera are characteristic of the fauna of the mainland. Of the species, *Phænicothraupis insularis* alone is an island race, and is also found on Mugeris Island. The only species that has any special West-Indian affinity is *Elainea martinica*, and this is of very doubtful value.

Islands, Mainland, and West Indies.	Islands and Main- land.	Islands and West Indies.	Islands only.		Meco.	Holbox.	Mugeret.	Cozumel.	Ruatan.	Bonacca.
†	...	...	...	1. <i>Turdus</i> .....	†	...	†	†		
	*	...	...	1. <i>grayi</i> .....	*	...	*	*		
	†	...	...	2. <i>Melanoptila</i> .....	...	...	...	†		
	†	...	...	2. <i>glabirostris</i> .....	...	...	...	*		
	...	...	...	3. <i>Harporhynchus</i> .....	...	...	...	†		
	...	...	*	3. <i>guttatus</i> .....	...	...	...	*		
†	...	...	...	4. <i>Mimus</i> .....	†	†	†	†		
*	...	...	...	4. <i>gilvus</i> .....	*	*	*	*		
†	...	...	...	5. <i>Polioptila</i> .....	...	...	...	†	†	
	...	*	...	5. <i>caesiogaster</i> .....	...	...	...	*	*	
	*	...	...	6. <i>Troglodytes</i> .....	...	...	...	†		
†	...	...	...	7. <i>beani</i> .....	...	...	...	*		
†	...	...	*	7. <i>Dendroeca</i> .....	...	†	...	†	...	†
	...	*	...	8. <i>petechia</i> .....	...	...	...	*		
	*	...	...	9. <i>bryanti</i> .....	...	*	...	...	...	*
†	...	...	...	8. <i>Vireo</i> .....	...	†	†	†	†	†
*	...	...	...	10. <i>calidris</i> .....	...	...	...	*		
	*	...	...	11. <i>olivaceus</i> .....	...	...	...	...	*	*
	*	...	...	12. <i>magister</i> .....	...	*	*	*	*	*
	...	...	*	13. <i>bairdi</i> .....	...	...	...	...	*	*
	*	...	...	14. <i>ochraceus</i> .....	...	*	*	...	*	
	†	...	...	9. <i>Cyclorhis</i> .....	†	...	...	†		
	*	...	...	15. <i>flaviventris</i> .....	*	...	...	...		
	...	*	...	16. <i>insularis</i> .....	...	...	...	*		
	†	...	...	10. <i>Tachycineta</i> .....	†	†	...	...		
	*	...	...	17. <i>albilinea</i> .....	*	*	...	...		
†	...	...	...	11. <i>Cœreba</i> .....	...	...	...	†		
*	...	...	...	18. <i>cyanea</i> .....	...	...	...	*		
†	...	...	*	12. <i>Certhiola</i> .....	...	†	...	†		
	...	...	...	19. <i>caboti</i> .....	...	*	...	*		
†	...	...	...	13. <i>Euphonia</i> .....	...	...	...	†		
	*	...	...	20. <i>affinis</i> .....	...	...	...	*		
	...	†	...	14. <i>Spindalis</i> .....	...	...	...	†		
	...	*	...	21. <i>benedicti</i> .....	...	...	...	*		
†	...	...	...	15. <i>Pyrranga</i> .....	†	...	†	†		
	*	...	...	22. <i>roseigularis</i> .....	*	...	*	*		
	†	...	...	16. <i>Phœnicotheraupis</i> .....	†	...	†	...		
	...	*	...	23. <i>insularis</i> .....	*	...	*	...		
	†	...	...	17. <i>Eucometis</i> .....	†	...	...	...		
	*	...	...	24. <i>spodocephala</i> .....	*	...	...	...		
	†	...	...	18. <i>Cardinalis</i> .....	†	†	†	†		
	*	...	...	25. <i>coccineus</i> .....	*	*	*	*		
	†	...	...	19. <i>Guiraca</i> .....	†	...	†	...		
	*	...	...	26. <i>parellina</i> .....	*	...	*	...		
	†	...	...	20. <i>Spermophila</i> .....	†	...	†	...		
	*	...	...	27. <i>moreleti</i> .....	*	...	*	...		
†	...	...	...	21. <i>Phonipara</i> .....	...	†	...	†		
	...	*	...	28. <i>intermedia</i> .....	...	*	...	*		
3	15	2	8	Carried forward.....	10	8	9	19	4	3

Islands, Mainland, and West Indies.	Islands and Main- land.	Islands and West Indies.	Islands only.		Mecc.	Holbox.	Mugeves.	Cozumel.	Ruian.	Bonacca.
3	15	2	8	Brought forward .....	10	8	9	19	4	3
	†	...	...	22. Spizella .....	...	...	...	...	†	...
	*	...	...	29. pinetorum .....	...	...	...	...	*	...
	†	...	...	23. Embernagra .....	†	...	...	...	...	...
	*	...	...	30. verticalis .....	*	...	...	...	...	...
†	...	...	...	24. Chrysomitris .....	...	...	†	...	...	...
	*	...	...	31. mexicana .....	...	...	*	...	...	...
†	...	...	...	25. Agelaius .....	...	...	†	...	...	...
	*	...	...	32. phœnicus .....	...	...	*	...	...	...
†	...	...	...	26. Icterus .....	†	†	†	†	†	†
	*	...	...	33. giraudi .....	*	...	...	...	...	...
	*	...	...	34. cucullatus .....	*	*	*	*	...	...
	*	...	...	35. auratus .....	*	...	...	...	...	...
	*	...	...	36. gularis .....	...	...	...	*	...	...
†	...	...	...	27. Quiscalus .....	...	...	†	†	†	†
	*	...	...	37. macrurus .....	...	...	*	*	*	*
	†	...	...	28. Cyanolyca .....	†	†	...	...	...	...
	*	...	...	38. yucatanica .....	*	*	...	...	...	...
	†	...	...	29. Xanthura .....	...	...	...	†	...	...
	*	...	...	39. luxuosa .....	...	...	...	*	...	...
	†	...	...	30. Campostoma .....	...	...	...	†	...	...
	*	...	...	40. imberbe .....	...	...	...	*	...	...
†	...	...	...	31. Elainea .....	†	†	†	†	†	†
	*	...	...	41. martinica .....	*	*	*	*	*	*
†	...	...	...	32. Myiopagis .....	...	...	†	†	†	†
	*	...	...	42. placens .....	...	...	*	*	*	*
†	...	...	...	33. Pitangus .....	...	...	†	†	†	†
	*	...	...	43. derbianus .....	...	...	*	*	*	*
	†	...	...	34. Myiobius .....	...	...	...	†	†	†
	*	...	...	44. sulphureipygius .....	...	...	...	*	*	*
	†	...	...	35. Pyrocephalus .....	...	†	†	†	†	†
	*	...	...	45. rubineus .....	...	*	*	*	*	*
†	...	...	...	36. Contopus .....	...	...	...	†	†	†
	*	...	...	46. brachytarsus .....	...	...	...	*	*	*
†	...	...	...	37. Myiarchus .....	...	...	...	†	†	†
	*	...	...	47. magister .....	...	...	...	*	*	*
	*	...	...	48. yucatanensis .....	...	...	...	*	*	*
	*	...	...	49. lawrencii .....	...	...	...	*	*	*
†	...	...	...	38. Tyrannus .....	†	†	†	†	†	†
	*	...	...	50. melancholicus .....	*	*	*	*	*	*
*	...	...	...	51. griseus .....	...	...	...	*	*	*
	*	...	...	52. magnirostris .....	...	...	*	...	...	...
	†	...	...	39. Pipra .....	†	†	...	...	...	...
	*	...	...	53. mentalis .....	*	*	...	...	...	...
†	...	...	...	40. Hadrostomus .....	...	†	...	†	†	†
	*	...	...	54. aglaie .....	...	...	...	*	*	*
	†	...	...	41. Attila .....	†	†	†	†	†	†
	*	...	...	55. cozumelæ .....	...	...	...	*	*	*
	*	...	...	56. citriopygius .....	*	*	*	...	...	...
4	39	4	9	Carried forward.....	19	16	20	37	9	3

Islands, Mainland, and West Indies.	Islands and Mainland.	Islands and West Indies.	Islands only.		Meco.	Holbox.	Mugeres.	Cozumel.	Rustan.	Bonacca.
4	39	4	9	Brought forward .....	19	16	20	37	9	3
	†	...	...	42. Dendroornis .....	†	...	...	...	...	...
	*	...	...	57. eburneirostris .....	*	...	...	...	...	...
	†	...	...	43. Dendrocincla .....	†	...	†	...	...	...
	*	...	...	58. homochrous .....	*	...	*	...	...	...
	†	...	...	44. Thamnophilus .....	†	...	...	...	...	...
	*	...	...	59. doliatus .....	*	...	...	...	...	...
†	...	...	...	45. Lamproornis .....	†	†	†	†	...	†
*	...	...	...	60. prevosti .....	*	*	*	*	...	*
†	...	...	...	46. Doricha .....	†	†	...	...	...	...
*	...	...	...	61. elizæ .....	*	...	...	...	...	...
	†	...	...	47. Amazilia .....	†	...	...	...	...	...
	*	...	...	62. cinnamomea .....	*	...	...	...	...	...
	†	...	...	48. Chlorostilbon .....	†	†	†	†	†	†
	...	...	*	63. forficatus .....	...	*	*	*	...	...
	*	...	...	64. caniveti .....	...	...	...	...	*	*
†	...	...	...	49. Chatura .....	...	...	...	†	...	...
	*	...	...	65. gaumeri .....	...	...	...	*	...	...
†	...	...	...	50. Nyctibius .....	...	...	...	...	†	...
*	...	...	...	66. jamaicensis .....	...	...	...	...	*	...
	†	...	...	51. Nyctidromus .....	...	...	†	†	...	...
	*	...	...	67. albicollis .....	...	...	*	*	...	...
	†	...	...	52. Dryobates .....	...	...	...	†	...	...
	*	...	...	68. scalaris .....	...	...	...	*	...	...
+	...	...	...	53. Centurus .....	†	...	...	†	†	†
	*	...	...	69. rubriventris .....	...	...	...	*	...	*
	*	...	...	70. dubius .....	*	...	...	*	...	...
	...	...	*	71. canescens .....	...	...	...	...	*	...
	†	...	...	54. Eumomota .....	†	...	...	...	...	...
	*	...	...	72. superciliaris .....	*	...	...	...	...	...
†	...	...	...	55. Ceryle .....	...	...	...	†	†	...
*	...	...	...	73. alcyon .....	...	...	...	*	*	...
	*	...	...	74. superciliosa .....	...	...	...	*	...	...
	†	...	...	56. Trogon .....	†	...	...	...	...	...
	*	...	...	75. melanocephalus .....	*	...	...	...	...	...
†	...	...	...	57. Crotophaga .....	...	†	†	†	†	...
*	...	...	...	76. ani .....	...	...	*	*	*	...
	*	...	...	77. sulcirostris .....	...	*	*	*	...	...
	†	...	...	58. Piaya .....	†	†	†	...	...	...
	*	...	...	78. cayana .....	*	*	*	...	...	...
+	...	...	...	59. Coccyzus .....	...	...	...	†	†	...
*	...	...	...	79. minor .....	...	...	...	*	*	...
	†	...	...	60. Rhamphastos .....	†	...	...	...	...	...
	*	...	...	80. carinatus .....	*	...	...	...	...	...
†	...	...	...	61. Conurus .....	...	†	...	...	...	...
	*	...	...	81. astec .....	...	*	...	...	...	...
+	...	...	...	62. Chrysotis .....	...	...	...	†	†	...
	*	...	...	82. auripalliatas .....	...	...	...	...	*	...
	*	...	...	83. autumnalis .....	...	...	...	...	*	...
	*	...	...	84. xantholora .....	...	...	...	*	...	...
10	59	4	11	Carried forward .....	28	23	26	50	17	6

Islands, Mainland, and West Indies.	Islands and Main- land.	Islands and West Indies.	Islands only.		Meco.	Holbox.	Mugerus.	Cozumel.	Ruantan.	Bonacca.
10	59	4	11	Brought forward .....	28	23	26	50	17	6
	†	...	...	63. Cicaba .....	†	...	...	...	...	...
	*	...	...	85. virgata .....	*	...	...	...	...	...
†	...	...	...	64. Glaucidium .....	...	...	...	†	...	...
	*	...	...	86. phalaenoides .....	...	...	...	*	...	...
	†	...	...	65. Asturina .....	†	†	...	†	†	†
	*	...	...	87. plagiata .....	...	...	...	...	*	*
	*	...	...	88. ruficauda .....	*	*	...	*	*	*
	†	...	...	66. Buteola .....	...	...	...	†	...	...
	*	...	...	89. brachyura .....	...	...	...	*	...	...
†	...	...	...	67. Urubitinga .....	...	...	...	†	...	...
	*	...	...	90. anthracina .....	...	...	...	*	...	...
	†	...	...	68. Geranospizias .....	†	...	...	...	...	...
	*	...	...	91. nigra .....	*	...	...	...	...	...
	†	...	...	69. Hypotriorchis .....	...	...	...	...	†	†
	*	...	...	92. rufigularis .....	...	...	...	...	*	*
	†	...	...	70. Ictinia .....	...	...	...	...	†	†
	*	...	...	93. plumbea .....	...	...	...	...	*	*
†	...	...	...	71. Cathartes .....	...	...	...	†	...	...
	*	...	...	94. aura .....	...	...	...	*	...	...
	†	...	...	72. Tigrisoma .....	...	...	...	†	...	...
	*	...	...	95. cabanisi .....	...	...	...	*	...	...
†	...	...	...	73. Dendrocygna .....	...	...	...	†	...	...
	*	...	...	96. autumnalis .....	...	...	...	*	...	...
	†	...	...	74. Cairinia .....	...	...	...	†	...	...
	*	...	...	97. moschata .....	...	...	...	*	...	...
†	...	...	...	75. Columba .....	...	...	...	†	†	†
	*	...	...	98. leucocephala .....	...	...	...	*	*	*
	†	...	...	76. Zenaida .....	...	†	†	...	...	...
	*	...	...	99. amabilis .....	...	*	*	...	...	...
	†	...	...	77. Chamæpelia .....	...	†	†	†	...	...
	*	...	...	100. passerina .....	...	*	*	*	...	...
	†	...	...	101. rufipennis .....	...	...	...	†	...	...
†	...	...	...	78. Engyptila .....	...	†	†	*	...	...
	*	...	...	102. jamaicensis .....	...	*	*	*	...	...
	†	...	...	79. Crax .....	...	...	...	†	...	...
	*	...	...	103. globicera .....	...	...	...	*	...	...
	†	...	...	80. Ortalia .....	...	†	†	...	...	...
	*	...	...	104. vetula .....	*	*	...	...	...	...
	†	...	...	81. Aramides .....	...	...	...	†	...	...
	*	...	...	105. albiventris .....	...	...	...	*	...	...
†	...	...	...	82. Porzana .....	...	...	...	†	...	...
	*	...	...	106. rubra .....	...	...	...	*	...	...
	†	...	...	83. Aramus .....	...	...	...	†	...	...
	*	...	...	107. giganteus .....	...	...	...	*	...	...
	†	...	...	84. Parra .....	...	...	...	†	...	...
	*	...	...	108. gymnostoma .....	...	...	...	*	...	...
17	76	4	11	Totals .....	32	28	29	67	22	7

I think therefore that Meco, so far as its birds are concerned, should be considered an integral part of the mainland of Northern Yucatan\*.

This removes 9 genera and as many species from the list, and leaves 75 genera and 99 species to be examined.

Of the 75 genera, *Melanoptila* is the only genus found in the islands and the adjoining mainland to the exclusion of the rest of Central America, and *Spindalis* is the only genus belonging to the West Indies to the exclusion of the continent. Forty-three genera are common to the islands, the continent, and to some one or more of the West Indies. The remaining 30 (or 31, including *Melanoptila*) are shared by the islands and mainland to the exclusion of the West Indies.

It will thus be seen that the relationship of the islands to the mainland is very much closer than it is to the West Indies, so far as regards genera, though *Spindalis* is a remarkable exception.

Next, as regards species, of which there are 99 to be considered (*i. e.* 108, less 9 belonging only to Meco). Of these 17 are common to the islands, the mainland, and one or more of the West Indies; 67 (*i. e.* 76, less 9 Meco birds) are common to the islands and the mainland to the exclusion of the West Indies; 4 are common to the islands and West Indies to the exclusion of the mainland; and 11 are peculiar to the islands alone.

Of the 67 species found on the islands and mainland to the exclusion of the West Indies, 10 are found nearly exclusively on the mainland immediately adjoining the islands; the remaining 57 are of wider range. The 10 species are the following:—

- |                                      |                                   |
|--------------------------------------|-----------------------------------|
| 1. <i>Melanoptila glabrirostris.</i> | 6. <i>Cyanolyca yucatanica.</i>   |
| 2. <i>Vireo magister.</i>            | 7. <i>Myiarchus yucatanensis.</i> |
| 3. <i>Pyrranga roseigularis.</i>     | 8. <i>Centurus dubius.</i>        |
| 4. <i>Spizella pinetorum.</i>        | 9. <i>Centurus rubriventris.</i>  |
| 5. <i>Icterus auratus.</i>           | 10. <i>Chrysotis xantholora.</i>  |

\* I have not been able to find any trace of Meco Island on the chart; but there is a place marked as El Meco on the mainland near the coast opposite Mugeris Island. Mr. Gaumer's labels, however, give Meco

The four species found in the islands and the West Indies to the exclusion of the mainland are:—

1. *Polioptila cæsiogaster*?, Cozumel, Ruatan, and Bahamas.
2. *Dendroica petechia*, Cozumel and Jamaica.
3. *Elainea martinica*, several islands and Lesser Antilles.
4. *Tyrannus magnirostris*, Mugeses and Cuba.

Besides these the following species, though also found on the mainland, belong rather to the West-Indian fauna:—

*Vireo calidris*, Cozumel and most of the West-Indian islands.

*Tyrannus griseus*, Cozumel and all the more northern Antilles.

*Crotophaga ani*\*, Cozumel, Ruatan, and the Antilles generally.

*Zenaida amabilis*, Holbox, Mugeses, and most of the Antilles.

*Engyptila jamaicensis*, Holbox, Mugeses, Cozumel, and Jamaica.

To complete the list of birds with special West-Indian affinities, the following peculiar species must be added:—

*Certhiola caboti*, Holbox and Cozumel, nearest to *C. bahamensis* of the Bahamas.

*Spindalis benedicti*, Cozumel, nearest to *S. pretrii* of Cuba and *S. zena* of the Bahamas.

Lastly, the species peculiar to the islands are 11 in number, viz.:—

1. *Harporhynchus guttatus*, Cozumel.
2. *Troglodytes beani*, Cozumel.
3. *Vireo bairdi*, Cozumel.
4. *Cyclorhis insularis*, Cozumel.

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Island so distinctly, that I infer that the place he visited was some small island or cay that has escaped the cartographers. It must, however, be well wooded to harbour such birds as species of *Eucometis*, *Embernagra*, *Cyanolyca*, *Pipra*, *Attila*, *Dendroornis*, *Thamnophilus*, *Trogon*, *Rhamphastos*, &c., &c.

\* It seems proper to consider this species as West Indian, so far as the islands now under consideration are concerned. It is, however, the prevalent species at Panama.

5. *Certhiola caboti*, Holbox and Cozumel.
6. *Spindalis benedicti*, Cozumel.
7. *Phaenicothraupis insularis*, Meco, Mugerres.
8. *Phonipara intermedia*, Holbox, Cozumel.
9. *Attila cozumelæ*, Cozumel.
10. *Chlorostilbon forficatus*, Holbox, Mugerres, Cozumel.
11. *Centurus canescens*, Ruatan.

All of these are of mainland affinities, except *Certhiola caboti* and *Spindalis benedicti*.

It will be seen from the foregoing lists that the affinities of the birds of these islands, as a whole, as might have been expected from their position, are largely on the side of those of the mainland. Still there is a West-Indian element, only just to be traced in Northern Yucatan by the presence of such birds as *Petrochelidon fulva* (not yet noticed on the Yucatan islands), *Zenaida amabilis*, and *Engyptila jamaicensis*, which is more strongly developed in the islands. At the same time it is clear that the West-Indian birds found on them are either specifically identical or so closely related as to be separable only by some slight modification of colour.

These differences being so slight, it is hardly possible that the West-Indian element in these islands can be due to any ancient land-connexion with the West Indies. For, from Prof. Agassiz's contour map of the Caribbean Sea ("Three Cruises of the 'Blake,'" i. p. 98, fig. 57), it will be seen that the whole of Northern Yucatan and the islands adjoining are separated from Cuba by a depth of over 1000 fathoms, and the Bay Islands from Jamaica by over 500 fathoms, and that all the islands themselves lie within the 100-fathom line of the mainland coast. If there had been any recent land-connexion, a supposition which the similarity of the birds alone would justify, the mainland, as well as the West Indies, would hardly fail to show such a connexion in a much more pronounced manner, and we should find, not the strong contrast that exists between the faunas of Cuba and Jamaica and the mainland, but a large number of features in common.

The alternative supposition to account for the West-Indian

element in these islands is that the birds have reached them at no distant date by flight. When we consider that the trade-wind blows almost continuously over Cuba and Jamaica in the direction of Yucatan and this coast for several months in the year, it is hardly a matter of wonder that some West-Indian birds do stray so far west.

We should, however, expect to find more of them on the mainland. That this is not the case may be due to the imperfect way in which nearly the whole of this coast has been explored. No collections whatever have been made from any point between Belize and Cape Catoche, and the coast of British Honduras has only been touched in a very imperfect way.

I anticipate therefore that as our knowledge of the immediate mainland becomes more advanced, the peculiarities of these islands as regards their West-Indian element will diminish, if not altogether disappear.

I have hitherto treated of these coast-islands as a whole, but on examining them in detail they split up naturally into three groups. Leaving Meco out of the question, Holbox and Mugerres may be classed together, Cozumel by itself, and the Bay Islands of Ruatan and Bonacca by themselves.

HOLBOX and MUGERRES.—The bird-fauna of these islands closely resembles that of the mainland. Of the 70 recorded specimens, 26 are migrants, 1 has a very wide range, and 43 form the more localized resident fauna. Of these 43 species, the following 6 are more or less associated exclusively with the West Indies:—(1) *Certhiola caboti* (also found on Cozumel), a peculiar species, but very closely allied to *C. bahamensis*; (2) *Phonipara intermedia* (also found on Cozumel), very close to *P. olivacea* of the West Indies and to *P. pusilla* of the mainland; (3) *Elainea martinica* (also found on several other islands), a common species of the Lesser Antilles, but very closely allied to *E. pagana* of the mainland; (4) *Tyrannus maguirostris*, identical with the Cuban bird. The remaining two are (5) *Zenaida amabilis* and (6) *Engyptila jamaicensis*, both also found on the mainland. Of the 37 mainland forms, *Phænicothraupis insularis* and *Chloro-*

*stilbon forficatus* alone can at present claim to be peculiar, but both of them are also found on other islands. Holbox and Mugerres therefore have a very decided mainland affinity as regards their birds, a very slight peculiarity, and a West-Indian element, due most probably to quite recent or not distant casual immigration.

COZUMEL.—The larger size of Cozumel and the greater time spent over the examination of its fauna gives us a total of 159 species as found within its limits. Of these 65 are migrants and 27 birds of very wide range. This leaves 66 as the number of resident species, with more or less restricted limits; 52 of these are also characteristic of the mainland, 4 are shared with other islands, 4 are strictly West-Indian, and 6 are peculiar. Of the latter, *Spindalis benedicti* is the only one with West-Indian affinity, the others are modified mainland forms. *Harporhynchus ocellatus*, one of these, is remarkable as representing a genus not found nearer than the State of Vera Cruz or the northern shore of the Gulf of Mexico. Its presence in Cozumel must be attributed to casual introduction at a somewhat remote date, due perhaps to the severe northern storms which prevail in this region during the winter months.

Thus Cozumel would seem to have been separated from the mainland for a considerable period, during which time it has received casual immigrants from the West Indies, from North America, and from the mainland, some of them at dates sufficiently long ago to allow of their modification.

RUATAN and BONACCA.—These islands are very different in their physical features from those just mentioned. They are high, attaining an elevation of about 1200 feet, and have the upper portion covered with pines, instead of being low islands of recently elevated coral limestone. Mr. Gaumer's collections from these islands include specimens of 72 species, of which 42 are migrants, and 5 are of very wide range. The remaining 25 also belong almost exclusively to the mainland; but there is a decided element amongst these, with an affinity to the coast of Yucatan and its islands rather than to the coast immediately opposite. This is shown by the

presence of *Vireo magister*, *V. ochraceus*, *Centurus rubri-ventris*, and *C. canescens*. *Crotophaga ani* is the only West-Indian representative, and also belongs to Cozumel. It is difficult to account for this northern element, unless it be due to the northerly gales already mentioned. The trade-winds that strike the Bay Islands blow over the widest part of the Caribbean Sea and bring no stragglers from the West Indies.

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X.—*On the Birds of the Bonin Islands.*

By HENRY SEEBOHM, F.Z.S.

THE arrival of a small box of bird-skins from the Bonin Islands makes it possible to clear up some of the difficulties which have surrounded the avifauna of this interesting but neglected group.

Mr. P. A. Holst left Yokohama on the 6th of April, 1889, and spent the greater part of May, June, July, and August on the Bonin Islands, calling at some of the Seven Islands both in going and returning. Collections were made at the following localities :—

Hatchinow-Shima, or Fatsizio Island, about 200 miles south of Yokohama ;

Muco-Shima and Nakondo-Shima, two of the Parry Islands, nearly 600 miles south of Yokohama ;

Chichi-Shima, or Peel Island, about 40 miles further south ;

Haha-Shima, or Hillsborough Island, one of the Coffin Islands or Baily Islands, about 40 miles south of Peel Island.

The Bonin Islands were visited in 1827 by Captain Beechey, during the voyage of the ' Blossom ;' but the zoological discoveries were not published until 1839 (' The Zoology of Captain Beechey's Voyage to the Pacific and Behring's Straits, performed in H.M.S. *Blossom* under the command of Captain F. W. Beechey in the years 1825-28 : ' Ornithology, by N. A. Vigors).

In 1828 they were visited by Baron F. H. von Kittlitz ;

and an unfinished paper, "Ueber die Vögel der Inselgruppe von Boninsima," appeared in the 'Mémoires présentés à l'Académie Impériale des Sciences de St. Pétersbourg par divers Savans,' 1830, pp. 231-248, which was followed in 1833 by some figures and short text in the third part of Kittlitz's "Kupfertafeln zur Naturgeschichte der Vögel."

For the last sixty years our information respecting the Bonin Islands and its ornithology has been of the most meagre character. In 1854 they were visited by Mr. Stimpson, who found examples of four species on the islands, which are included in a "Catalogue of Birds collected by the United States North Pacific Surveying and Exploring Expedition, in command of Capt. John Rodgers, United States Navy; with notes and descriptions of new species" (Cassin, Proc. Acad. Nat. Sc. Philad. 1862, pp. 312-327).

In 1882 Blakiston and Pryer published a paper on the Birds of Japan in the 'Transactions of the Asiatic Society of Japan' (vol. x. p. 84), in which a few waifs and strays of ornithological information respecting the Bonin Islands occur.

Mr. Holst writes:—"It seemed to me quite solemn when the 'Suruga Maru' cast anchor in 25 fathoms of water at Port Lloyd, on Peel Island, one of the central group of the Bonins, between high rocks and lofty gloomy hills, which shelter the harbour almost on every side. The bay has a circumference of more than three miles, and the mountains are covered with small palm trees and other tropical vegetation. The islanders soon made their appearance in sanpans and canoes, and were most of them half-naked Japanese.

"No bird can be said to be very abundant on Peel Island, but *Hypsipetes squamiceps* is the most so. It is very good eating, and is said to be very fat in the winter. There are a good many Blue Rock-Thrushes (*Monticola solitarius*), but I have only found one kind of Warbler, *Cettià diphone*. I have seen a pair of Buzzards and a Raven, besides some small Sandpipers and a flock of about twenty Gulls. Pigeons are said to be common in winter. There are plenty of a good-sized deer, some weighing as much as 250 lb., and green turtles as large as 400 lb.; also wild goats, wild boars, wild cats, flying foxes, &c.

“During the whole time I have been on Peel Island we have had almost continuous rains, with very few fine days; but the islanders inform me that this is very exceptional, and that their rainy season is October and November. The islanders are the laziest, sleepest, and most disobliging people I have ever met with, and I am tormented with mosquitoes and horse-flies.

“I have visited the Parry Islands, about forty miles north of Peel Island; but we had heavy rain all the time. I have also been to the Baily Islands for a couple of days, where we had the thermometer at 95° in the shade. I have heard of a Sea-Eagle which had come to the north end of Stapleton Island during the last three winters, but it is never seen during summer.”

#### CORVUS MACRORHYNCHUS JAPONENSIS.

Mr. Holst has sent an example of the Japanese race of the Oriental Raven from Peel Island, and one from Nakondo-Shima, an island belonging to the Parry group, about 40 miles further north.

The bill is thick (upper mandible at nostrils .75 inch high), and the general size is large (wing from carpal joint 13½ inches); but Japanese examples are frequently larger. The feathers of the throat are lanceolate, but those of the upper breast are not. The feathers of the mantle are glossed with green and have dark bases. The example from Peel Island has some white on both wings, being apparently a partial albino.

#### GEOCICHLA TERRESTRIS.

Kittlitz's Ground Thrush was discovered in 1828 on one of the Bonin Islands, and was described under the name of *Turdus terrestris* (Kittlitz, *Mém. prés. à l'Acad. St. Pétersb. par divers Savans*, 1830, p. 244). The type is in the Museum of the Imperial Academy of Sciences in St. Petersburg; there is a second example in the Vienna Museum, and a third in the Leyden Museum.

Mr. Holst failed to secure specimens of this interesting bird.

## MERULA CELÆNOPS.

This well-marked species of Thrush was originally discovered by Mr. Namiye on Miaco-Shima, one of the Seven Islands south of Yokohama, in latitude  $34^{\circ}$  (Stejneger, Proc. United States Nat. Mus. 1887, p. 484). The types (male and female) are in the Smithsonian Institution in Washington, and no example was known in European collections until I secured one (a male) in the Pryer Collection. Mr. Holst has now sent me a pair (male and female) from Hatchinow-Shima (or Fatsizio Island) in latitude  $33^{\circ}$ , where he remarks that they are common. This species is very similar to *Merula protomomelæna* (*Turdus dissimilis*, Seebohm, P. Z. S. 1879, p. 805, pl. lxiv.), but differs in having grey instead of orange-chestnut axillaries. The female very closely resembles the female of *Merula chrysolæus*, but the brown of the upper parts is more russet (less olive) and the orange-chestnut of the underparts darker in the island species.

## MONTICOLA CYANUS SOLITARIUS.

The Eastern Blue Rock Thrush is a common bird on the Bonin Islands. Mr. Holst has sent me seven adult males, four adult females, and one male in first spring plumage, collected in April and May on Peel Island, together with four eggs from a clutch of five. He has also sent two males and one female, collected in July on the same island, which are in the plumage of birds of the year. A female collected on the 1st of August on Haha-Shima (one of the southern or Baily Group) is in the same plumage. A male obtained on 27th of June on the last-mentioned island, and a female on the 13th of June on Muco-Shima (one of the northern or Parry Group), are young in first plumage.

## HYPSSIPETES SQUAMICEPS.

The Bonin-Island Bulbul was discovered by Kittlitz in 1828, and named by him *Oriolus squamiceps* (Kittlitz, Mém. prés. à l'Acad. Imp. des Sciences de St. Pétersbourg, par divers Savans, 1830, p. 241). Shortly afterwards he identified his species with its Japanese ally, and adopted Temminck's specific name; but no longer believing it to be an

Oriole, and doubting Temminck's assertion that it was a Thrush, he decided that it was a Roller, and called it *Galgulus amaurotis* (Kittlitz, Kupfertafeln zur Naturgeschichte der Vögel, p. 8, pl. xii. fig. 1). From 1832 the two species remained confused together until 1884, when the Bonin-Island Bulbul reappeared in ornithological literature under the name of *Hypsipetes squamiceps* (Meyer, Zeitsch. ges. Orn. i. p. 211).

The acquisition of twelve examples from Chichi-Shima (or Peel Island), Haha-Shima (or Hillsborough Island, one of the Baily Islands), and Nakondo-Shima (one of the Parry Group) enables me to confirm Dr. Meyer's conclusion that the two species differ both in size and colour. Three females vary in length of wing (from carpal joint) from 4·85 to 5·1 inches, and in length of tail from 4·5 to 4·8 inches; whilst eight males vary in length of wing from 5·1 to 5·45 inches, and in length of tail from 4·7 to 5·0 inches. The bill (from frontal feathers) measures in the females ·85 inch, and in the males from ·85 to 1·05 inch. The tarsi of the females measure ·95 inch, and those of the males vary from ·95 to 1·05 inch. The colours of the soft parts are described as follows:—"Bill and tarsi slate-grey; irides light brown." An example of young in first plumage closely resembles the adult, but has the crown uniform brown like the back.

#### CETTIA DIPHONE.

The Bonin Bush Warbler was originally described under the name of *Sylvia diphone* (Kittlitz, Mém. prés. à l'Acad. des Sciences de St. Pétersb. par divers Savans, 1830, p. 237), from examples obtained from the Bonin Islands in 1828. An imperfect example was described in 1884 as having been obtained by Mr. N. Ota on the Bonin Islands (Blakiston, Amended List of the Birds of Japan, p. 56); and there is an example in the Pryer Collection, probably from the same source.

Mr. Holst has sent three examples from Chichi-Shima (Peel Island) and two from Muco-Shima (one of the Parry Group), collected in May and June.

The Bonin Bush Warbler is very closely allied to *Cettia cantillans*, from which it does not differ in colour.

The examples sent are four males and one young in first plumage. The adults differ from adult examples of *Cettia cantillans* in the following particulars:—

Culmen  $\cdot 69$  to  $\cdot 7$  inch (instead of  $\cdot 5$  to  $\cdot 6$  inch), wing from carpal joint  $2\cdot 2$  to  $2\cdot 3$  inches (instead of  $2\cdot 1$  to  $2\cdot 28$  inches), tail  $2\cdot 46$  to  $2\cdot 56$  inches (instead of  $2\cdot 0$  to  $2\cdot 3$  inches), tarsus  $\cdot 93$  to  $\cdot 98$  inch (instead of  $\cdot 89$  to  $\cdot 9$  inch). The length of wing is about the same, but the culmen, tail, and tarsus are longer. There are ten tail-feathers, of which the outer ones are  $\cdot 4$  inch shorter than the longest. The relative proportion of the primaries is about the same in both species.

#### HAPALOPTERON FAMILIARE.

Mr. Holst has sent twelve examples of this curious little Timeliine Warbler, which was originally discovered in 1828 on the Bonin Islands, and described under the name of *Icos familiaris* (Kittlitz, Mém. prés. à l'Acad. Imp. des Sciences de St. Pétersb. par divers Savans, 1830, p. 235). In 1848 it was doubtfully referred to the genus *Iora* (Gray, Gen. B. i. p. 199), and in 1854 the genus *Apalopteron* (scr. *Hapalopteron*) was invented for its reception (Bonaparte, Compt. Rend. xxxix. p. 59). This genus was degraded in 1869 to the rank of a subgenus of *Pycnonotus* (Gray, Hand-list of Birds, i. p. 271), but it is not known that any of these writers ever saw an example.

Until its affinities can be more accurately determined it is probably wisest to allow it to remain in the genus which Bonaparte created for it; but it appears to be not distantly related to *Stachyrhis* (a genus represented in Borneo) and to *Stachyrhidopsis* (which is represented in Formosa). Mr. Holst has sent examples of male, female, and young, which scarcely differ in plumage. The bill is long, stout, and curved; the tarsus is long, and the feet are stout; the nostrils are covered by an operculum; the rictal bristles are fairly well developed; the scutellation of the tarsus is very obscure; the wings are considerably concave; the first primary is more

than half the length of the second; the second primary is about as long as the secondaries; and the third primary is between the seventh and eighth. The soft parts are described as follows:—"Bill and tarsi black; irides light brown." The upper parts are olive-green and the underparts bright yellow, shading into dull olive on the flanks; there is a ring of white feathers round the eye; forehead black; lores yellow; superciliary stripe black; ear-coverts black anteriorly, yellow posteriorly. The outer webs of the quills are margined with yellow. Tail-feathers twelve, rather pointed, and of nearly equal length. Axillaries, under wing-coverts, and inner margin of quills pale yellow. Wing from carpal joint 2·7 to 2·6 inches; tail 2·4 to 2·25 inches; culmen ·74 to ·65 inch; tarsus 1·0 to ·9 inch. The dates are 13th of June to 2nd of August, and the localities Muco-Shima and Nakondo-Shima (two of the Parry Islands) and Haha-Shima (one of the Baily Islands).

FRINGILLA KITTLITZI, sp. nov.

The Bonin Island Greenfinch was discovered by Kittlitz in 1828, but was not regarded by its discoverer as distinct from the European species. It most nearly resembles *Fringilla sinica* in size, agreeing with that species and with *F. kawarahiba* (and differing from the European species) in having the bases of the secondaries yellow on both webs. It has much less yellow at the base of the tail-feathers than any of its allies, and less on the inner webs of the quills than the other two eastern species. The crown and nape of *F. sinica* are grey, those of *F. kawarahiba* brown, and those of *F. kittlitzii* olive.

Mr. Holst has sent three examples from Nakondo-Shima (one of the Parry Islands), and two from Haha-Shima (one of the Baily Islands).

FRINGILLA MONTIFRINGILLA.

A single example of the Common Brambling was caught on the steamer about thirty miles north of the Bonin Islands early in April. This species is a common winter visitor to all of the Japanese Islands, occasionally wandering as far south as the Loo-Choo Islands.

## CHAUNOPROCTUS FERREIROSTRIS.

The Bonin Grosbeak was discovered in 1827 on one of the Bonin Islands, during the voyage of the 'Blossom,' and was originally described without any record of the locality whence it was procured (Vigors, Zool. Journ. 1828, p. 354); the types are now in the British Museum. It was rediscovered a year later, and redescribed as *Fringilla papa* (Kittlitz, Mém. présentés à l'Acad. Imp. des Sciences de St. Pétersb. par divers Savans, 1830, p. 239). It is figured in Bonaparte and Schlegel's 'Loxiens,' pls. 37, 38 (p. 32), as *Chaunoproctus papa*.

Mr. Holst did not succeed in obtaining this curious species, but he heard that it was to be found on the Baily Islands.

## HIRUNDO RUSTICA GUTTURALIS.

An example of the Eastern race of the Common Barn Swallow is dated the 3rd of May from Peel Island, and is described as one out of two, which were seen for one day only on their spring migration. This bird is a common summer visitor to Japan.

## BUTEO VULGARIS PLUMIPES.

Mr. Holst has sent four examples of the Eastern race of the Common Buzzard from Peel Island, not far from the centre of the Bonin group. Two of these examples are young, with barred tail-feathers, and the other two do not appear to be very old, as there are traces of bars on several of the tail-feathers. In all the examples the tarsi are feathered for more than half their length.

## CARPOPHAGA IANTHINA.

The Japanese Fruit Pigeon was procured by Kittlitz on the Bonin Islands in 1828. One of his examples is in the Senckenberg Museum in Frankfort, and a second is in the Museum of the Imperial Academy of Sciences in St. Petersburg. The latter has been made the type of a new species, *Ianthænas nitens* (Stejneger, Proc. United States Nat. Mus. 1887, p. 421), on the ground that the head is brown instead of slate-grey; but as this is not the case with the Frankfort

specimen, it is probable that the difference is due to abrasion. Mr. Holst did not procure this bird on the Bonin Islands, though he saw a Pigeon on Peel Island and obtained its eggs, but he has sent an example from Hatchinow-Shima (Fatsizio Island), which does not differ from Japanese specimens.

#### CARPOPHAGA VERSICOLOR.

The Bonin Fruit Pigeon was discovered on one of the Bonin group of islands in 1827 by Captain Beechey during the voyage of the 'Blossom,' and was named *Columba metallica* (Vigors, Zool. Captain Beechey's Voyage, p. 25). In consequence of most unreasonable delay in the completion of the part relating to the Mollusca the results of the voyage were not published until 1839. In the meantime two events happened which made the use of this name impossible. In 1828 F. H. von Kittlitz spent a fortnight on the Bonin Islands and also discovered the Fruit Pigeon which is peculiar to them, and described and figured it in 1832 under the name of *Columba versicolor* (Kittlitz, Kupfertafeln zur Naturgeschichte der Vögel, p. 5, pl. v. fig. 2). Not only was Vigors's name thus antedated by that of Kittlitz in consequence of the provoking delay, but it was otherwise, and, so far as appears, quite independently applied to another species of Fruit Pigeon from the Island of Timor (Temminck, Planches Coloriées, no. 562) in 1835. In the same year the Bonin species was named *Columba kittlitzii* (Temminck, Planches Coloriées, page following text to no. 578).

Kittlitz's type of this handsome bird is in the St. Petersburg Museum, and there is a duplicate in the Senckenberg Museum in Frankfort, but Vigors's type appears to have been lost. Mr. Holst has obtained for me a male from Nakondo-Shima, one of the Parry Group of the Bonin Islands. It is dated the 15th of September, and is moulting both its primaries and its rectrices. The soft parts are described as follows:—"Bill greenish yellow; tarsi dark red; irides dark blue."

*Carpophaga versicolor* can never be confused with its Japanese ally. It is a much larger and much paler bird,

measuring from one to two inches longer in the wing, and an inch longer in the tail. The bronze on the wing-coverts is green in all positions, and the ground-colour of the underparts is lavender instead of dark bluish grey.

*CHARADRIUS FULVUS.*

The Asiatic Golden Plover was found on one of the Bonin Islands by Captain Rodgers (Cassin, Proc. Acad. Nat. Sc. Philad. 1862, p. 321), doubtless on migration.

*TOTANUS INCANUS.*

An example of the American Wandering Tattler was procured by Mr. Holst on Peel Island on the 11th of May. The whole of the underparts are barred, the nasal groove extends for two thirds of the length of the bill, and the back of the tarsus is very imperfectly scutellated. It is sexed a female. Wing from carpal joint 6·9 inches. The soft parts are described as follows:—"Bill slate-grey; tarsi yellow; irides light brown." It appears to be a fully adult bird, doubtless on its way north to breed.

*TOTANUS INCANUS BREVIPES.*

An example of the Asiatic Wandering Tattler was procured on Peel Island on the 1st of June. The belly is nearly all unspotted white; the nasal groove only extends along half the length of the bill; and the scutellations at the back of the tarsus are very perfect. It is sexed a male. Wing from carpal joint 6·2 inches. It is described as being very shy; it was in the company of a mate which was not procured. From the barring on its upper tail-coverts and the traces of pale margins on many of the feathers of the upper parts, I take it to be a bird of the previous year.

It was probably an example of this race which was procured by Captain Rodgers on one of the Bonin Islands (Cassin, Proc. Acad. Nat. Sc. Philad. 1862, p. 109).

*TOTANUS HYPOLEUCUS.*

The Common Sandpiper was procured on one of the Bonin Islands by Captain Rodgers (Cassin, Proc. Acad. Nat. Sc. Philad. 1862, p. 322), and was recorded under the name of

*Tringoides empusa*. Mr. Holst obtained an example on Peel Island on the 11th of July.

LARUS CACHINNANS.

An immature example of a large Gull procured by Mr. Holst on Peel Island appears to belong to Pallas's Herring Gull. It was one of a party of perhaps twenty birds, which disappeared shortly after his arrival in April.

DIOMEDEA ALBATRUS.

There are five eggs of Steller's Albatros in the Pryer Collection, which are labelled as having come from the Bonin Islands. They vary in size from 4·7 by 2·9 inches to 4·3 by 3·0 inches. They are creamy white, profusely speckled with russet at the large end.

Steller's Albatros was discovered by the illustrious traveller whose name it bears on the coast of Kamtschatka, and was described in 1780 (Pallas, *Spicilegia Zoologica*, pt. v. p. 28). It is a common species in the Japanese seas, and is generally found in company with a dark form, which has been regarded by some ornithologists as the young. Others have described it as specifically distinct; but it seems probable that the two forms represent a dimorphic species, like *Fulmarus glacialis*, *Stercorarius pomarinus*, *Stercorarius richardsoni*, *Ardea jugularis*, &c. The dark form was figured on plate 963 of the 'Planches Enluménées' of D'Aubenton under the title of L'Albatros de la Chine. Upon this plate the name of *Diomedea chinensis* was founded in 1820 (Temminck, *Man. d'Orn.* i. preface, page cx); but its author appears to have changed his mind in 1828, and renamed it *Diomedea brachyura* (Temminck, *Planches Coloriées*, Genus *Diomedea*, 75th livraison). It was afterwards rediscovered and redescribed under the name of *Diomedea derogata* (Swinhoe, *Proc. Zool. Soc.* 1873, p. 786).

CESTRELATA HYPOLEUCA.

Some years ago I received a few birds from Mr. Snow, of Yokohama, which had been collected on Krusenstern Island in the North Pacific Ocean. Amongst these was the skin of a small Petrel, which I gave to the British Museum

along with the rest of my Tubinares when that group was being arranged by Mr. Salvin. This skin is the type of *Æstrelata hypoleuca* (Salvin, Ibis, 1888, p. 359), and remained unique until I received an adult and young from Mr. Holst. The soft parts of the adult are described as follows:—"Tarsi bluish pink; bill black; irides dark brown; pupil blue." These skins were obtained on the 16th of June on Nakondo-Shima, one of the Parry group of the Bonin Islands. The young bird is moulting from its downy stage into the adult plumage, and appears not to have left the nest.

#### NYCTICORAX CRASSIROSTRIS.

Mr. Holst has been fortunate enough to procure an example of this much disputed species. It is a female with very short crest, and was obtained on Nakondo-Shima, one of the Parry Islands, on the 15th of June.

The Bonin Night Heron was originally discovered by Captain Beechey during the voyage of the 'Blossom' in 1827, but was not named until 1839 (Vigors, Zool. Captain Beechey's Voyage, p. 27). In the meantime it was rediscovered in 1828, and identified, in 1833, with *Ardea caledonica* (Kittlitz, Kupfertafeln zur Naturgeschichte der Vögel, pt. iii. p. 27). Vigors's type was once in the Museum of the Zoological Society, and was transferred to the British Museum, where it now is, all assertions to the contrary (Walden, Trans. Zool. Soc. ix. p. 238) notwithstanding.

The Bonin Night Heron is vinous grey above and white below; the head and crest are black, and the occipital plumes, what there is left of them, appear to have been white. The superciliary streak is white, and the axillaries are white. The soft parts are described as follows:—"Tarsi light yellow, with greenish scales in front; bill black, greenish yellow at base; irides light yellow." Wing from carpal joint 11 inches; tail 4·3 inches; bill, from frontal feathers, 2·8 inches; tarsus 3·3 inches; middle toe with claw 3 inches; height of bill at nostrils ·9 inch.

It appears to be quite distinct from *Nycticorax manillensis*, which has reddish axillaries and a rufous superciliary streak;

but it only differs from *Nycticorax caledonica* in having the bill slightly stouter, measuring from 1 to .9 (instead of from .9 to .8) inch at the base of the nostrils.

#### SULA LEUCOGASTRA.

The Common Booby was procured on the Bonin Islands by Mr. Stimpson in 1854 (Cassin, Proc. Acad. Nat. Sc. Philad. 1862, p. 325), and has already been recorded as breeding on these islands (Blakiston and Pryer, Trans. As. Soc. Japan, 1882, p. 102). Mr. Holst has sent an adult male and an adult female from Peel Island, obtained on the 11th of May. He states that this species is common on the lonely islands, especially on Long Island or Minam-Shima, whence he has sent an egg. The egg measures 2.5 by 1.6 inches, and is greenish white with very little superfluous chalk on the surface. The colours of the soft parts of the birds are not given, but the bill appears to be pale yellow, and the feet yellowish green.

#### PHAETON RUBRICAUDA.

Mr. Holst writes that there is a bunch of the tail-feathers of the Red-tailed Tropic-bird in the Tokio Museum labelled Bonin Islands. I have a skin which was procured by Mr. Snow in the spring of 1883 on Krusenstern Island, about forty degrees to the east of the Bonin Islands. Mr. Holst was told that a white bird with red tail was common at certain seasons on the Parry Islands.

Thus the Bonin Islands appear to have derived their resident birds from various sources. After the winter visitors have been eliminated there remain only 15 residents. Of these, *Diomedea albatrus*, *Œstrelata hypoleuca*, *Sula leucogastra*, and *Phaeton rubricauda* are ocean-birds with ranges of considerable extent, leaving only 11 resident land-birds. Of these *Corvus japonensis*, *Monticola solitarius*, and *Buteo plumipes* are Japanese birds, leaving the following eight species peculiar to the Bonin Islands:—

1. *Geocichla terrestris*, which is not very nearly allied to any other species, but is probably connected with *G. sibirica*.

2. *Hypsipetes squamiceps*, which is doubtfully distinct from *H. pryeri* of the Loo-Choo Islands.

3. *Cettia diphone*, which has its nearest ally in *C. cantillans* from Japan.

4. *Hapalopteron familiare*, which may be allied either to a species from Formosa or the Malay Archipelago.

5. *Fringilla kittlitzii*, which is most nearly allied to *F. kawaraha* from Japan.

6. *Chaunoproctus ferreirostris*, which may be an ally of *Coccothraustes personatus* changed in colour, or of *Loxia enucleator*, which has changed the size of its bill.

7. *Carpophaga versicolor*, which may be an offshoot of *C. ianthina* from Japan, or of *C. griseigularis* from the Philippine Islands.

8. *Nycticorax crassirostris*, which is doubtfully distinct from *N. caledonica* of Australia.

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#### XI.—Notices of recent Ornithological Publications.

##### 1. Aitchison on the Zoology of the Afghan Border.

[The Zoology of the Afghan Delimitation Commission. By J. E. T. Aitchison, M.D., C.I.E., F.R.S., F.L.S. Trans. Linn. Soc. 2nd ser. Zool. v. pt. 3. London: May, 1889.]

The authorities objected to have more than one Naturalist attached to the Afghan Delimitation Commission. Consequently Dr. Aitchison, whose "special calling is that of a Botanist," had to undertake the zoological work also, and being unprovided with proper assistants and not able to induce the natives to collect for him, did not make such extensive collections as might well have been formed in the interesting district explored and under the favourable circumstances of the expedition.

In his summary of the results Dr. Aitchison tells us that specimens of 123 species of birds were obtained, and 14 others were recognized. "Amongst these there are only three new species, namely, a Woodpecker (*Gecinus gorii*, Hargitt), a Sparrow (*Passer yatii*, Sharpe), and a Pheasant

(*Phasianus principalis*, Sclater). With few exceptions all the birds observed were migratory, the exceptions being the Pheasant, Raven, Rook, Carrion-Crow, Jackdaw, Sparrow, Starling, the Sky-Lark (*Alauda arvensis*), the Large-crested Lark (*Galerida cristata*), the Bokhara Lark (*Melanocorypha bimaculata*), the Wall-creeper (*Tichodroma muraria*), the Bittern (*Botaurus stellaris*), an Owl, several of the Raptores, the Black-breasted Sand-Grouse (*Pterocles arenarius*), and a Red-legged Partridge (*Caccabis chukar*).

“As spring advances, birds are seen to arrive, following each other very rapidly, such as *Aedon familiaris*, *Sylvia*, *Saxicolæ*, *Motacillæ*, *Lanius*, *Pastor*, *Merops*, *Coracias*, &c. The various Ducks are then leaving, except the Brahminy (*Casarca rutila*), which breeds there and is resident throughout the year. The largest number of species occur in the genera *Saxicola* (8), *Lanius* (6), *Sylvia* (5), *Motacilla* (5), and *Emberiza* (4).”

The special section on birds is prepared by Mr. Sharpe, who adds to the names of the species such synonymy as bears upon their distribution in the neighbouring parts of Central Asia, and the necessary remarks on the specimens. Dr. Aitchison appends occasional field-notes. The localities and dates of the specimens obtained are precisely recorded, and maps are given to show the routes traversed by the Naturalist. Coloured figures are given of *Gecinus gorii*, *Passer yatii*, and *Phasianus principalis*.

## 2. Allen on the Species of *Cyclorhis*.

[On *Cyclorhis viridis* (Vieill.) and its near Allies, with Remarks on other Species of the Genus *Cyclorhis*. By J. A. Allen. Bull. Am. Mus. Nat. Hist. ii. p. 123.]

Mr. Allen has had the advantage of examining 46 specimens of *Cyclorhis* collected at Chapada in Matto Grosso by Mr. H. H. Smith. The information derived from this fine series and from other quarters has enabled him to correct and supplement the observations on this somewhat difficult genus lately published by Graf v. Berlepsch and by the Editor of this

Journal (Ibis, 1887, p. 320, and 1888, p. 83). He recognizes 10 species and 3 subspecies of *Cyclorhis*, of which he gives a synoptical table.

### 3. Allen on new South-American Birds.

[Descriptions of new Species of South-American Birds, with Remarks on various other little-known Species. By J. A. Allen. Bull. Am. Mus. Nat. Hist. ii. p. 137.]

Mr. Allen describes as new species *Thryothorus macrurus* from Bogota, *T. longipes* from Ecuador, *Platyrhynchus bifasciatus* from Matto Grosso (*H. H. Smith*), *P. insularis* from Tobago, *Euscarthmus ochropterus* and *Sublegotus virescens*, both from Matto Grosso (*H. H. Smith*), and *Empidonax lawrencii* (= *Ochthæca flaviventris*, Lawrence), and proposes a new sub-specific name (*Thamnophilus doliatus mexicanus*) for the Central American form of *T. doliatus*. He also gives interesting notes on other obscure species—amongst others on *Tanagra cærulescens*, Wied (= *Porphyrospiza pulchra*, Sharpe), and on certain species of *Habrura*, *Phyllomyias*, and *Ornithion*. Mr. Allen has now the Lawrence Collection to work upon, and full access to the types of Lefresnaye and Prince Max. of Wied. We are glad to see that he is making good use of his opportunities.

### 4. Aplin on the Birds of Oxfordshire.

[The Birds of Oxfordshire. By O. V. Aplin, M.B.O.U.\* With a map. 8vo. Oxford: 1889.]

The author is one of three ornithological brothers, whose 'Birds of the Banbury District' we noticed favourably in this Journal for 1883, p. 375. In conjunction with the above members of his family, and availing himself of the assistance of Mr. W. Warde Fowler and others, he has now extended his researches so as to embrace the entire county, the result being a work which will bear comparison with any similar treatise on local avifaunas. The introductory sketch of the natural features of Oxfordshire, with the changes wrought by drainage, game-preserving and other causes, is excellent, and a good map, which should always accompany a work of this

kind, facilitates reference to the places mentioned. The Alpine Chough shot at Broughton in April 1881 forms the subject of a coloured frontispiece, and the author points out that not only did the bird show no signs of confinement, but that also, on inquiry, no instances of escapes were forthcoming. All the remarks upon the various species appear to be correct as well as concise, while several interesting facts are set forth; and the entire work is characterized by a complete absence of "padding." We think that Mr. Aplin would have acted wisely in following the arrangement set forth in the "B. O. U." List, rather than that of the 4th edition of "Yarrell"; for the sequence in the latter was obviously and necessarily a compromise, and should never have been accepted as a pattern.

#### 5. Berlepsch on new Neotropical Birds.

[Descriptions of new Species and Subspecies of Birds from the Neotropical Region. By Hans von Berlepsch. Auk, v. p. 449.]

In this article are described as new species or subspecies *Campylorhynchus zonatus costaricensis*, *Certhia mexicana albescens*, *Basileuterus godmani* from Veragua, *Eucometis spodocephala pallida* from Yucatan, *E. s. stictothorax* from Veragua, *E. cristata affinis* from Venezuela, *Icterus gularis yucatanensis*, *Myiobius ridgwayi* from Rio, and *Synallaxis coryi* from Mérida.

#### 6. Berlepsch on Birds from Brazil and North Peru.

[Systematisches Verzeichniss der von Herrn Gustav Garlepp in Brasilien und Nord-Peru, im Gebiete des oberen Amazonas, gesammelten Vogelbälge. Von Hans von Berlepsch. J. f. O. 1889, p. 97.]

Our friend Hans Graf v. Berlepsch writes on the collections made by Gustav Garlepp, primarily an insect-collector, sent out by Dr. Staudinger of Dresden, who has passed up the Amazons into Peru. The present paper gives an account of a small series obtained in 1884 at Fonteboa and Tunantins on the Middle Amazons. The 28 specimens are referred to 18 species, amongst which the most noticeable are *Oporornis*

*agilis*, a winter migrant from North America, and *Phaethornis filippii*, a scarce Humming-bird, of which the true home was previously uncertain.

#### 7. Berlepsch's Notes on Neotropical Birds.

[Notes on some Neotropical Birds belonging to the United States National Museum. By Hans von Berlepsch. Proc. U. S. N. M. 1888, p. 559.]

This is a series of very useful notes upon "obscure specimens" belonging to the U. S. National Museum which have been sent to Graf v. Berlepsch for examination by the authorities of that establishment. The main portion of the paper is devoted to the Trochilidæ, upon which, as we all know, the Graf is a leading authority. At the close of the communication are given the results of an examination of six of Mr. Lawrence's types belonging to other families of Birds.

#### 8. Büttikofer on a new Gallinule.

[On a new Species of Gallinule. By J. Büttikofer. Notes Leyden Mus. xi. p. 191.]

The new Gallinule is *Porphyrio bemmeleni* from Sumatra, allied to *P. poliocephalus*. It is based on a specimen received alive at the Zoological Gardens, Rotterdam, now in the Leyden Museum.

#### 9. Büttikofer on Birds from South-western Africa.

[Third List of Birds from South-western Africa. By J. Büttikofer. Notes Leyden Mus. xi. p. 193.]

A new consignment of birds received from Mr. van der Kellen from Gambos on the Upper Cunene contains examples of 62 species, 15 of which were not included in Mr. Büttikofer's two previous lists of birds from this district. The total number of species of which examples have been received from this collector is now 195.

#### 10. Chapman on a new Humming-bird.

[Description of a new Species of Humming-bird of the Genus *Amazilia*. By Frank M. Chapman. Bull. Am. Mus. Nat. Hist. ii. p. 163.]

*Amazilia æneobrunnea* is based on a single specimen in the American Museum of Natural History, said to be from Bogota. It is quite a distinct species, but comes nearest to *A. lawrencii*, Elliot.

### 11. Chapman on the Genus *Xiphorhynchus*.

[A Revision of the Genus *Xiphorhynchus*, Swainson, with Descriptions of two new Species. By Frank M. Chapman. Bull. Am. Mus. Nat. Hist. ii. p. 153.]

Mr. Chapman has revised the species of the peculiar Dendrocolaptine genus *Xiphorhynchus*, having for his material the specimens of the Lafresnaye Collection, those of the U. S. N. Museum, and of the Lawrence, Maximilian, and Verreaux Collections now in the American Museum of Natural History. He describes three species as new, namely, *X. venezuelensis* (the Venezuelan form of *X. trochilirostris*), *X. dorsimaculatus*, based on a single specimen supposed to be from Cayenne, and *X. rufidorsalis* from Matto Grosso (*H. H. Smith*). Altogether nine species are recognized, of which a key is given. Mr. Chapman has "not examined" *X. pucherani*, which is unquestionably a good species of this genus, and not of *Drymornis*, as he suggests.

### 12. Dalgleish on Nests and Eggs from Paraguay.

[Notes on a Collection of Birds and Eggs from the Republic of Paraguay. By J. J. Dalgleish, M.B.O.U. Proc. R. Phys. Soc. Edinb. x. p. 73.]

Mr. Dalgleish gives interesting notes on the nesting and eggs of 28 species of birds collected by his former correspondent in Uruguay, who has now settled in Paraguay, in the Estancia of Ytañu, about 80 miles south of Asuncion. The species were determined by the Editor of this Journal from specimens sent to him by Mr. Dalgleish. Three eggs of *Chauna chavaria* taken from the nest on Dec. 20th, 1887, are described as "of an elongated oval form, and dull white colour, measuring on an average  $3\frac{1}{8}$  by  $2\frac{7}{10}$  inches."

13. *Etheridge on the Birds of Lord Howe Island.*

[Lord Howe Island, its Zoology, Geology, and Physical Characters. The Australian Museum, Sydney. Memoirs, no. 2. Sydney: 1889.]

Mr. R. Etheridge, Jr., in his report on the general zoology of Lord Howe Island, devotes several pages to a very interesting account of its birds, of which about 40 species are now known. Nine of these, as shown by Mr. Etheridge's Table (p. 17), are restricted to the island. They belong to Australian genera except the Thrush (*Merula vinitincta*). One of them, *Gerygone thorpei* (Ramsay, Proc. Linn. Soc. N. S. W. 1887, ii. pt. 4, p. 677), is a recent discovery made by Mr. Etheridge's expedition. The extinct *Notornis alba* (Ibis, 1873, p. 295, t. x.) was not heard of. The Woodhen of Lord Howe Island (*Ocydromus sylvestris*) "unless protected" will shortly share the fate of the *Notornis*. "At the present time its range is confined to the extreme southern end of the island, in Erskine Valley, and the ground around the sea-girt base of Mount Gower. It is even now rare and difficult to obtain, and would be impossible of capture were it not for the fact that its curiosity overcomes its shyness. Its gradual extinction is probably due to the ravages committed by the wild domestic cats. During a journey to Mount Gower, primarily to procure specimens, only one individual was seen, and during the whole of our residence there those well acquainted with their haunts could obtain but four others. *Ocydromus sylvestris* can be attracted within gun-shot by any continuous and varied noise, such as knocking two stones together, striking against a tree, occasional whistling, and other peculiar but discordant noises."

14. *Giglioli's First Report on the Results of the Ornithological Investigation of Italy.*

[Primo Resoconto dei risultati della inchiesta Ornitologica in Italia. Parte prima, Avifauna Italiana. Elenco sistematico delle specie di Uccelli stazionarie o di Passaggio in Italia, con nuovi nomi Volgari, e colle notizie sin qui fornite dai collaboratori nella inchiesta Ornitologica. Compilato dal Dottore Enrico Hillyer Giglioli. 8vo. Firenze: 1889, pp. 706.]

The first results of the participation of Italy in the Inter-

national Ornithological Congress of 1884 at Vienna were the establishment by the Minister of Agriculture of an "Uffizio Ornitologico" at Florence, in connection with the well-known collection of Italian Vertebrates in that city, and the nomination of Dr. Giglioli as the Director of the new Office. The Director commenced his duties by the preparation and publication of the excellent 'Avifauna Italica,' noticed in this Journal in 1886 (Ibis, 1886, p. 516). He has now taken a second step in advance. Like Austria, Germany, and some other countries, Italy, under Dr. Giglioli's guidance, has inaugurated a large corps of observers scattered over the kingdom, who report to the "Uffizio Ornitologico" on the birds of their different districts. The list of these collaborators is, it will be seen, a long one. The present volume gives us an abstract of their reports on each of the 450 species enumerated in the 'Avifauna Italica.' These are systematically arranged under the generic and specific names adopted in the Avifauna, to which a full list of the various local names is appended. Thus, on turning to the name of any particular species, we find the mode and time of its occurrence in Italy, from north to south, and in Sicily and Sardinia, succinctly set forth. An excellent idea of its distribution is thus gathered at a glance.

It is interesting to note that all researches in Sardinia have as yet failed in ascertaining the occurrence of *Sitta whiteheadi* in that island. It would appear therefore that this species is absolutely restricted to Corsica.

#### 15. *Leverkühn on the Legendary History of the Hoopoe.*

[Der Wiedehopf in den Legenden der Araber. Von Paul Leverkühn. Zool. Garten, 1889, p. 173.]

Herr P. Leverkühn translates into German, from Curzon's 'Monasteries of the Levant,' a curious Arabic legend about King Solomon and the Hoopoe (*Upupa epops*). Apparently Herr Leverkühn only knows Curzon's work from an American edition, 1856. We may therefore inform him that this well-known book was originally published in London by Murray in 1849.

16. *Leverkühn on Variations in the Coloration of Birds.*

[Ueber Farbenvarietäten bei Vögeln. Von Paul Leverkühn. J. f. O. 1889, p. 121.]

Herr Leverkühn continues his account of cases of general or partial albinism and other variations in colour which occur in various birds. The present article contains his notes on examples of such cases observed during a visit to the Museums of Bremen, Göttingen, and Kiel—altogether in 41 species.

17. *Leverkühn on the Literature of Syrrhaptes.*

[Litterarisches über das Steppenhuhn, zweite Revue, nebst Original-Mittheilungen über die 1888er Invasion, von Paul Leverkühn. Monatssch. Deutsch. Ver. Schutze Vogelw. xiv.]

The number of papers and articles on this well-worn subject is very large. Herr Leverkühn's second attempt at some account of it gives us references to more than 200 titles, and other information which may be useful to those at work on it. Seven eggs laid in North Germany and Jutland are described. The supposed eggs from Kent referred to by the author are now well known to be supposititious.

18. *Menzbier and Severtzow on the Ornithology of Turkestan.*

[Dr. N. A. Severtzow. Ornithologie du Turkestan et des Pays adjacents. Par M. le Docteur M. A. Menzbier. Livr. 2. Text and Atlas. Folio. Moscou: 1889.]

We have already noticed (*Ibis*, 1889, p. 388) the first livraison of this important work, and given some indication of its origin and scope. The second livraison now before us continues the account of the Diurnal Raptores. The accompanying atlas contains coloured lithographs of *Hierofalco uralensis* (two plates) and *Leptopæcile sophie*.

It appears that the whole work will extend to six volumes, which can only be acquired by subscription to the amount of £30. Mr. R. H. Porter is the English agent for this publication.

19. *Meyer on scarce Varieties of Tetrao.*

[Ueber einige seltene Exemplare von Rackel- und Birkwild in Museum Ferdinandeum zu Innsbruck. Von Dr. A. B. Meyer. Ferdinandeums-Zeitschrift, 1886, p. 225.]

Dr. A. B. Meyer, who is, as we all know, our chief authority on the Grouse and their hybrids and variations, now gives us an account of certain specimens belonging to the Museum Ferdinandeum of Innsbruck, which have been entrusted to him for examination. Five of these curious freaks of nature are here described and commented upon. They are hybrids or varieties of *Tetrao urogallus* and *T. tetrix*.

20. *Muirhead on the Birds of Berwickshire.*

[The Birds of Berwickshire, with remarks on their local distribution, migration, and habits, and also on the folk-lore, proverbs, popular rhymes, and sayings connected with them. By George Muirhead, F.R.S.E., F.Z.S., &c. Vol. I. 8vo. Edinburgh: 1889.]

This is the first instalment of a work which, as the title indicates, is far more than a mere account of birds as observed in Berwickshire alone. Its wealth of illustration—nearly every chapter or article having a beautifully etched vignette—makes it quite a drawing-room book; in fact we remember nothing like it since the publication of Wise's 'New Forest,' some five-and-twenty years ago. The letter-press has evidently been prepared with great care, its style is excellent and scholarly, a vast amount of antiquarian and etymological research is displayed, and altogether the book commends itself to a far wider circle than that of the mere ornithologist. Those who have not subscribed to it are to be pitied, for to them the price is considerably (and justly) raised.

21. *Ridgway on new Costa-Rican Birds.*

[Notes on Costa Rican Birds, with Descriptions of Seven new Species and Subspecies and One new Genus. By Robert Ridgway. Proc. U.S. Nat. Mus. 1888, p. 537.]

The authorities of the National Museum of Costa Rica

have sent Mr. Ridgway a large collection of birds from that country for examination. Amongst these the following new species and subspecies are represented:—*Zeledonia coronata*, *Microcerculus orpheus*, *Geothlypis caninucha icterotis*, *Xiphocolaptes emigrans costaricensis*, *Picolaptes gracilis*, *Sclerurus canigularis*, *Picumnus flavotinctus*, *Dendroornis punctigula*, and *Dendrocolaptes variegatus*. Notes on other rare species are given. The position of the new genus *Zeledonia* (at first believed to be Pteroptochine, cf. Ibis, 1889, p. 262) is still uncertain.

### 22. Robinson on Albino Birds.

[Notes on some Albino Birds presented to the U.S. National Museum, with some Remarks on Albinism. By Lieut. Wirt Robinson. Proc. U.S. Nat. Mus. 1888, p. 413.]

Mr. Robinson gives an account of some albino specimens in the U.S. National Museum, chiefly examples obtained by himself in Virginia, and discusses the theory of albinism without coming to any definite conclusions.

### 23. Salvadori on three new Birds from Burmah.

[Descrizione di tre nuove specie di uccelli raccolte nei Monti Carin da Leonardo Fea. Per T. Salvadori. Ann. Mus. Civ. Genova, ser. 2, vii. p. 363.]

These three species, discovered by Sign. Fea on the Karennee mountains, are named *Suthora fea*, *Malacias castanopterus*, and *Poliopsar fuscogularis*\*.

### 24. Salvadori on the Birds collected by Fea in Burmah.

[Uccelli raccolti nei Monti Carin a Nord-est di Tounghoo nel Pegù presso Rangoon e Tounghoo e nel Tenasserim presso Malewoon. Per Tomaso Salvadori. Ann. Mus. Civ. Genova, ser. 2, vii. p. 369.]

Sig. Leonardo Fea having now returned to Europe to recruit his health, and having brought his last collection with him, we are supplied with a complete account of the birds by Count Salvadori in his usual excellent style. Fea's recent

\* On this species, cf. Sharpe, Ibis, 1889, p. 580, and Salvad. *infra*, p. 130.

collecting-grounds have been Malewoon, near the eastern extremity of Tenasserim, in Pegu near Rangoon and near Tong-hoo, and in Karennee. Of these three series, that of Karennee is by far the largest and most important, and the account of it occupies the greater part of Count Salvadori's memoir. Karennee, as will be seen on looking at the map in Mr. Oates's 'Handbook to the Birds of British Burmah,' lies between the north-eastern corner of Pegu and the river Salween, and is hitherto chiefly known to us ornithologically from Mr. Wardlaw Ramsay's explorations\*. Sig. Fea claims to have penetrated into its unknown recesses further than any other explorer†. During his two journeys into the Karennee mountains in 1887 and 1888 he accumulated 467 specimens of birds, which are referred by Count Salvadori to 165 species. Of these the greater number are also found in the higher districts of Tenasserim, and have been already noted as met with in Karennee by Mr. Wardlaw Ramsay. But Sig. Fea's investigations have added about 60 species to this avifauna. Of these 60 three have been described as new in a previous paper (see above, p. 118), and five others are now characterized under the names *Cypselus minusculus*, *Cyornis dialilema*, *Zosterops mesoxantha*, *Pomatorhinus imberbis*, and *Merula subobscura*. Moreover five other species of which specimens were obtained by Sig. Fea are new to the Burmese list, though known from adjoining countries.

While we heartily congratulate Sig. Fea on his brilliant discoveries in this and other branches of zoology, and agree to the truth of the proverb "Philosophus non habet patriam," we cannot help remarking that it is not creditable, either to our own government or to Englishmen generally, to leave the exploration of British India to be undertaken by naturalists of other nations.

\* Cf. Ibis, 1875, p. 348, and other papers by the same author and by Lord Tweeddale.

† Cf. Boletino d. Soc. Geogr. Ital. 1888, p. 854.

25. *Shufeldt on the Osteology of the Tubinares and Steganopodes.*

[Observations upon the Osteology of the Orders Tubinares and Steganopodes. By Dr. R. W. Shufeldt. Proc. U.S. Nat. Mus. xi. p. 253.]

In this article Dr. Shufeldt describes and illustrates the skeletons of *Oceanodroma furcata* and *Fulmarus glacialis rodgersi*, and summarises the points in which they differ. In like manner he describes the skeleton of *Diomedea albatrus*, and states his agreement with Forbes's views (Scient. Mem. p. 434) as to relationship of the Tubinares. He then turns to the Steganopodes, and discusses at full length the osteology of *Sula bassana* and a skull of *Pelecanus fuscus*.

26. *Shufeldt on the Osteology of the Herons.*

[Osteological Studies of the Subfamily Ardeinæ. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Comp. Med. & Surg., July 1889.]

This memoir is chiefly devoted to a full account of the osteological characters of *Ardea herodias*, which is well chosen as a type of the true Ardeinæ. Some general observations are prefaced, in the course of which the author well remarks that many of the nine genera into which recent authors have divided the North-American Ardeinæ are superfluous, and that they may be safely reduced to two—*Ardea* and *Nycticorax*.

27. *Sousa on new Collections from Angola.*

[Aves de Angola de exploração do Sr. José de Auchieta. Por José Augusto de Sousa. Journ. Sci. Math. Phys. e Nat. Lisboa, 2<sup>a</sup> ser. no. 2, 1889, p. 113.]

M. de Sousa, Conservator of the Zoological Section of the Lisbon Museum, gives an account of two Angolan collections recently received from Sr. Auchieta. The first, from Catumbella, contains examples of 36 species, amongst which are two specimens of an *Ægialitis*, allied to *Æ. venusta* and *Æ. mechorsi*, but presenting some differential features, also the first example of *Hydrochelidon nigra* received from Angola. The second collection, from Quissanga, in Benguela, contains specimens of 29 species.

28. *Stejneger on Japanese Nutcrackers.*

[Review of Japanese Birds.—VIII. The Nutcracker (*Nucifraga caryocatactes macrorhynchos*). By Leonhard Stejneger. Proc. U.S. Nat. Mus. 1888, p. 425.]

Dr. Stejneger has studied the Nutcrackers and come to the conclusion that the correct names for the two slightly different forms of this widely spread species are *Nucifraga caryocatactes macrorhynchos* and *N. c. brachyrhynchos*. As regards the Japanese Nutcrackers, his material "contradicts Mr. Seebohm's suggestion that the resident bird is to all intents and purposes identical with the resident form in Europe." On the contrary, he considers it identical with the Siberian or slender-billed form, *N. c. macrorhynchos*.

29. *Stejneger on Japanese Wrens.*

[Review of Japanese Birds.—IX. The Wrens. By Leonhard Stejneger. Proc. U.S. Nat. Mus. 1888, p. 547.]

Continuing his studies on Japanese birds, Dr. Stejneger now discusses the Wrens, of which he assigns two forms to the Japanese Empire, *Troglodytes fumigatus*, from Yezo, Hondo, and Kiusiu, and *T. f. kurilensis*, from the Kurile Islands.

30. *Tristram's Catalogue of his Collection.*

[Catalogue of a Collection of Birds belonging to H. B. Tristram, D.D., LL.D., F.R.S. Durham: 1889.]

Our much-valued friend and correspondent, Canon Tristram, has every reason to be proud of his collection of birds, which embraces more than 17,000 specimens, and is certainly one of the most important of English private collections, after that of Messrs. Salvin and Godman. Like most other ornithologists, he began with "British birds," adding in 1844 specimens obtained in Switzerland and North Italy. Then a residence in Bermuda and a visit to North America induced him to study and collect the feathered tribes of the Nearctic Region. To these were subsequently added the fruits of his well-known expeditions to Algeria and Palestine, with the

particulars of which all readers of 'The Ibis' must be well acquainted. Not many ornithologists of the present day have enjoyed equal opportunities of studying their favourite subject in the field, or have done it with such good results. Not only as an observer and collector, but also as a chronicler of his notes and discoveries, few of us, indeed, can compete with Canon Tristram!

During these last twenty years our friend has devoted his special attention to the avifauna of the islands of the Pacific and Indian Oceans, and, aided by his numerous correspondents in these far-away parts, in the shape of naval officers, missionaries, and consuls, has achieved, as will be seen by reference to his catalogue, very successful results. *Nestor productus* of Norfolk Island, *Monarcha dimidiata* of Rarotonga (both now extinct), and *Pericrocotus tegimæ* of the Loo Choos, are prizes that even a national museum would be proud to possess. Besides these and many other rarities, there are about 128 "types" in the series.

The Catalogue begins with the Ratitæ and ends with the Passeres. Under the head of each genus the species are arranged in alphabetical order. The specimens are designated by letters, and the sex, locality, date, and name of collector are attached when known. Thus we find the much-discussed Grebe of Vancouver's Island entered as "*Podiceps occidentalis*, Lawr., b. ♀. Breeding-plumage. Vancouver's Island.—Burn [*lege* Brown—ED.]. Mus. Sir W. Jardine. Specimen described Ibis, 1887, p. 98." [See also Ibis, 1887, pp. 259, 361; 1888, p. 148.—ED.]

### 31. *Van Kempen on rare Birds of the North of France.*

[Sur quelques Oiseaux rares du Nord de la France. Par Ch. Van Kempen. Bull. Soc. Zool. France, xiv. p. 104.]

M. Van Kempen gives a list of a mounted collection of rare birds said to have been procured near Dunkirk, of which he has lately become the possessor. It comprises examples of three species—*Sula fiber*, *Procellaria conspicillata*, and *Diomedea fuliginosa*—which we are certainly surprised to hear

of. But we fear that the account given of their history is not very satisfactory.

32. *Waterhouse's 'Index Generum Avium.'*

[*Index Generum Avium*. A List of the Genera and Subgenera of Birds. By F. H. Waterhouse, A.L.S., Librarian to the Zoological Society of London. London: R. H. Porter, 1889.]

As is stated in the preface to this work, the 'Index Generum Avium' consists of an alphabetical list of about 7000 terms that have been employed or suggested by various authors, since the date of the twelfth edition of Linnæus's 'Systema Naturæ,' as generic and subgeneric names for birds, and of references to the places and dates of their publication. No attempt has been made to discriminate between these various terms as to which of them should be most correctly employed. Such points are left for the decision of those who use the 'Index.' But so much time is often lost in ascertaining where and when a generic name was first given, that it is believed that the information thus accumulated in a handy form cannot fail to be of much practical value.

One of the most active and experienced members of the B. O. U. has kindly favoured us with his opinion of the present work as follows:—

"The idea of Mr. Waterhouse's book is excellent, and only those who work at synonymy day by day and year by year, as the writer is compelled to do with the 'Catalogue of Birds,' can comprehend what a boon has been given to us by the work now offered to the public. It is by far the most complete and carefully compiled Index to the Genera of Birds; and by the attention which the author has given to verifying his references, the value of the book will be rendered permanent, and it will not be easily superseded, as the compilations of some of his predecessors in the same field of literature have been."—R. B. S.

33. *Winge on Pallas's Sand Grouse in Denmark.*

[Om Steppenhönen (*Syrnhaptes paradoxus*) i Danmark i 1888. Sammenstillet af Herluf Winge. Vidensk. Meddel. naturh. Forening Kjøbenhavn, 1889, p. 57.]

Mr. Herluf Winge has put together in this memoir what seems to be a very complete account of the invasion of *Syrhaptus paradoxus* into Denmark in 1888. The incursion commenced on April 26th, when examples were observed near Vordingborg. On the first days in May they were numerous in many localities. Mr. Winge gives exact details as to the occurrences observed in every part of Denmark. A map of the localities would have rendered this part of the subject more intelligible.

## XII.—Letters, Extracts, Notices, &c.

WE have received the following letters addressed to the Editor of 'The Ibis':—

Turin Zoological Museum,  
October 27, 1889.

SIR,—Allow me to send you a few remarks on Mr. Waterhouse's 'Index Generum Avium,' of which I have lately received a copy. It is a most useful book to the working ornithologist, and I do not wish to criticize it, but only to point out a few omissions and mistakes which have occurred to me on a cursory look through it. I cannot find the following genera mentioned:—

*Erythrotriorchis*, Gurney, MSS.; Sharpe, P. Z. S. 1875 (April 20), p. 338; Gurney, Ibis, 1876, p. 65; id. List Diurn. B. of Prey, p. 45 (1884).

*Hirundolanius*, Clarke, Trans. N.Z. Inst. xiii. p. 454 (1881); Buller, B. of New Zeal. 2nd ed. i. p. 119.

*Ionocicca*, Salvad. Ann. Mus. Civ. Gen. ser. 2, iii. p. 236 (1886).

*Lambruschinia*, Salvad. Cat. Uccelli Sardegna, p. 128 (1864).

*Mellopitta*, Stejneger, Stand. Nat. Hist. iv. Birds, p. 466 (1885); id. Auk, vi. p. 79 (1889).

The date (1839) attributed to Bonaparte's 'Introduzione' to the birds of the 'Fauna Italica,' where the generic names *Bonasia*, *Casarca*, *Cettia*, *Chettusia*, *Chlorospiza*, *Citrinella*,

and *Erismatura* are mentioned, is wrong, as I have already shown (*Ibis*, 1888, pp. 320-325), and ought to be 1841. The mistake is avoided as regards the genera *Lusciniopsis* and *Pseudoluscinia*, so that I suppose that the sheets containing the other generic names were printed before my paper appeared.

The genus *Chettusia*, Bp. (*Iconogr. F. I. Introd.* p. 9, 1841, not 1839), is not mentioned also on p. 115, tabl. xli. of the same work, as Mr. Waterhouse states. On the plate xli. (dated 1838) there is only the name *Vanellus gregarius*, and in the accompanying text *Chettusia gregaria* is simply the Italian name printed under that of *Vanellus gregarius* (*cf. Ibis*, 1888, p. 323, note).

*Erythrospiza*, Bp., was established before the "Saggio," pp. 53, 141 (1831), in the work which bears the title 'Sulla seconda edizione del Regno Animale del Barone Cuvier; Osservazioni,' p. 80 (1830), (*cf. Ibis*, 1888, p. 320, note).

*Eurhynchus*, not quite correctly attributed to Latreille, was mentioned by Lesson, 'Tr. d'Orn.' p. 183 (1831), and used by him, 'Compléments de Buffon, Ois.,' p. 603 (1837), before Gray, 'List Gen. B.' p. 53 (1840).

*Microglossus*, Geoffr. St.-Hilaire. As Mr. Waterhouse rightly states, Vieillot published this genus in the 'Galerie des Oiseaux,' i. p. 47, pl. 50, only the date 1825 is not quite exact. In fact he took it from Geoffroy St.-Hilaire, who, in a memoir, "Sur les Appareils de la Déglutition et du Goût dans les Aras Indiens, ou Perroquets Microglosses" (*Mém. du Mus.* x. pp. 186-198, pl. 11. figs. 13, 14, 16, 1823), proposed the French name "Microglosse." The memoir was read the 6th July, 1821, but was not printed till 1823; at the end of it (p. 198) there is a note in which Geoffroy St.-Hilaire states that the genus *Microglosse* had already been published in the 'Galerie des Oiseaux' by Vieillot, to whom he had communicated his memoir.

From all this it is quite evident that the date of the genus *Microglossus* must be between 6th July, 1821, and 1823. I may remark, by the way, that the 'Galerie des Oiseaux' was published in eighty-two parts, from 1820 to 1826 (see Engel-

mann's 'Bibliotheca Historico-naturalis'). I found this out while preparing the volume on the Parrots for the British-Museum Catalogue, and I am afraid that the name *Microglossus* (1821-23) will have to give way to *Solenoglossus*, Zanzani (1821), or to *Probosciger*, Kuhl (1820), if we can use Kuhl's name, which appears to me very doubtful.

*Plectolophus*, amended for *Plyctolophus*, Vieill., was used, according to Reichenow (Journ. f. Orn. 1881, p. 23), by Le Maout in 1853 (Hist. Nat. Ois. p. 106), and this is prior to Finsch (Die Papageien, i. p. 265, 1867).

*Podicipes*, the corrected form of *Podiceps*, is attributed by Mr. Waterhouse to Babington ('Catalogue of the Birds of Suffolk,' p. 200, 1884-86). But it was suggested before by Gloger (Journ. für Ornith. 1854, p. 430, note), and it was also used, previously to Mr. Babington, by Elliott Coues in his 'Check-List of North-American Birds,' p. 129 (1882).

Yours &c.,

T. SALVADORI.

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Northrepps,  
Nov. 19, 1889.

STR.—I am desirous of putting on record the following short notes:—

The Rev. Edmund Fitch, who has recently returned to England after a residence of over four years at Chagga, in Eastern Africa, about 4500 feet above the sea-level, on the southern slope of Kilima-njaro, has presented to the Norwich Museum a specimen of *Buteo augur*, a species which he informs me is abundant about Chagga, nesting in trees at a height of from twenty to thirty feet, and preying chiefly on snakes, which Mr. Fitch has often observed these Buzzards carrying in their talons when on the wing.

I am indebted to Mr. Fitch for two skins obtained at Chagga of birds which are not mentioned in Captain Shelley's Kilima-njaro list, published in the P. Z. S. 1885, p. 222. One of these is an immature specimen of *Pseudotantalus ibis*, which was shot while perched on the roof of Mr. Fitch's

house, and was the only individual of this species seen by him at Chagga; the other is an example of *Scopus umbretta*, a species which Mr. Fitch informs me frequents in small numbers the streams which descend the mountain's side.

Another matter to which I am desirous of alluding is the difference in size between the African Short-eared Owl, *Asio (Phasmoptynx) capensis*, and the allied Madagascar race, which Schlegel (*Mus. P.-B. Revue, Noctuæ*, p. 3) called "*Otus capensis major*." Mr. Sharpe, in his *Catalogue of the Striges* (p. 241), gives it as his opinion that "the difference in size is not sufficient to make one think that the Madagascar bird is really distinct."

I have been led to a conclusion the reverse of Mr. Sharpe's, after taking the following measurements from specimens of both races in the Norwich Museum:—

*Smaller Race.*

	Wing. in.	Tarsus. in.	Middle toe <i>s. u.</i> in.
♂, Casa Vieja, Spain . . . .	11·30	2·10	1·15
♂, Tangier . . . . .	11·80	2·10	1·10
Tangier (not sexed) . . . . .	11·45	2·00	1·05
♂, Natal . . . . .	11·85	2·10	1·10
King William's Town, South Africa (not sexed) . . . .	11·35	2·10	1·20
♀, Potchefstroom . . . . .	11·70	2·10	1·10
♀, Potchefstroom . . . . .	11·65	2·10	1·00
♀, South Africa . . . . .	11·50	1·90	1·10

*Larger Race* (all from Madagascar).

	Wing. in.	Tarsus. in.	Middle toe <i>s. u.</i> in.
♂ . . . . .	13·10	2·30	1·30
♂ . . . . .	12·40	2·20	1·20
♂ . . . . .	13·80	2·20	1·20
♀ . . . . .	13·80	2·20	1·10
Not sexed . . . . .	13·20	2·30	1·40
Do. . . . .	13·10	2·30	1·35
Do. . . . .	13·40	2·40	1·40

I may add that the Spanish example above referred to,

which was presented to the Norwich Museum by Col. Irby, by whom it was shot on 10th November, 1870, differs from other examples that I have seen in having the back of the head and neck very regularly cross-banded with narrow bands of brown, lighter than the brown of other parts of the feather, each feather being for the most part crossed by three such bands. I suspect that this may be an indication of immaturity, though probably one that is subject to considerable individual variation.

In a very young bird from Tangier, which had evidently but just left the nest, and which was kindly lent to me by Lord Lilford, there are traces of nuchal markings somewhat similar in character to those on the Spanish specimen at Norwich, but much less regular and conspicuous, and also less sharply defined.

I may add that in this young bird the light cross-bars on the scapulars are more clearly defined than in the adult, and also that the blackish tint on the face is more extended, nearly surrounding the eyes, and reaching from thence to the edge of the disc.

Yours &c.,

J. H. GURNEY.

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Smithsonian Institution,  
Washington, D.C.,  
Nov. 16, 1889.

SIR,—A letter from Professor Alfred Newton which appeared in 'The Ibis' of October 1889, having reference to the use to which certain young birds put the terminal claw of their pollux digits, has interested me not a little. *Opisthocomus* I have never seen, either young or old, in the flesh, but I have seen young Grebes assist themselves in their terrestrial locomotion in precisely the manner which Professor Newton so admirably describes. These, however, are not the only birds that so use their clawed thumbs to assist themselves in their first attempts at progression. So long ago as 1882, in my 'Contributions to the Anatomy of Birds,' on page 776, I say that "Mr. James Bell, of Florida,

an excellent observer of the habits of birds in their native haunts, had that same morning (Dec. 28, 1881) narrated to Mr. Ridgway how, when he was in Florida, he had noticed that the young of *Ionornis martinica* actually put these claws to practical use by holding on to twigs in climbing out of their nests, and sometimes even suspended themselves as Bats do." These claws are large in the Californian Condor, and it would be interesting to know whether the young of the Cathartidæ put them to similar uses.

Yours &c.,

R. W. SHUFELDT.

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United States National Museum,  
Washington, November 22, 1889.

SIR,—In the last number of 'The Ibis' Mr. J. H. Gurney, Jun., remarks (p. 572), that *Colymbus adamsi* "is only distinguished from . . . *C. glacialis* by the white colour of the bill and a slight difference in its shape." Having on various occasions compared specimens of the two birds and noted other differences, I desire to say that in true *C. adamsi* the whitish colour of the bill is the *least* important distinctive character, since *C. glacialis* occasionally has a more or less light-coloured bill. In *C. adamsi* the exposed culmen is longer than the tarsus, while in *C. glacialis* it is shorter: in *C. adamsi* the head and neck are glossed with violet-blue, and the white spots on the scapulars are decidedly longer than broad; while in *C. glacialis* the head and neck are glossed with green, and the white spots on the scapulars about as wide as they are long. These differences are quite constant, and therefore young birds may readily be distinguished by the comparative length of exposed culmen and tarsus. (*Cf.* 'Manual of North-American Birds,' p. 7, where, however, by an accidental transposition of the words "shorter" and "longer," in paragraphs *c*<sup>1</sup> and *c*<sup>2</sup> respectively, the relative length of culmen and tarsus in the two species is made to appear exactly the opposite of what is actually the case.)

Yours &c.,

ROBERT RIDGWAY.

Croft House, Holywood,  
Co. Down,  
December 1, 1889.

SIR,—Allow me to record in your pages the recent occurrences in this and the adjoining county of several examples of the Great Spotted Woodpecker (*Dendrocopus major*), generally quite a rare bird in the north of Ireland. One was shot near Newry on or about 23rd October; a second was shot and two others seen near Gilford on 4th November; and about the same time another was shot near Donaghadee—all three places in this county; while on 29th November a fourth specimen was shot at Glenarm, co. Antrim.

Yours &c.,

R. LLOYD PATTERSON.

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*Extract from a Letter from Count Salvadori.*—Mr. Ogilvie-Grant (Ibis, 1889, p. 449) states that my *Turnix beccarii* (Ann. Mus. Civ. Gen. vii. p. 675) “from Celebes appears to be absolutely identical with *T. rufescens*, Wallace.” Later on (*op. cit.* p. 465) he is not so certain, and says that *T. rufescens* from the island of Semaio will “probably prove to be identical with *T. beccarii* from Celebes.” But as Semaio belongs to the Timor group, a different subregion from that of Celebes, where the land-birds are mostly peculiar to the island, I think that Mr. Grant should have given the same indulgence to my species as he has to *T. rufescens* (kept distinct from *T. saturata* and *T. maculosa*), and should have allowed that, judging from the locality, it may prove to be different. The two type specimens of *T. beccarii* are in the Museum of Genoa, and may easily be obtained from the Director for comparison, if Mr. Grant wishes to settle the question.

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*Note on Spodiopsar fuscogularis.*—With reference to Mr. Sharpe's remarks on *Spodiopsar fuscogularis* (Ibis, 1889, p. 580), Count Salvadori writes to say that he has washed the throat of the typical specimen very carefully, but that it remains unchanged, and the dark colour is still there. Besides,

as he has already remarked (Ann. Mus. Civ. Gen. ser. 2, vii. p. 421), *S. fuscogularis* is different in structure from *S. burmanicus*; he has compared it with many specimens of the latter, and cannot match it with any of them as regards the shape of the bill, which is longer and thinner in *S. fuscogularis*.

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*The Southern Range of the Cœrebidæ.*—In his Report on the progress of Ornithology in 1886 (Wieg. Arch. 53 Jahrg. ii. Bd. p. 114), Dr. Reichenow points out that in the 11th vol. of the Catalogue of Birds (p. 1) I have committed an error in stating the southern range of the Cœrebidæ to stop at the Gulf of Guyaquil on the western slope of South America. My statement was undoubtedly an oversight, as a species of this family, *Conirostrum cinereum*, has been obtained by Jelski (cf. Tacz. Orn. Pér. i. p. 425) and by Nation (Cat. B. xi. p. 16) near Lima; by d'Orbigny near Tacna (d'Orb. Voy. Ois. p. 375); and by Whitely near Arequipa (P. Z. S. 1867, p. 984). In the same district *Diglossa brunneiventris* was also obtained by Whitely. But Tarma, Paucartambo, and Sicastica, other localities mentioned by Dr. Reichenow as proving the existence of the last-named species in Western Southern America south of Guyaquil, are not on the Pacific, but on the Atlantic slope of the Andean range. The fact is that these two high-ranging species of Cœrebidæ are found on both sides of the water-parting as far south as about 18° S. lat.—P. L. S.

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*The Raffles Museum at Singapore.*—Mr. Davison, writing from Singapore on the 1st November last, gives us a favourable account of the progress of the Museum under his charge. The collection, he says, is rapidly increasing, in fact faster than he can keep up with the additions, especially in the entomological department. In March next Mr. Davison and Mr. Ridley, the botanist, have arranged to make a collecting-expedition into the mountains of the Malay Peninsula, where, judging from what has been recently done in Perak, they ought to make some grand discoveries. Mr. Davison is planning later on to bring out handbooks on the birds and mam-

mals of the Straits Settlements and adjacent protected States, for which end he is busy collecting notes and specimens.

*Ornithological Works in Progress.*—We understand that Messrs. Sotheran & Co. intend to carry out the scheme of producing a monograph of the Birds of Paradise, which was always a pet idea of the late John Gould. The letterpress will be written by Mr. Bowdler Sharpe, who will utilize many of the plates of Gould's 'Birds of New Guinea,' but the work will also contain illustrations of all the new species described since Mr. Gould's death. The plates are, we understand, nearly all drawn, and the work will appear early in the present year.

Mr. F. Clifton, of Lynmouth Cottage, Hoyard Road, Dorking, has been engaged for several years in collecting materials for a work on the fauna of Surrey, and asks the kind assistance of such of the members of the B. O. U. and other ornithologists connected with the county as may be able to give him information on some of the rarer species.

Mr. Miller Christy, F.L.S. (of Chignal St. James, Chelmsford), announces his intention of publishing a volume on the birds of Essex, provided a sufficient number of subscribers can be obtained. The work will extend to about 250 pages, with a map and numerous illustrations, and will at the same time form one of the special memoirs of the Essex Field Club.

Mr. James Backhouse, Jr., F.Z.S., has in preparation a 'Handbook of European Birds,' to be published, in an 8vo form, during the ensuing spring by Messrs. Gurney and Jackson, at a subscription price of 7s. 6d.

The proposed work is intended to treat of *European* birds only, but, it being by no means easy in some cases to decide which species deserve to be thus described, two Appendices will be added: one comprising a list of strictly Asiatic or African birds which have only casually occurred within European limits; the other a list of the Nearctic (North American) species of which records are extant as having been met with in Europe.

# THE IBIS.

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## SIXTH SERIES.

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No. VI. APRIL 1890.

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XIII.—*On the Ornithology of Northern Borneo.* By R. BOWDLER SHARPE, F.L.S., F.Z.S., &c., Zoological Department, British Museum. *With Notes* by JOHN WHITEHEAD.—Part VI.\*

(Plate IV.)

Order COLUMBÆ.

270†. TRERON CAPELLEI.

*Treron capellei* (V.); *Salvad. Ucc. Born.* p. 285; Brüggem. *Abhandl. nat. Ver. Brem.* v. p. 461 (1877); Sharpe, *Ibis*, 1877, p. 23, 1879, p. 265.

*a, b.* ♂ ♀ ad. Lawas River, April 14, 1886.

*c, d.* ♂ ♀ ad. Benkoka, Nov. 7, 1885.

[Common in forests, frequenting high trees, where it obtains its food. This Pigeon has a peculiarly harsh call; in fact all the species of this genus that have come under my observation have peculiarly disagreeable notes.

Native name "Puni lanquok."

Iris black; bill pea-green; feet king's yellow.]

\* Continued from p. 24.

† *Loriculus galgulus* (*antea*, p. 1) having been numbered "194 a," the correct number of this species is 270.

271. *TRERON VERNANS*.

*Treron vernans* (L.); Salvad. t. c. p. 286; Brüggem. t. c. p. 461; Sharpe, P. Z. S. 1879, p. 348, 1881, p. 799.

a. ♀ ad. Labuan, July 16, 1885.

b. ♂ ad. Labuan, May 27, 1886.

c. ♂ ad. Kina Balu, April 1888.

[Very common in Labuan, often congregating in fairly large flocks. It nests in gardens, especially in orange-trees, where it makes a frail nest and lays two white eggs (axis 1.1, diam. 0.85) about the middle of May and at other dates. Found up to 1000 feet on Kina Balu.

This species has a beautiful eye, the iris being composed of rings of yellow, pink, and blue; bill green; feet dull pink.]

272. *TRERON FULVICOLLIS*.

*Treron fulvicollis* (Wagl.); Salvad. t. c. p. 288; Blasius, Verh. z.-b. Gesellsch. Wien, xxxiii. p. 66 (1883); Sharpe, Ibis, 1879, p. 265; id. P. Z. S. 1881, p. 799.

a. ♂ ad. Labuan, May 1886.

[Apparently only a migrant to Labuan, where it occurs rarely.]

273. *PTILOPUS JAMBU*.

*Ptilonopus jambu* (Gm.); Salvad. t. c. p. 289; Brüggem. t. c. p. 536; Sharpe, Ibis, 1877, p. 23; id. P. Z. S. 1879, p. 348, 1881, p. 799.

a. ♂ ad. Kina Balu, March 11, 1888.

b, c. ♂ ♀ ad. Labuan, June 1888.

d. ♀ juv. Labuan, June 30, 1888.

[Visits Labuan in numbers in the month of June, which is about the beginning of the S.E. monsoon; during other months it is not to be met with.

Met with on Kina Balu up to 3000 feet.

Native name "Puni Gumballi."]

274. *CARPOPHAGA ÆNEA*.

*Carpophaga ænea* (L.); Salvad. t. c. p. 290; Brüggem. t. c. p. 461; Blasius, t. c. p. 67; Sharpe, Ibis, 1876, p. 51; id. P. Z. S. 1879, p. 348, 1881, p. 799.

a. ♂ ad. Pulo Gaya, May 4, 1885.

b. ♂ ad. Benkoka, Sept. 14, 1885.

[Iris dark lake; tip of bill blue; the rest muddy lake-red, like the feet.

Common in the forests, feeding on fruits high on the tops of the trees, often out of shot. This Pigeon has a loud booming "coo." The natives have often told me that there are two forms of this Pigeon in Borneo—a large species that is generally found in pairs, and a small one that goes about in flocks; but I must say that I do not place any faith in their statements.

Found on Kina Balu up to 1000 feet.

Native name "Pergum."]

#### 275. CARPOPHAGA BADIA.

*Carpophaga badia* (Raffl.); Salvad. t. c. p. 291; Sharpe, Ibis, 1888, p. 396.

a, b. ♂ ad. Kina Balu, Feb. 27, 1888.

c. ♀ ad. Kina Balu, March 10, 1888.

[Fairly common, though local, on Kina Balu, on which mountain, if the forest be suitable, it is found up to 6000 feet. It frequents high trees, like *C. ænea*, to which species it assimilates in habits; the note, however, is deeper. One of my men found a nest of this Pigeon, which was placed in the thick (old rice-field) jungle, and not in the forest. This is a common habit of many forest species, to seek out quiet spots in thick tangled jungle, where no doubt they are freer from the attacks of monkeys, which must be the worst enemies birds have in the tropics; for two bright white eggs would have but a faint chance of concealment if placed in a forest-tree.

Iris pale dull yellow; skin round eye and on the nostrils and feet muddy pink.]

#### 276. CARPOPHAGA BICOLOR.

*Carpophaga bicolor* (Scop.); Salvad. t. c. p. 292; Sharpe, P. Z. S. 1879, p. 349.

*Myristicivora bicolor*, Sharpe, P. Z. S. 1881, p. 799.

a. ♂; b, c. ♀ ad. Pulo Tega, April 28, 1886.

d. ♂ ad. Pulo Eno, Dec. 29, 1885.

[This beautiful Pigeon is seldom met with on large islands, but loves to frequent the small islands round the coast, in which it at times fairly swarms. It affects the tops of the high fruit-bearing forest-trees, when on looking up sometimes you may see a tree fairly alive with them, and the birds themselves squabbling, feeding, and driving one another about from branch to branch. I have often seen them at sea, making flights from island to island, no doubt in quest of fresh fruit-trees.

Though the plumage of this species is as plain as "black and white" can be, yet when perched high on some dead bough or amongst the leaves in the full glare of the sun it is a most difficult bird to see. One might think it was a bird that would be seen anywhere, but in the full glare of the sun these plain colours, when looked at from below, are a real protection.

Iris black; skin round eye, nostrils, and feet dull slaty blue; rest of bill black.]

#### 277. CHALCOPHAPS INDICA.

*Chalcophaps indica* (L.); Salvad. t. c. p. 299; Brüggem. t. c. p. 536; Sharpe, P. Z. S. 1879, p. 346.

a, b. ♂; c, d. ♀ ad. Labuan, July 1886.

[Common in the S.E. monsoon, when this little Pigeon is caught by hundreds by the natives, who build a small covered place on the ground, round which they place some grain, and then attract the Pigeons with a peculiar bamboo calling-instrument, with a booming note like that of the birds (*cf.* Burbidge, P. Z. S. 1879, p. 347). The Pigeons then settle, and are noosed in numbers by the native only a few feet off. This bird has a tender skin, and is difficult to preserve neatly. The flesh is very sweet and much sought after by all in the East. Where these Pigeons come from, or where they go to, I am unable to say; but I never met with a native who had seen their nest.

Native name "Punei tanah," or "Earth Pigeon."]

278. *MACROPYGIA EMILIANA*.

*Macropygia emiliana*, Bp. Consp. ii. p. 58 (1854).

- a. ♂ ad. Kina Balu, Feb. 11, 1887.  
 b. ♂ ad. Kina Balu, March 20, 1887.  
 c. ♀ ad. Kina Balu, April 1888.

This is probably the same bird as that sent from Brunei by Mr. Treacher in 1879 and determined by me as *M. tenuirostris* (Ibis, 1879, p. 265).

[Met with sparingly on Kina Balu up to 2000 feet. On the 13th of January I found two nests, one of this species and the other of *M. ruficeps*. Both these Doves were nesting amongst some bracken fern only a few feet from the ground; the plumage of the birds is so easily mistaken for the dry fern that the protection afforded by the coloration is perfect. The nest was composed of a few dead twigs, and contained one white egg nearly hatched.

[Iris pale yellow; bill dark brown; feet dull pink.]

279. *MACROPYGIA RUFICEPS*.

*Macropygia ruficeps* (T.); Salvad. t. c. p. 298.

- a, b. ♀ ad. Kina Balu, Feb. 9, 1887.  
 c, d. ♂ ♀. Kina Balu, March 1887.  
 e. ♂ juv. Kina Balu, March 16, 1888.  
 f. ♂ ad. Kina Balu, April 15, 1888.

Count Salvadori has mentioned this species as a likely bird to be found in Borneo, but this is the first really authentic record of its occurrence there.

[Iris greyish yellow; bill brownish black; feet dark pink.

Similar to the last species in habits, but very common on Kina Balu, frequenting open paddy-fields at 1000 feet, and I have seen them in forest up to 9000 feet. I found a good number of nests of this species, but they never contained more than one egg. The latter is creamy white. Axis 1.1, diam. 0.8. The birds nest from January to May.]

280. *CALÆNAS NICOBARICA*.

*Calœnas nicobarica*, Sharpe, P. Z. S. 1879, p. 348; id. Ibis, 1879, p. 265.

*a, b.* ♂ ♀ ad. Pulo Tega, April 24, 1886.

*c.* ♀ juv. Pulo Tega, April 21, 1886.

[Very plentiful on the small islands at some distance from the coast. This Pigeon migrates from island to island, and was very common on Pulo Tega in April, where in most months it would be difficult to find a bird. It frequents the ground, and flies up into the trees when alarmed, making a considerable noise with its wings. The note is a powerful "coo." The natives say that they nest in numbers on some small islands further out to sea. One of my birds, evidently a young one, has a black tail.

Iris dark greyish black; bill and nasal skin black; feet dull dark pink; soles of feet king's yellow.

A fresh-killed bird is covered with grey powder on the head, breast, and neck, which adds greatly to its beauty.

Native name "Burong Jinguni."]

#### Order GALLINÆ.

##### Fam. PHASIANIDÆ.

#### 281. ARGUSIANUS GRAYI.

*Argusianus grayi* (Elliot); Salvad. t. c. p. 305; Brüggem. t. c. p. 463; Sharpe, Ibis, 1877, p. 23, 1878, p. 267.

*a, b.* ♂ ♀ ad. Benkoka, Oct. 1885.

[The Bornean Argus Pheasant is fairly common in forests which are not hunted too much by natives, who, I believe, especially round Kina Balu, have caused the extermination of some of the ground-birds, making them so rare that it is necessary to go well inland to obtain most species of game-birds. This fine Pheasant frequents the true forest, most frequently localities that are slightly hilly. It is seldom seen alive, though one day I walked close to a hen in the forest, which ran quickly out of sight; but the rain had soddened all the paths, so that the tell-tale leaves did not give her warning of my approach. One of my boys shot a pair, and a fine male caught in a snare was half eaten by a wild cat before we found it. The Argus calls out frequently in the daytime, especially when there is a loud noise, such as a clap of



BAMBUSICOLA ERYTHROFRYS.



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thunder or a tree falling, and often the firing of a gun will cause it to cry out, making the forest resound with its powerful voice. The males make large arenas in the forest, which embrace circles of a yard and a half in diameter, neatly swept of all leaves and twigs. They roost in trees near these spots.

Native name "Burong Krūhi."

Bare skin on the head cobalt-blue; iris grey; legs vermilion, the divisions of the scales being well marked and of a paler colour.]

Fam. PERDICIDÆ.

282. *BAMBUSICOLA ERYTHROPHRYS*, sp. n. (Plate IV.)

*Bambusicola hyperythra* (nec Sharpe, 1879); Sharpe, Ibis, 1887, p. 454.

♂ ad. Similis *B. hyperythra*, sed capitis lateribus et facie laterali aurantiaco-rubris distinguenda, gutture nigricante. Long. tot. 10, culm. '95, alæ 5·8, caudæ 1·8, tarsi 1·85 poll. Angl.

♀ ad. Mari similis, sed gutture minime nigro.

When Mr. Whitehead's specimens first arrived in 1887, I took them to be hen birds of *B. hyperythra* described by me from Mr. Treacher's Lawas collections in 1879. I have ventured to describe them now as belonging to a new species, as Mr. Whitehead feels convinced that they constitute an adult pair of birds, and the difference in the colour of the eyebrow between the Kina Balu specimens and *B. hyperythra* is well marked.

a, b. ♂ ♀ ad. Kina Balu, March 3, 1887.

[This Partridge frequents the thick bamboo-jungle on the steep slopes of Kina Balu from 2000 to 4000 feet. It was extremely difficult to obtain specimens owing to the impossibility of getting about in the parts frequented by these birds. Besides, no doubt, the rat-trapping Dusans have had something to do with their rarity.

Iris greenish brown; bill black; skin round eye dull pink, that on throat brighter; legs salmon-pink.]

## 283. ARBOROPHILA CHARLTONI (Eyton).

a. ♀ ad. Benkoka, Sept. 3, 1885.

b. ♂ ad. Benkoka, Oct. 12, 1885.

This species was first obtained in Borneo by Mr. W. H. Pryer, who procured it near Sandakan, but by some oversight it was not included by me in my description of his collection (P. Z. S. 1881, p. 790).

[Apparently a very local species. I found this forest Partridge fairly common on the Benkoka River, and nowhere else. It frequents the ground in true forest.

Native name "Lenticong."

Iris brown; bill black; feet dull yellowish green.]

## 284. ROLLULUS ROULOUL.

*Rollulus rouloul* (Scop.); Salvad. t. c. p. 308; Blasius, t. c. p. 69; Sharpe, Ibis, 1876, p. 51, 1879, p. 270; id. P. Z. S. 1881, p. 800.

*Rollulus rulrul*, Brüggem. t. c. p. 463.

a. ♂ ad. Benkoka, Sept. 15, 1885.

b. ♀ ad. Sandakan, April 18, 1885.

[Fairly common, frequenting the ground in the forest.

Bill and iris black; feet and base of bill and skin round eye coral-red.]

## 285. EXCALFACTORIA CHINENSIS.

*Excalfactoria chinensis* (L.); Salvad. t. c. p. 311; Sharpe, Ibis, 1878, p. 419; id. P. Z. S. 1879, p. 350.

*Coturnix chinensis* (L.); Brüggem. t. c. p. 350.

a, b. ♂ ♀ ad. Labuan, July 15, 1885.

c. ♀ ad. Kina Balu, Feb. 1888.

[Common in open plains, and found on Kina Balu up to 1000 feet. These birds nest in the "Llang"-grass plains, and lay five or six dark olive-green eggs, which are speckled all over with black and dark-brown spots; axis 1, diam. .85. I found a nest in the middle of February, and have seen them in other months.

Feet orange-yellow; iris lake-brown; bill black.]

## Fam. MEGAPODIIDÆ.

## 286. MEGAPODIUS CUMINGI.

*Megapodius cumingi*, Dillwyn; Salvad. t. c. p. 302; Sharpe, P. Z. S. 1879, p. 349; id. Ibis, 1879, p. 267; id. P. Z. S. 1881, p. 800.

a, b. ♂ ♀. Pulo Tega, April 23, 1886.

[See my notes in 'Ibis' for October 1888, p. 411.

Common on the small islands off the coast.]

## Order GRALLÆ.

## Fam. CHARADRIIDÆ\*.

## 287. ESACUS MAGNIROSTRIS.

*Orthorhamphus magnirostris* (Geoffr.); Salvad. t. c. p. 212.

*Ædicnemus magnirostris*, Seebohm, Geogr. Distr. Charadr. p. 89 (1887).

a. ♂ ad. Abai, Feb. 27, 1886.

[This large Stone Plover is seldom met with on the coast of Borneo. During my four years' collecting in the East I only saw three individuals. They frequent the sandy bays, either singly or in pairs. I once saw one of these Plovers hunting the large sand-crabs which abound at low water on the coasts. These crabs have wonderful power of dodging, stopping dead, and then running at full speed in the opposite direction; so it took the Plover some long time before it could deal the crab a blow with its powerful beak.

Iris pale yellow; feet creamy yellow; bill black, brighter yellow at base.]

## 288. SQUATAROLA HELVETICA.

*Squatarola helvetica* (L.); Salvad. t. c. p. 313; Sharpe, Ibis, 1879, p. 270; id. P. Z. S. 1881, p. 800.

*Charadrius helveticus* (L.); Seebohm, t. c. p. 102.

a. Labuan, Dec. 8, 1887.

[Visits Labuan during the migration in small parties of three or four, but is never seen in flocks.]

\* All the Charadriidæ have been determined for us by Mr. Seebohm.

289. *CHARADRIUS FULVUS*.

*Charadrius fulvus* (Gm.); Salvad. t. c. p. 313; Seebohm, Geogr. Distr. Charadr. p. 99 (1887); Brüggem. t. c. p. 536; Sharpe, Ibis, 1879, p. 51; id. P. Z. S. 1879, p. 350; id. Ibis, 1879, p. 270.

a. ♀ ad. Benkoka, Nov. 9, 1885.

b. ♀ ad. Labuan, Dec. 29, 1885.

c. ♀ ad. Labuan, Jan. 10, 1886.

[Common in Labuan during migration, many apparently remaining some time on the island.]

290. *ÆGIALITIS PERONI*.

*Ægialitis peronii* (T.); Salvad. t. c. p. 315; Sharpe, P. Z. S. 1879, p. 250.

*Charadrius peronii*, Seebohm, Geogr. Distr. Charadr. p. 66 (1887).

a, b. ♂ ♀. Pulo Tega, N. Borneo, April 24, 1886.

[The only resident Plover, generally seen in pairs on the sand-spits and bays round the coast. The eggs are three in number, placed in the full glare of the burning sun amongst the sea-drift. They are of a buff colour, thickly blotched with sepia at the larger end, speckled and marked to a lesser degree all over with the same colour and lighter grey; sometimes they are speckled and streaked all over without any blotches at the large end. Axis 1·3, diam. ·95.]

291. *ÆGIALITIS CANTIANA*.

*Charadrius cantianus* (Lath.); Seebohm, Geogr. Distr. Charadr. p. 168 (1887).

a. ♀. Labuan, Jan. 31, 1886.

[Met with mixed amongst the large flocks of *Æ. geoffroyi*.]

292. *ÆGIALITIS DUBIA*.

*Ægialitis dubius* (Scop.); Salvad. t. c. p. 316; Sharpe, Ibis, 1876, p. 51; id. P. Z. S. 1879, p. 350.

*Charadrius dubius*, Brüggem. t. c. p. 463.

*Charadrius minor*, Wolf & Meyer; Seebohm, Geogr. Distr. Charadr. p. 130 (1887).

a, b. ♂ ♀. Pulo Tega, N. Borneo, April 24, 1886.

[A winter visitor, generally seen singly or in pairs on the sea-coast.]

293. *ÆGIALITIS GEOFFROYI*.

*Ægialitis geoffroyi* (Wagl.); Salvad. t. c. p. 318; Sharpe, P. Z. S. 1879, p. 350, 1881, p. 800.

*Charadrius geoffroyi*, Seebohm, Geogr. Distr. Charadr. p. 146 (1887).

a, b. ♂ ♀. Labuan, Jan. 10, 1886.

[The commonest winter visitor, remaining late enough to attain its full summer plumage.]

294. *GLAREOLA ORIENTALIS*.

*Glareola orientalis*, Leach; Salvad. t. c. p. 319; Sharpe, Ibis, 1876, p. 51, 1877, p. 23; id. P. Z. S. 1879, p. 351; Seebohm, Geogr. Distr. Charadr. p. 258 (1887); Brüggem. t. c. p. 536.

a. ♀. Labuan, Nov. 11, 1887.

[I myself only met with one specimen in Labuan, though I saw others that had been shot by natives.]

295. *STREPSILAS INTERPRES*.

*Strepsilus interpres* (L.); Salvad. t. c. p. 320; Sharpe, P. Z. S. 1879, p. 351; id. Ibis, 1879, p. 270; Seebohm, Geogr. Distr. Charadr. p. 410 (1887).

a. ♀ ad. Mouth of Lawas River, April, 16, 1886.

[A few seen, even as late as May.]

296. *TRINGA RUFICOLLIS*.

*Actodromas salina* (Pall.); Salvad. Ucc. Born. p. 234.

*Tringa minuta ruficollis*, Seebohm, Geogr. Distr. Charadr. p. 437, pl. xv.

*Tringa salina*, Brüggem. t. c. p. 463.

a, b. ♂ ♀. Pulo Tega, N. Borneo, April 24, 1886.

[Met with in small flocks on the sea-coast during the winter season; but, like all the rest of the Sandpipers, it is only common, or apparently so, during the time it is actually moving south or north.]

297. *TRINGA SUBMINUTA*.

*Tringa subminuta* (Midd.); Seebohm, t. c. p. 438.

a. Abai, N. Borneo, Dec. 30, 1887.

[Met with on a large and swampy plain in small flocks.]

## 298. TRINGOIDES HYPOLEUCUS.

*Tringoides hypoleucus* (L.); Salvad. t. c. p. 326; Sharpe, Ibis, 1876, p. 52; id. P. Z. S. 1879, p. 351, 1881, p. 800.

*Totanus hypoleucus*, Brüggem. t. c. p. 464; Seebohm, Geogr. Distr. Charadr. p. 271; Blasius, t. c. p. 71.

a. ♂ ad. Pulo Gaya, May 1, 1885.

[Fairly common, some apparently remaining throughout the year.]

## 299. TOTANUS GLAREOLA.

*Totanus glareola* (L.); Salvad. t. c. p. 327; Sharpe, P. Z. S. 1879, p. 351; id. Ibis, 1879, p. 271; Brüggem. t. c. p. 646; Seebohm, t. c. p. 365.

a, b. Ad. Labuan, August 14, 1886.

c. ♀ ad. Benkoka, Nov. 9, 1885.

[Fairly common in the migratory season, frequenting the borders of swamps.]

## 300. TOTANUS BREVIPES.

*Totanus incanus* (Gm.); Salvad. t. c. p. 329; Sharpe, P. Z. S. 1879, p. 351.

*Totanus incanus brevipes*, Seebohm, t. c. p. 361.

a. ♀ ad. Labuan, Jan. 10, 1886.

[Frequenting the borders of the mangrove swamps during the winter months.]

## 301. NUMENIUS UROPYGIALIS.

*Numenius uropygialis*, Gould; Sharpe, Ibis, 1876, p. 52; id. P. Z. S. 1879, p. 351, 1881, p. 800.

*Numenius phaeopus* (L.); Salvad. t. c. p. 333.

*Numenius phaeopus variegatus*, Seebohm, t. c. p. 330.

a, b. ♂ ♀ ad. Labuan, Aug. 14, 1886.

[Fairly common in small parties of five or six during the winter months.]

## 302. SCOLOPAX GALLINAGO.

*Scolopax gallinago*, L.; Seebohm, t. c. p. 484.

a. Ad. Labuan, Nov. 26, 1885.

[Only one specimen, brought to me by one of my collectors.]

## 303. SCOLOPAX MEGALA.

*Gallinago megala*, Swinh.; Salvad. t. c. p. 334.

*Scolopax megala* (Swinh.); Seebohm, t. c. p. 479.

a, b. ♂ ♀. Abai, N. Borneo, Dec. 25, 1887.

[This was apparently the commonest Snipe in Borneo, nearly all the Snipes shot in that island and Palawan being of this species.]

Count Salvadori reckoned that this Snipe would surely occur in Borneo, but this is the first authentic instance of the species having been found there.

## Fam. RALLIDÆ.

304. HYPOTENIDIA STRIATA (L.); Salvad. t. c. p. 336; Sharpe, P. Z. S. 1879, p. 352.

a. ♂. Labuan, July 27, 1885.

[Iris brown; bill dull pink; feet dull grey. Scarce.]

## 305. RALLINA FASCIATA.

*Rallina fasciata* (Raffl.); Salvad. t. c. p. 337; Sharpe, P. Z. S. 1879, p. 352; Brüggem. t. c. p. 464; id. Ibis, 1879, p. 271.]

a. [Wing only.] Kina Balu, 1888.

[Very common in Palawan, but I only saw one Bornean specimen, in the hands of a Kina Balu Dusan.]

## 306. ORTYGOMETRA CINEREA.

*Ortygometra cinerea* (V.); Salvad. t. c. p. 339.

a. ♂ ad. Tampassuk Plain, February 18, 1886.

[Iris lake; bill yellow, the under mandible tinged with lake at base; feet dull olive-green.

Scarce in Borneo, but in Java I saw numbers walking about on the water-plants in ponds.]

## 307. ERYTHRA PHENICURA.

*Erythra phenicura* (Penn.); Salvad. t. c. p. 340; Sharpe, P. Z. S. 1879, p. 352, 1881, p. 800; id. Ibis, 1879, p. 271.

a. ♂. Labuan, July 14, 1885.

[Iris light yellowish brown; bill greenish yellow; feet olive-brown.]

Fairly common in open places; often found at some distance from the swamps.]

## Fam. ARDEIDÆ.

## 308. ARDEA SUMATRANA.

*Ardea sumatrana*, Raffles; Salvad. t. c. p. 344; Sharpe, Ibis, 1879, p. 271, 1881, p. 800.

a. ♂ ad. Abai, N. Borneo, March 6, 1886.

[Iris straw-yellow.

Not very common, but a resident species.

Native name "Orok."]

## 309. ARDEA PURPUREA.

*Ardea purpurea*, L.; Salvad. t. c. p. 345; Sharpe, Ibis, 1877, p. 24; id. P. Z. S. 1879, p. 352; Blasius, t. c. p. 71.

a. ♂ ad. Benkoka, Oct. 3, 1885.

[Only a few seen, on the large swampy plains.]

## 310. DEMIEGRETTA SACRA.

*Demiegretta sacra* (Gm.); Salvad. t. c. p. 346; Sharpe, P. Z. S. 1879, p. 353.

a. ♀. Abai, Dec. 12, 1886.

[A winter visitor, frequenting rocks at low water and small uncovered patches at high tide.

Eye king's yellow.]

## 311. HERODIAS TORRA.

*Herodias torra*, Frankl.; Salvad. t. c. p. 347.

a. ♂ ad. Benkoka, Oct. 3, 1885.

[Iris straw-yellow; bill yellow; legs black.]

## 312. BUBULCUS COROMANDUS.

*Bubulcus coromandus* (Bodd.); Salvad. t. c. p. 350; Brüggem. t. c. p. 537; Sharpe, P. Z. S. 1881, p. 800.

a. ♂ ad. Benkoka, Oct. 17, 1885.

[Very common, apparently remaining throughout the year, but I believe that only non-breeding birds do so, as I never met with a native who had seen this Egret nesting.

Native name "Burong Knowi."]

## 313. ARDEOLA SPECIOSA.

*Ardeola speciosa* (Horsf.) ; Salvad. t. c. p. 351.

*Ardea speciosa*, Brüggem. t. c. p. 464.

a. ♀. Benkoka, Oct. 13, 1885.

[Iris light yellow ; bill black, the lower mandible yellow ; legs dull green.]

Only one specimen met with in Borneo, but in Java, where there is much open rice-land, this species is very common. Often enough, when passing a field, you do not observe this little Heron until suddenly dozens of snow-white wings (the small and dull-coloured body being difficult to see) open and slowly flap away.]

## 314. BUTORIDES JAVANICA.

*Butorides javanica* (Horsf.) ; Salvad. t. c. p. 351 ; Sharpe, Ibis, 1876, p. 52 ; id. P. Z. S. 1879, p. 353, 1881, p. 800.

a. ♀. Kina Balu, March 20, 1887.

b. ♀. Lawas River, April 6, 1886.

[Fairly common, frequenting rivers, but more especially mangrove swamps. I met with a fine adult bird in a rocky stream at the foot of Kina Balu.]

## 315. GORSACHIUS MELANOLOPHUS.

*Gorsachius melanolophus* (Raffl.) ; Salvad. t. c. p. 354 ; Sharpe, Ibis, 1879, p. 271.

a. ♂. Benkoka, Oct. 29, 1885.

[Scarce. I met with this species nesting in Palawan. The nest was placed amongst the tangled masses of undergrowth a few feet from the ground, and contained two white eggs, slightly greenish, on 27th June. Axis 1·9, diam. 1·45.]

## 316. ARDETTA CINNAMOMEA.

*Ardetta cinnamomea* (Gm.) ; Salvad. t. c. p. 354 ; Sharpe, P. Z. S. 1879, p. 353.

a. ♀. Labuan, June 30, 1886.

[Fairly common, frequenting paddy-fields.]

Iris straw-yellow ; feet olive-green ; bill brown, lower mandible yellow.]

## 317. ARDETTA SINENSIS.

*Ardetta sinensis* (Gm.) ; Salvad. t. c. p. 354 ; Sharpe, Ibis, 1877, p. 24.

a. ♂. Abai, Feb. 18, 1886.

[Scarce, frequenting reed-beds in rivers. It often sits stretched upright until you are within a few yards, in which position this small Heron is about as narrow a bird as can be imagined.

Iris bright yellow ; bill black, lower mandible yellow ; feet and legs green, yellow behind.]

## 318. NYCTICORAX GRISEUS.

*Nycticorax griseus* (L.) ; Salvad. t. c. p. 356.

a. ♂. Labuan, June 25, 1886.

Mr. Motley obtained this species in Banjermassing. This is the first record for Labuan.

[Only one specimen seen, which was brought to me by a native in Labuan. I had a shot at an undoubted *N. griseus*, in adult plumage, on the Benkoka River.]

## Fam. CICONIIDÆ.

## 319. LEPTOPTILUS JAVANICUS.

*Leptoptilus javanicus* (Horsf.) ; Salvad. t. c. p. 358 ; Sharpe, Ibis, 1879, p. 272.

a. ♂. Abai, N. Borneo, Feb. 24, 1886.

[Iris dull grey ; neck pale yellow, spotted with black ; bill dirty white ; feet black.

Generally seen only where the plains are of very great extent, standing about solitary, sometimes settling on low trees.]

## Order ANSERES.

## Fam. ANATIDÆ.

## 320. MARECA PENELOPE.

*Mareca penelope* (L.) ; Sharpe, Ibis, 1877, p. 24.

a. Ad. Tampassuk.

The Wigeon has only been met with once before in Borneo, Mr. Everett having procured a specimen near Bintulu in November 1875.

[I came across a small flock of Wigeon on the Tampussuk plain, two of which I shot, one a male just getting the adult plumage.

This is the only time I met with Ducks in the East.]

## FAM. PELECANIDÆ.

## 321. FREGATA MINOR.

*Fregata minor* (Gm.); Salvad. t. c. p. 364.

a. ♀ ad. Labuan, July 8, 1886.

[Fairly common off the coast of Borneo, especially during high winds. This bird has a wonderfully steady flight, often remaining for hours high in the air without apparently moving its wings. The natives in Palawan believe that it lives on air.

Bill greyish blue; iris black; pouch reddish pink.]

## 322. PLOTUS MELANOGASTER.

*Plotus melanogaster* (Penn.); Salvad. t. c. p. 367; Sharpe, P. Z. S. 1879, p. 353.

a, b. ♂ ♀. Benkoka River, Sept. 27, 1885.

[See my notes in 'The Ibis' for October 1888, p. 412.]

## FAM. LARIDÆ.

## 323. STERNA BERGII.

*Sterna cristata*, Steph.; Salvad. t. c. p. 376.

*Sterna bergii*, Sharpe, P. Z. S. 1879, p. 353.

a. ♀. Labuan, July 1886.

[Fairly common on the coast, where I believe it to be a resident species.]

## 324. ANOUS LEUCOCAPILLUS.

*Anous leucocapillus*, Gould; Sharpe, Ibis, 1878, p. 415.

a. ♂. Padas, June 2, 1886.

First met with in Borneo off Sarawak by the late Governor Ussher. Mr. Everett has also procured *Anous stolidus*.

[I picked this bird up one evening on the shore, where it was resting, apparently much fatigued. Another settled on the awning of a steamer off the coast one evening.

Iris, bill, and feet black; inside of mouth yellow.]

[To be continued.]

XIV.—*Notes on the Paradise-birds of British New Guinea.*

By A. P. GOODWIN, of Lismore, N.S.W.

IN the early part of 1889 I left my home on the Richmond River for the purpose of visiting New Guinea, where I intended to spend a few months in collecting ornithological specimens and in acquiring for myself that knowledge of the feathered tribes which can only be gained by personal observation.

I arrived at Port Moresby at a very favourable moment, for only a few days after my landing I had an opportunity of joining an exploring party whose object was to reach the summit of Mount Owen Stanley. The leader of the expedition was Sir William Macgregor, then Governor or Administrator of that recently acquired British colony. I gladly embraced the opportunity, and it is sufficient here to say that I made the journey along with Sir William as far as Mount Musgrave, where he left some members of the expedition, while he himself, with a few select followers, made a successful ascent of Mount Owen Stanley\*.

On his return to Mount Musgrave I again joined His Excellency on his homeward march, which was also successfully accomplished.

During that short and decisive trip into the heart of British New Guinea I was fortunate enough to meet with examples of twelve different species of Paradise-birds, a short account of which will, I think, be interesting to those who have not had the opportunity of seeing these splendid birds in their native haunts.

Our expedition followed the course of the Vanapa River, on the banks of which we heard the cry of the Twelve-wired Bird of Paradise (*Seleucides niger*), but, time not permitting us to go hunting, we did not procure a specimen of this, one of the finest birds of the whole family. The Twelve-wired Paradise-bird inhabits the swampy districts near the coast, where it is not easily obtained. Its call can be heard at a

\* See Proc. Roy. Geogr. Soc. 1889, p. 605, for an account of this expedition.

long distance and is a double note, difficult to imitate even by the natives.

Leaving the Vanapa River, we ascended the lower mountains, where we encountered the King Bird of Paradise (*Cicinnurus regius*), of which we secured several specimens during our first day's march. This was the first time I had seen this little bird in all its beauty. Its legs, when it is alive, are of a clear cobalt-blue colour. I had previously only seen prepared specimens, in which the legs become black and shrivelled. I found it to be a restless little creature, not easily seen in the dense scrub, nor was it met with above an altitude of 2000 feet. Its food consists of seeds and berries, of which there is abundance in this locality.

The next Paradise-bird met with was the Raggi's Paradise-bird (*Paradisea raggiana*), which is also found on the lower ranges of the mountains, and is rarely ever seen above an altitude of 3000 feet. One evening I observed a number of this species flying from one tree to another, evidently feeding and dancing, as I am told is their habit. *P. raggiana* lives on fruit, which generally grows on high trees in Papua; and as nature has provided these birds with a thick skin to keep their long plumage from falling out, it requires a strong charge of the gun to bring them to the ground. It is to be regretted that the long red plumes soon lose their brightness after death.

We came across the magnificent Rifle-bird (*Ptilorhis magnifica*) on Mount Kowald, as also on Mount Belford, at an altitude of 3000 feet and over. This bird haunts the dense scrub, usually in the neighbourhood of the running streams. It is solitary and wild and shy, requiring some skill to secure it. On Mount Belford, at the altitude of 4000 feet, we first heard the call of Lawes's Paradise-bird (*Parotia lawesi*), the local form of the Six-wired Bird of Paradise, but did not succeed in obtaining a specimen until we had crossed the Joseph River and ascended Mount Musgrave to the same altitude. Here I secured an example of this beautiful bird. Our camp was near one of their play-grounds, so I had a good

opportunity of watching this bird's movements. It has a strong resemblance to the Silky Bower-bird of New South Wales (*Ptilonorhynchus holosericeus*) both in form and habits. It has a similar bill, beautiful blue eyes, and strong legs, and, like the Bower-bird, is very cautious, restless, and swift. It has also a similar flight. Although *P. lawesi* does not build a bower, still it has its play-ground, where a number of these birds (from six to eight) may be found playing together. The play-ground may be easily known by the colour of the soil and by the clearance of the surrounding underbrush.

The Sickle-billed Paradise-bird (*Drepanornis cervinicauda*) resorts to the same zone, but is very seldom seen. We were unable to sight one, although we heard its call several times during our stay in the mountains. It keeps to the topmost branches of the highest trees, where it pours out its song, which is said to resemble that of the Nightingale.

At an altitude of 5000 feet we came across the Superb Bird of Paradise (*Lophorhina minor*). This species flutters about on the highest perches it can find, and looks no larger than a butterfly. It is needless to say that few specimens of it were secured. Its call is similar to that of *Parotia lawesi*, but is not so strong. The most striking feature of this beautiful little bird is its cape, which it has the power to expand so as to form a half-circle over its back. On Mount Musgrave, at an altitude of 6000 feet, we also came across a fine species of *Epimachus* (*E. macleayanae*). Up to that time only one specimen of this splendid bird was known. This had been discovered two years previously by Mr. Belford, who was at this time one of our party. This specimen had been sent to Sydney, where Dr. Ramsay, of the Australian Museum, had described it. This bird differs materially from *Epimachus maximus* in that the breast and flank-feathers are of a rusty colour shaded with purple. It inhabits the mountain regions at an altitude of from 6000 to 9000 feet, above which no Paradise-birds were found. The call of *E. macleayanae* is a shrill double note, similar to the striking of a pair of clappers.

In the same locality we procured several female specimens of the Stephanie's Paradise-bird (*Astrarchia stephanie*), being the first examples of that sex yet discovered. The male bird, of which there is only one specimen known, was described by Dr. Meyer of Dresden from a specimen sent to Europe by the late Mr. Hunstein. It may be noted that, although we remained for some time in the same locality, no specimen of this rare species was seen after the first day or two. As I had not the good fortune to come across one myself, I am unable to give much information on this very interesting discovery.

The Golden-winged Bird of Paradise (*Diphyllodes chrysoptera*), it is safe to say, is only found in the interior, as we did not come across it until we were on the Knutsford range.

The only new Bird of Paradise discovered during the expedition was a bird very similar to the Golden Bird of Paradise (*Xanthomelus aureus*), and I have no doubt it will prove to be a species of this genus when the specimen comes to be examined. It was met with on ascending Mount Owen Stanley. I therefore propose to name it *Xanthomelus macgregori*, in honour of our leader—the first white man who has reached the summit of this range. It is of the same size as its prototype, with head, back, and wings of a golden-orange, but the breast and abdomen are black. The feathers on the head are parted in the middle and form a small crest in front; the beak and feet are similar to those of *X. aureus*. The tail in the single specimen obtained had been shot away.

The Birds of Paradise are usually divided into three groups, to the first and second of which all the above-named species belong. The third group consists of the Bower-birds, the most interesting of which that we met with was one of the genus *Amblyornis*, also a new bird to science. As it was found on Mount Musgrave, I propose to call it *Amblyornis musgravianus*. It is somewhat larger than *A. subalaris*, and measures about 10 inches from the tip of the beak to the end of the tail; the wings and back are of a dull darkish green; the throat, breast, and belly of a uniform brown;

under the wings of a yellowish brown. The crest is of a deep golden-orange, slightly streaked with darkish brown and the centre-feathers tipped with the same colour. The iris is brown, the base of beak horn-colour, and the feet are black. Like the rest of the Bower-birds, it is of a shy disposition, and it requires great patience and prudence to obtain specimens. It is keen-sighted and quick of motion; its notes, of which there are several, are clear and sharp. During our stay on Mount Musgrave I had frequent opportunities

Fig. 1.

Bower of *Amblyornis musgravianus*.

of observing this interesting bird. I had never seen a more beautiful bower or play-ground than that which it constructs. It was, however, eclipsed by another which I came across on our return journey on Mount Musgrave, namely that of *Amblyornis subalaris*. The first bower of *A. musgravianus* met with was constructed of moss. It was about two feet high, and built evenly round a small tree, looking at first sight like a marble fountain. The small sticks placed in various positions on the tree gave the idea of jets of water. The

outer rim of the playground was about three inches higher than the inside course, which was smooth and even.

One day on Mount Belford, the member of the party from which it takes its name came into camp with a specimen of *A. subalaris*, and urged me not to leave without seeing the playground of this species. I am glad to say I followed his advice. At a short distance off the bower from the back looks like a cartload of sticks rounded on the top. On going round to the front I saw the most beautiful building ever

Fig. 2.

Bower of *Amblyornis subalaris*.

constructed by a bird, to which, however, my poor description cannot do justice. The edifice (fig. 2) was dome-like, only half covered over, and exposed to view inside a ring or circus. In the centre of this was built a bank of moss, decorated with flowers and seed, out of which grew a small tree interlaced with sticks. The *A. subalaris* is smaller than the one I have named *A. musgravianus*, but otherwise similar in colour.

I was certainly well rewarded for my trouble on this occa-

sion, and felt much indebted to Mr. Belford for having shown me the most interesting sight which I witnessed during the whole of the expedition.

This concludes my notes, which were taken under many disadvantages incidental to a pioneer undertaking; but if I have given any new information on the subject of Paradise-birds, be it ever so little, I shall feel that I have been well rewarded for the hardships which I endured.

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XV.—*On a Collection of Birds made by the late Mr. J. S. Jameson on the Aruwhimi River, Upper Congo.* By Captain G. E. SHELLEY, F.Z.S.

(Plate V.)

IN 1882 I had the pleasure of describing Mr. Jameson's ornithological collections from Matabele Land\*. It is with the greatest regret that I now have to give a final list of the birds obtained by this ardent young naturalist during his residence at Yambuya, on the Upper Congo, where he was stationed with the rear guard of the Stanley Expedition for the relief of Emin Pasha. His untimely death has been a loss to science, which naturalists will regret equally with the loss of those scientific pioneers of ornithology in Eastern Africa, Drs. G. A. Fischer and R. Böhm, both cut off in their prime, when there was every reason to expect that their work had only just commenced. Mr. Stanley is more celebrated as an explorer than as a naturalist, and the unfortunate death of Mr. Jameson, who would have contributed much to the scientific interest of the expedition, is therefore the more to be deplored.

Small though the present collection be, it will be found to be of great interest to students of Ethiopian ornithology, and is in some respects extremely important as regards the geographical distribution of species, as it serves to show how small is our knowledge of the range of African birds, and how little we are acquainted with the physical configuration

\* See 'Ibis,' 1882, pp. 236, 349.

of the interior of Africa, which might give us some explanation of the distribution of species. The majority of the birds collected on the Aruwhimi are identical with species from the Lower Congo, and as these are mostly the same as the forms of Gaboon, the affinities of the avifauna of these two districts receives ample confirmation. Thus, when a species inhabiting the Gold Coast or the Niger Region is represented by an allied species in Gaboon or in the Congo district, the Aruwhimi bird will be found to belong to the Congo species and not to that of the Gold Coast. But this is not invariably so; for the *Pholidornis* discovered by Mr. Jameson is allied to the species of the Gold Coast, as are also *Pytelia schlegeli* and *Diaphorophya blissetti*, which are purely Guinean species. Many birds recorded by Mr. Sharpe as found in the Niam-Niam country, from Mr. Bohndorff's collection in 1884\*, are now shown to have an intermediate habitat, and a zoological connection is thus established with the Moubuttu country explored by Emin Pasha. Mr. Jameson's collection, therefore, limited though it be by reason of the distractions and responsibility of his position at Yambuya, is of great importance for our knowledge of the geographical distribution of African birds, and had he lived there is no doubt that he would have added greatly to the renown of the Stanley Expedition, to which he contributed a considerable sum of money and ultimately sacrificed his life †.

In the accompanying paper I have quoted only from articles which refer immediately to the ornithology of the Congo district and the adjacent countries. Reference should be made to the papers on Dr. Böhm's and Dr. Fischer's collections in the 'Journal für Ornithologie,' where several Congo species are recorded.

#### 1. ASTURINULA MONOGRAMMICA.

*Asturinuia monogrammica*, Sharpe & Bouvier, Bull. Soc.

\* See Journ. Linn. Soc. (Zool.) xvii. p. 419.

† [Mr. Jameson died at Bangala, on the Upper Congo, on the 17th of August, 1888. See notice of his death, Proc. R. Geogr. Soc. x. p. 646.—Ed.]

Zool. France, ii. p. 472 (1877); Sharpe, Journ. Linn. Soc. xvii. p. 437 (1884).

Yambuya.

2. MUSCICAPA GRISOLA.

*Muscicapa grisola*, Sharpe, Cat. B. Brit. Mus. iv. p. 151 (1879); Rchw. J. f. O. 1887, p. 300 (Manyanga), p. 305 (Leopoldville).

Yambuya.

3. MUSCICAPA LUGENS.

*Muscicapa lugens*, Sharpe, Cat. B. Brit. Mus. iv. p. 155 (1879).

An adult specimen from Yambuya, agreeing with the type in the British Museum.

4. ARTOMYIAS FULIGINOSA.

*Artomyias fuliginosa*, Sharpe & Bouvier, Bull. Soc. Zool. France, ii. p. 479 (1877); Rchw. J. f. O. 1887, p. 305 (Leopoldville).

Bolobo, Upper Congo.

Agrees with specimens from the Gaboon. There is also a specimen in the British Museum from Landana, collected by M. Petit.

5. TERPSIPHONE CRISTATA.

*Terpsiphone melampyra*, Sharpe, P. Z.-S. 1873, p. 717; Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 45 (1876).

*Terpsiphone cristata*, Sharpe, Cat. B. Brit. Mus. iv. p. 354 (1879); id. Journ. Linn. Soc. xvii. p. 425 (1884); Rchw. J. f. O. 1887, p. 300 (Manyanga).

♂ ♀ ad. and some males out of plumage. Yambuya.

6. DIAPHOROPHYA CASTANEA.

*Diaphorophya castanea*, Sharpe & Bouvier, Bull. Soc. Zool. France, ii. p. 479 (1877).

*Diaphorophya castanea*, Rchw. J. f. O. 1887, p. 305 (Leopoldville).

♂ ♀, Yambuya.



J. G. Keulemans del. et lith.

Mutten Bros. imp.

1. PHOLIDORNIS JAMESONI.
2. COSSYPHA BARTELLOTTI.

p. 173, pl. iv.

Bull. Soc.

B. Brit. Mus. v.

J. L. O. 1887, p. 301

Yamboua.

BARTHELOTTI, sp. n. (Plate V. Fig. 2.)

Very like *C. cyanocampter*, but of a pale ochreous buff  
 cinnamon-rufous below. Total length 8.6 inches,  
 tail 3.7, tarsus 1.1.

Yamboua.

This species differs markedly in the coloration of the  
 under parts from *C. cyanocampter* of the Gulf Coast, of which  
 I have named it after Major  
 Bartelotti, who lost his life in the course

Bull. Soc.

B. Brit. Mus. v.



J. G. Keel

1. *COSSYPHA JAMESONI*  
2. *COSSYPHA BARTELOTTI*

7. DIAPHOROPHYA BLISSETTI.

*Diaphorophya blissetti*, Sharpe, Ibis, 1873, p. 173, pl. iv. fig. 1; id. Cat. B. Brit. Mus. iv. p. 141 (1879).

♂ ad., Yambuya.

Agrees with the type in the British Museum, but seems to have the chestnut on the sides of the face a little more extended.

8. BIAS MUSICUS.

*Bias musicus*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 308 (1876); Sharpe, Cat. B. Brit. Mus. iv. p. 142 (1879); Rchw. J. f. O. 1887, p. 309 (Kibondo).

2 ♂ & 2 ♀, Yambuya.

9. ACROCEPHALUS TURDOIDES.

*Acrocephalus fulvolateralis*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 307 (1876).

*Acrocephalus turdoides*, Seebohm, Cat. B. Brit. Mus. v. p. 95 (1881).

*Acrocephalus arundinaceus*, Rchw. J. f. O. 1887, p. 301 (Manyanga).

♀ in autumn plumage. Yambuya.

10. COSSYPHA BARTELOTI, sp. n. (Plate V. fig. 2.)

Similar to *C. cyanocampter*, but of a pale ochreous buff instead of cinnamon-rufous below. Total length 6.6 inches, wing 3.4, tail 3.7, tarsus 1.1.

♂, Yambuya.

This new species differs markedly in the coloration of the underparts from *C. cyanocampter* of the Gold Coast, of which I have seen four specimens. I have named it after Major Edmund Musgrave Barttelot, who lost his life in the same expedition as Mr. Jameson.

11. ERYTHROPYGIA RUFICAUDA.

*Erythropygia ruficauda*, Sharpe, Cat. B. Brit. Mus. vii. p. 78, pl. xv. fig. 2 (1883); Rchw. J. f. O. 1887, p. 301 (Manyanga).

Two adults from Yambuya.

## 12. EREMOMELA BADICEPS.

*Eremomela badiceps*, Sharpe, Cat. B. Brit. Mus. vii. p. 164 (1883).

*Stiphronis badiceps*, Rchw. J. f. O. 1887, p. 306 (Leopoldville).

One immature specimen from Yambuya.

## 13. CAMAROPTERA BREVICAUDATA.

*Camaroptera brevicaudata*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 307 (1876); Sharpe, Cat. B. Brit. Mus. vii. p. 168 (1883); Rchw. J. f. O. 1887, p. 301 (Manyanga).

An adult specimen from Yambuya.

## 14. HYLIA PRASINA.

*Hylia prasina*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 306 (1876); Sharpe, Cat. B. Brit. Mus. vii. p. 172 (1883); Rchw. J. f. O. 1887, p. 309 (Kassongo).

An adult bird from Yambuya.

## 15. BURNESIA LEUCOPOGON.

*Drymæca leucopogon*, Cab.; Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 42 (1876).

*Burnesia leucopogon*, Sharpe, Cat. B. Brit. Mus. vii. p. 207 (1883); Rchw. J. f. O. 1887, p. 301 (Manyanga), p. 306 (Leopoldville).

♂ ad., Yambuya.

## 16. BURNESIA BAIRDI.

*Burnesia bairdi*, Sharpe, Cat. B. Brit. Mus. vii. p. 207 (1883).

Two specimens from Yambuya.

## 17. CISTICOLA RUFICAPILLA.

*Cisticola ruficapilla*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 306 (1876); Sharpe, Cat. B. Brit. Mus. vii. p. 248 (1883); Rchw. J. f. O. 1887, p. 306 (Leopoldville).

Two adults from Yambuya.

## 18. MACROSPHENUS FLAVICANS.

*Macrosphenus flavicans*, Cass. Proc. Philad. Acad. 1859, p. 42; Sharpe, Cat. B. Brit. Mus. vii. p. 530 (1883).

An apparently young bird from Yambuya. In my collec-

tion there is an adult from Landana, so that the range of this bird extends from Gaboon to the Congo and as high up as the Aruwihimi River. Cassin supposed his genus *Macrosphenus* to be nearly allied to *Bernieria*, but beyond an outward similarity of a long bill and a green and yellow plumage there is little real resemblance. *Bernieria* has a compressed bill, with very evident rictal bristles, while *Macrosphenus* has a broadened and depressed bill, with very tiny rictal bristles, scarcely perceptible. It has also a long silky plumage on the rump and flanks, as in some of the Honey Suckers. I think that *Macrosphenus* is a Timeliine genus standing by itself, without any near allies.

19. *TURDINUS FULVESCENS*.

*Turdinus fulvescens*, Sharpe, Cat. B. Brit. Mus. vii. p. 545 (1883).

♀, Yambuya.

This specimen seems to be identical with one of Duchailleu's from Gaboon, and we have others from the same country which appear to agree with Reichenow's description of his new *Turdinus albipectus* (J. f. O. 1887, p. 307) from Leopoldville.

20. *NICATOR CHLORIS*.

*Nicator chloris*, Sharpe & Bouvier, Bull. Soc. Zool. France, ii. p. 480 (1877); Gadow, Cat. B. Brit. Mus. viii. p. 166 (1883); Rehw. J. f. O. 1887, p. 300 (Manyanga), p. 307 (Rivariva).

Two specimens from Yambuya.

21. *NICATOR VIREO*.

*Nicator vireo*, Sharpe & Bouvier, Bull. Soc. Zool. France, ii. p. 480 (1877); Gadow, Cat. B. Brit. Mus. viii. p. 166 (1883); Rehw. J. f. O. 1887, p. 300 (Manyanga), p. 305 (Leopoldville).

An adult male from Yambuya.

22. *DRYOSCOPIUS LEUCORHYNCHUS*.

*Dryoscopus leucorhynchus*, Rehw. J. f. O. 1877, p. 24, 1887, p. 305.

An adult and an immature bird from Yambuya. The latter is much mixed with chocolate-brown, and is probably a female, as described by Dr. Gadow (Cat. B. Brit. Mus. viii. p. 132).

23. *DRYOSCOPIUS TRICOLOR.*

*Dryoscopus tricolor*, Rehw. J. f. O. 1877, p. 103.

A female from Yambuya.

This bird seems to agree very well with the description of the type specimen, which was likewise a female, from Chinchouxo, but the lower back and rump are light grey, much mixed with white and mottled with white bases to the feathers.

24. *CINNYRIS SUPERBUS.*

*Cinnyris superbus*, Shelley, Monogr. Nect. p. 197, pl. 60 (1876); Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 41 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 428; Rehw. J. f. O. 1887, p. 306 (Leopoldville).

3 ♂ & ♀, Yambuya.

25. *CINNYRIS CHLOROPYGIUS.*

*Cinnyris chloropygius*, Shelley, Monogr. Nect. p. 257, pl. 79 (1876); Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 41 (1876); Rehw. J. f. O. 1887, p. 306 (Leopoldville).

3 ♂, Aruwhimi River.

26. *CINNYRIS ANGOLENSIS.*

*Cinnyris angolensis*, Shelley, Monogr. Nect. p. 279, pl. 87 (1876); Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 304 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 428 (1884); Rehw. J. f. O. 1887, p. 306 (Leopoldville).

♂ ♀ ad. and one young. Yambuya.

27. *CINNYRIS OBSCURUS.*

*Cinnyris obscurus*, Shelley, Monogr. Nect. p. 291, pl. 92 (1879).

♂ ad., Yambuya.

28. *ANTHREPTES HYPODILA.*

*Nectarinia collaris*, Sharpe, P. Z. S. 1873, p. 717.

*Anthothreptes subcollaris*, Rchw. J. f. O. 1887, p. 301 (Manyanga).

*Anthodiæta hypodila*, Shelley, Monogr. Nect. p. 345, pl. 111. figs. 1, 2 (1880).

3 ♂, Yambuya.

29. ANTHREPTES AURANTIA.

*Anthreptes aurantia*, Shelley, Monogr. Nect. p. 337, pl. 109 (1879).

*Anthothreptes aurantia*, Rchw. J. f. O. 1887, p. 301 (Manyanga).

Yambuya.

30. ANTHREPTES TEPHROLEMA.

*Anthreptes tephrolæma*, Shelley, Monogr. Nect. p. 333, pl. 72. fig. 2 (1880).

*Anthothreptes tephrolæma*, Rchw. J. f. O. 1887, p. 303 (Leopoldville).

♂, Yambuya.

31. PHOLIDORNIS JAMESONI, sp. n. (Plate V. fig. 1.)

Similar to *P. rubrifrons*, but distinguished by having the whole of the face chestnut, and not spotted with ashy grey.

♂, Yambuya.

I have compared this specimen with the type of *P. rubrifrons* (Sharpe & Ussher).

32. HIRUNDO GORDONI.

*Hirundo gordonii*, Sharpe, Cat. B. Brit. Mus. x. p. 168 (1885).

*Hirundo semirufa*, Rchw. J. f. O. 1887, p. 308 (Kassongo), p. 309 (Kibondo).

♂, Yambuya. Wing 4.3 inches.

33. HIRUNDO PUELLA.

*Hirundo puella*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 38 (1876); Sharpe, Cat. B. Brit. Mus. x. p. 154.

Lower Congo.

34. HIRUNDO NIGRITA.

*Hirundo nigrita*, Sharpe, Cat. B. Brit. Mus. x. p. 148.

*Waldenia nigrita*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 38 (1876).

2 ♀ ad., Yambuya.

35. MOTACILLA CAMPESTRIS.

*Motacilla campestris*, Sharpe, Cat. B. Brit. Mus. x. p. 370, pl. 6. figs. 1, 2.

2 ♂, Yambuya.

36. PASSER DIFFUSUS.

*Passer diffusus*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 49 (1876, Landana, Chinchonxo); Rehw. J. f. O. 1887, p. 305 (Leopoldville); Sharpe, Cat. B. Brit. Mus. xii. p. 336 (1888).

One adult specimen from Yambuya.

37. ONYCHOGNATHUS HARTLAUBI.

*Onychognathus hartlaubi*, Sharpe, Journ. Linn. Soc. xvii. p. 427 (1884).

♂ ad., Yambuya.

This species has also been obtained by M. Bohndorff in the Niam-Niam country.

38. PLOCEUS NIGERRIMUS.

*Malimbus nigerrimus*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 47 (1876).

*Ploceus nigerrimus*, Rehw. J. f. O. 1887, p. 305 (Leopoldville); Shelley, Ibis, 1888, p. 87.

♂ ♀, Yambuya.

By no means rare in collections from the Gaboon and Lower Congo. Emin Pasha has also found it in the Mombutu country.

39. PLOCEUS BOHNDORFFI.

*Ploceus bohdorffi*, Rehw. J. f. O. 1887, pp. 214, 307 (Stanley Falls).

♂ ad., Yambuya.

This is a form of *Ploceus abyssinicus* (Gm.), from which it differs merely in the slight extension of the black on the crown, showing an approach to *P. textor* of the west coast.

## 40. PLOCEUS NIGRICOLLIS.

*Symplectes nigricollis*, Rchw. J. f. O. 1887, p. 301  
(Manyanga).

2 ♂, Yambuya.

## 41. ESTRELDA NONNULA.

*Estrellda nonnula*, Shelley, Ibis, 1886, p. 330.

*Habropyga tenerrima*, Rchw. J. f. O. 1887, pp. 213, 307  
(Stanley Falls), p. 307 (Kibongi).

Males and females from Yambuya.

This pretty Weaver Finch was discovered by Emin Pasha in Equatorial Africa, and specimens were sent home by him from the Monbuttu country. Mr. Bohndorff met with it on the Upper Congo, and the present occurrence at Yambuya considerably increases its range to the westward.

## 42. PYTELIA SCHLEGELI.

*Pytelia schlegeli*, Sharpe, Ibis, 1870, p. 482, pl. 14. figs. 2, 3;  
id. Cat. B. Brit. Mus. xiii. p. 304.

♂ juv., Yambuya.

Not to be separated from the Gold-Coast specimens. This is rather an unexpected species in the Upper Congo region, and is evidently a parallel occurrence to those of the *Pholidornis* and *Diaphorophya blissetti*. Perhaps the adult bird may be found to be specifically distinct, like *Pholidornis jamesoni*.

## 43. NIGRITA BICOLOR.

*Nigrita bicolor*, Sharpe & Bouvier, Bull. Soc. Zool. France, iii. p. 75 (1878); Sharpe, Cat. B. Brit. Mus. xiii. p. 318.

♂ ad., Yambuya.

The range of this *Nigrita* is also thus greatly extended.

## 44. NIGRITA CANICAPILLA.

*Nigrita canicapilla*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 48 (1876); Sharpe, Cat. B. Brit. Mus. xiii. p. 315; Rchw. J. f. O. 1887, p. 307 (Kibongi).

♂ ♀, Yambuya.

The sexes are alike in plumage. This is a very interesting extension of the range of this species.

## 45. SPERMESTES POENSIS.

*Spermestes poensis*, Sharpe, Cat. B. Brit. Mus. xiii. p. 262.

♂ ♀, Yambuya.

The sexes are alike in plumage, according to Mr. Jameson's determinations. The range of the species is hereby greatly extended into the interior of Africa.

## 46. PYRENESTES COCCINEUS.

*Pyrenestes coccineus*, Sharpe & Bouvier, Bull. Soc. Zool. France, iii. p. 74 (1878); Rehw. J. f. O. 1887, p. 301 (Mandinga); Sharpe, Cat. B. Brit. Mus. xiii. p. 253.

2 ♂ ad., Yambuya.

The two specimens have perfectly black backs.

## 47. SPERMOSPIZA GUTTATA.

*Spermospiza guttata*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 49 (1876); Rehw. J. f. O. 1887, p. 307 (Kibongi).

♂ ad., Yambuya.

Agrees well with examples from Gaboon.

## 48. PENTHETRIOPSIS MACRURA.

*Penthetria macrura*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 49 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 426 (1884); Rehw. J. f. O. 1887, p. 305 (Leopoldville).

*Penthetriopsis macrura*, Sharpe, Cat. B. Brit. Mus. xiii. p. 220.

♂ ad., Lower Congo.

## 49. PYROMELANA FLAMMICEPS.

*Euplectes flammiceps*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 47 (1876).

*Pyromelana flammiceps*, Sharpe, Cat. B. Brit. Mus. xiii. p. 228; Rehw. J. f. O. 1887, p. 308 (Kassongo).

♂ ad., Lower Congo.

## 50. MEROPS MALIMBICUS.

*Merops malimbicus*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 304 (1876); Dresser, Monogr. Merop. p. 87, pl. 19 (1886).

♂ ad., Lower Congo.

## 51. MEROPS SUPERCILIOSUS.

*Merops superciliosus*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 40 (1876), ii. p. 475 (1879); Dresser, Monogr. Merop. p. 71, pl. 17 (1886); Rchw. J. f. O. 1887, p. 308 (Kassongo).

♂ ♀, Yambuya.

## 52. MEROPS ALBICOLLIS.

*Merops albicollis*, Sharpe, Journ. Linn. Soc. xvii. p. 435 (1884); Dresser, Monogr. Merop. p. 47, pl. 13; Rchw. J. f. O. 1887, p. 306 (Stanley Falls).

## 53. MELITTOPHAGUS GULARIS.

*Meropiscus gularis*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 304 (1876).

*Melittophagus gularis*, Dresser, Monogr. Merop. p. 123, pls. 28, 29.

## 54. EURYSTOMUS AFER.

*Eurystomus afer*, Sharpe, P. Z. S. 1873, p. 716; id. & Bouvier, Bull. Soc. Zool. France, i. pp. 39, 303 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 434 (1884); Rchw. J. f. O. 1887, p. 305 (Leopoldville).

Yambuya.

## 55. HALCYON CYANOLEUCA.

*Halcyon cyanoleuca*, Sharpe, Monogr. Alced. p. 189, pl. lxix. (1869); id. & Bouvier, Bull. Soc. Zool. France, i. p. 39 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 435 (1884).

## 56. ISPIDINA PICTA.

*Ispidina picta*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 40 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 435 (1884).

*Alcedo picta*, Rchw. J. f. O. 1887, p. 308 (Kassongo).

## 57. COSMETORNIS VEXILLARIUS.

*Macrodypteryx sperlingi*, Sharpe, P. Z. S. 1873, pp. 626, 717.

*Cosmetornis vexillarius*, Sharpe, Journ. Linn. Soc. xvii. p. 434 (1884).

A specimen without the long quills of the breeding-season.

58. *CYPSELUS APUS.*

*Cypselus apus*, Heugl. Orn. N.O.-Afr. i. p. 142 (1870).

One specimen without label, but doubtless from Yambuya.

59. *CHÆTURA CASSINI.*

*Chætura cassini*, Scl. P. Z. S. 1863, p. 205 (Gaboon).

An adult bird from Yambuya.

60. *CHÆTURA SABINEI.*

*Chætura sabiniei*, Hartl. Orn. W.-Afr. p. 25 (1857).

One specimen from Yambuya.

61. *MESOPICUS XANTHOLOPHUS.*

*Dendropicus africanus*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 312 (1876) (nec Gray).

*Mesopicus xantholophus*, Hargitt, Ibis, 1883, pp. 173, 421; Sharpe, Journ. Linn. Soc. xvii. p. 430 (1884); Rchw. J. f. O. 1887, p. 302 (Leopoldville).

Originally described from Gaboon, this species was also found on the Lower Congo by Lucan and Petit, and afterwards by Bohndorff in the Niam-Niam country. It evidently extends throughout the Congo region.

62. *CAMPOThERA PERMISTA.*

*Campothera maculosa*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 17 (1876) (nec Sw.).

*Campothera permista*, Sharpe & Bouvier, t. c. p. 312; Hargitt, Ibis, 1883, p. 478; Sharpe, Journ. Linn. Soc. xvii. p. 431 (1884); Rchw. J. f. O. 1887, p. 302 (Leopoldville).

Another Gaboon species which inhabits the Lower Congo and evidently extends throughout the entire Congo region to the Niam-Niam country.

63. *COLIUS NIGRICOLLIS.*

*Colius nigricollis*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 50 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 434 (1884).

Ad., Yambuya.

64. *CHRYSOCOCCYX KLAASI.*

*Cuculus klaasii*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 52 (1876); Sharpe, Journ. Linn. Soc. xvii. p. 433 (1884).

*Chrysococcyx klaasi*, Rchw. J. f. O. 1887, p. 308 (Stanley Falls).

Ad., Yambuya.

65. CHRYSOCOCCYX SMARAGDINEUS.

*Chrysococcyx smaragdineus*, Rchw. J. f. O. 1887, p. 302 (Leopoldville), p. 308 (Kassongo).

One young bird from Yambuya.

66. TRACHYPHONUS PURPURATUS.

*Trachyphonus purpuratus*, Marshall, Monogr. Capiton. p. 151, pl. lx.

Ad., Yambuya.

This is the Gaboon species, and not *T. goffini* of the Gold Coast.

67. BARBATULA SCOLOPACEA.

*Xylobucco scolopaceus*, Marshall, Monogr. Capiton. p. 115, pl. xlvii.

*Lignobucco consobrinus*, Rchw. J. f. O. 1887, p. 309.

Two specimens from Yambuya.

These two specimens show the greenish-yellow margins to the feathers of the upper surface, as described by Dr. Reichenow in his Kibondo examples; but the difference is so slight that young specimens of *B. scolopacea* from the Gold Coast are, I consider, indistinguishable.

68. CHALCOPELIA AFRA.

*Peristera afra*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 52 (1876).

*Chalcopelia afra*, Shelley, Ibis, 1883, p. 323.

Ad., Yambuya.

69. LOBIVANELLUS SUPERCILIOSUS.

*Lobivanellus superciliosus*, Rchw.; Seebohm, Geogr. Distr. Charadr. p. 201, pl. 9.

♂ ad., Aruwhimi River; ♀ juv., Yambuya.

70. ÆGIALITIS MINOR.

*Charadrius minor*, Wolf & Meyer; Seebohm, Geogr. Distr. Charadr. p. 130.

♂, Yambuya.

A young bird.

71. *TRINGA SUBARQUATA.*

*Tringa subarquata*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 313 (1876); Seebohm, Geogr. Distr. Charadr. p. 419.

Aruwhimi River.

A young bird in winter plumage. It has been found on the Lower Congo and probably follows the course of that river on its winter migration.

72. *TRINGOIDES HYPOLEUCUS.*

*Actitis hypoleuca*, Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 18 (1876).

*Totanus hypoleucus*, Seebohm, Geogr. Distr. Charadr. p. 371.

♀ ad., Yambuya.

XVI.—*On some of the Birds of the Sandwich Islands.*

By SCOTT WILSON, F.Z.S.

(Plate VI.)

It may be advantageous to preface these notes by a few geographical remarks as well as by a slight sketch of the leading physical features of the islands of the Hawaiian group, and especially of their forests, with which the existence of their feathered inhabitants is so closely bound up that the destruction of the one involves the extinction of the other. It is, alas! only too probable that both are doomed in a very near future, so that these notes will possess a melancholy interest for naturalists; but it will be quite needless for me to add another to the many descriptions already published of these lovely islands\*.

Anyone turning to Mr. Wallace's 'Island Life' (chap. xv.) will see that the Sandwich Islands form one of the most remote groups in the world, rising from ocean-depths which average about 3000 fathoms, whence Mr. Wallace infers that during the whole of their existence they have been as com-

\* Of late they have been brought into prominent notice owing to the heroic devotion of Father Damien, the martyr of Molokai.

pletely severed from the great continents as they are now. Indeed they lie some 2100 miles from the nearest point in the American continent (San Francisco), and they are at about the same distance from Samoa and the Marquesas on the south, and from the Aleutian Islands towards the north, though some widely scattered reefs and atolls, six or seven hundred miles off, serve to connect them with the other Pacific islands.

The Hawaiian group stretches from south-east to north-west for about 350 miles; but though so extensive, it is entirely volcanic and its principal island possesses two active volcanoes, the lava-streams from which render a large part of its area a treeless and barren waste. There are eight inhabited islands—Hawaii, Maui, Oahu, Molokai, Lanai, Kahoolawe, Kauai, and Niihau. Of these, Kahoolawe and Niihau, the two smallest, have no forests remaining. Hawaii is the most southerly and by far the largest of the group, having an area of 4100 square miles, and being well compared by Mr. Wallace to Devonshire, “with which it closely agrees both in size and shape, though its enormous volcanic mountains rise to nearly 14,000 feet high.” Maui, Oahu, and Kauai, each about the size of Hertfordshire or Bedfordshire (again to use Mr. Wallace’s comparison) come next in point of area, and these are followed by Molokai, Lanai, Niihau, and Kahoolawe in the order here named.

On my first visit to the large island of Hawaii (coming from Honolulu) in May 1877, I landed at Kealeakakua Bay, on its west coast, the scene of Captain Cook’s unfortunate death. Throughout the district of Kona, as this part of the island is named, the forest begins at an elevation of about 1100 feet, and stretches for some six miles up the slopes of the great mountain Mauna Loa (13,700 feet). For some considerable distance the more abrupt slopes of Mauna Hualalai (8275 feet) are also covered with dense forest. A great portion, however, of this island, especially the region from the sea-board to 1100 feet, is, as already stated, a desert waste of beds of clinkers and of lava-streams, which have rolled down to the sea from its three great volcanos—

Mauna Kea (13,805 feet), Mauna Loa, and Mauna Hualalai—and accordingly the total extent of forest is comparatively small. Most parts of the interior are thickly wooded to an elevation of about 6000 feet, above which the ohia trees (*Metrosideros polymorpha*) become mere scrub, and other forest-trees disappear entirely. Certain districts, even of the interior, as, for instance, the vast grassy plains of Waimea, have been entirely denuded of wood, partly through the ravages of feral cattle, partly through fires and other causes quite independent of volcanic action, so that the forests occupy at the present time but an inconsiderable extent of this island. Moreover the existing wooded region is becoming smaller year by year, owing to the countless herds of cattle which roam through its depths and have already so thrown it open that the impenetrable jungle of primeval Hawaii is a thing of the past. It is to be feared that if no check is put to the depredations of these destructive animals, and if trees are not planted to replace the great tracts of mighty giants which, in certain districts, are dying by hundreds, the forests of Hawaii will, at no distant date, become a matter of history. I am glad to say that several large land-owners are becoming alive to this danger, notably my friend Mr. W. H. Purvis, who, being an excellent botanist and practical tree-planter, has been one of the first to recognize the extreme danger of allowing this deforestation to go on, and who, by fencing in his lands against cattle, will assuredly by this wise proceeding preserve some part of the forest, and with it its many interesting birds, for the study of naturalists. I feel sure that all intelligent residents will agree with me that these beautiful islands, well named "the Paradise of the Pacific," would lose much of their charm were their native birds, conspicuous for the brilliancy of their plumage, and remarkable from their peculiarities, to be replaced by the noisy Mynah, the pugnacious Sparrow, and the Singapore Dove, all of which introduced species have already obtained a firm footing on the island of Oahu, and now fill its wooded ravines, formerly the home of far rarer and more beautiful species.

I have gone at some length into this question, as, by so doing, I may draw to it the attention of the Hawaiian Government, as well as that of the large land-owners, and their combined action cannot be too soon brought into effect if the entire disforestation of the Hawaiian Archipelago is to be prevented. It would be a disgraceful thing if such a Garden of Eden should be bereft of its birds, more especially as I am convinced that these islands have a great future before them as the great health-resort for the inhabitants of San Francisco flying from its unhealthy and treacherous climate, to say nothing of the vast number of tourists who will flock, in yearly-increasing numbers, to see the volcanic wonders of Hawaii, from all quarters of the globe. All these visitors may be expected to take an intelligent interest in the avifauna of the islands they visit or make their home, and on their behalf I appeal to the land-owners and to the Legislature of Hawaii to unite in protecting their country's birds. I would suggest that not only should forest-lands be fenced in as far as practicable, but that *no* exotic birds should be introduced. Several species of Hawaiian birds, which were to be found in Cook's time, and others which were obtained even so late as 1840, have become extinct, and it would not be rash to say that ere another century has elapsed but few native species will remain.

After this exordium, I will now attempt to give my readers some idea of the aspect of a Sandwich-Island forest. I shall enumerate the principal trees, more especially those which are frequented by birds that enliven the sublime solitude of the forest depths with the sweet ripples of their music—music “which gentler on the spirit lies than tired eyelids on tired eyes.” The ohia (*Metrosideros polymorpha*) is the queen of Hawaiian forest-trees, often attaining a height of from 90 to 100 feet, with a bole large in proportion. These giants are generally encircled to the greater part of their height by a climbing tree (*Freycinetia arborea*), which seems literally to coil around them, while its scarlet-tufted bracts and showy red fruit add yet another shade of colour. The ohia belongs to the *Myrtaceæ*, but the white stamens of the myrtle are

here replaced by crimson of the most brilliant hue, or in some varieties by orange, and in others by creamy buff. The crimson-flowered variety is, however, by far the most general, and the colour of its blossoms is only rivalled in brilliancy by the bright plumage of two species of birds I shall presently more particularly mention, both of which are ever to be seen sporting among its branches and probing its highly-coloured flowers for the nectar, as well as for the insects, which they contain. The ohia attains its greatest size in the lowest forest zone, from 1100 to 2500 feet, but it is to be found as high as 6000 or even 8000 feet. It well deserves its specific name, as one would at first hardly recognize the stately forest giant as belonging to the same species as the low-growing stunted shrub found in the mountain-region, were it not that these bushes, dwarfed as they are, are often a blaze of crimson flowers, being more floriferous than the forest-trees. The stunted ohia bushes found in the mountain-region have often a particularly dingy appearance, which still further disguises their identity. This peculiar appearance is due to a fungus (*Fumago vagans*, Pers.), a species which Mr. George Murray, of the British Museum of Natural History in Cromwell Road, has kindly identified for me, informing me that it is widely distributed throughout Europe and North America.

Next in importance, both in size and quantity, comes the koa (*Acacia koa*); and this, if the candle-nut (*Aleurites triloba*) is excepted, is the only other forest-tree worthy of the name. The koa, unlike the ohia, is never found in the lower forest-zone, nor does it occur as a shrub in the upland region. I think this fine acacia seldom grows below 3500 nor much above 5000 feet. In the comparatively dry soil at an elevation of about 4000 to 5000 feet it flourishes best, and in this region attains a great size. It is not so lofty as the ohia, and has a much more spreading habit than that tree; its bole is nearly equal in circumference to that of the ohia, and it was from gigantic specimens of this tree that the natives used formerly to hollow out their large war-canoes. The wood is very hard and extremely durable; it

takes, moreover, a high polish and is beautifully grained; indeed, in the opinion of experts its superiority over mahogany is undeniable, and I must say that some cabinets made of koa in the possession of the King are of extreme beauty. This fine forest-tree has a smooth trunk and large acacia-like leaves, which, in colour, resemble those of the *Eucalyptus*, but in certain lights possess a peculiar lustre of their own. It has an inconspicuous flower, but its bean is large, being some eight inches in length; still neither its flower nor fruit are any attraction to birds, and it is for the insect-life alone, found among its branches and among the mosses which deck them, that several species of birds frequent its feathery groves.

The next tree in point of size to the two already considered is the kukui or candle-nut (*Aleurites triloba*), a widely-distributed Polynesian species, but in the Hawaiian Archipelago only found in large tracts on the island of Kauai, although it is met with on all the other islands. The only birds I have ever observed to frequent its groves are the several species of *Chasiempis*, and occasionally *Psittirostra psittacea*. The kukui, though not much frequented by birds, deserves a word of mention, as the swelling park-like country of large districts on the island of Kauai owes much of its beauty to the stately clumps of this handsome tree. The delicately-indented foliage of the kukui has, like that of the koa, a lovely silvery appearance in certain lights, and its compact tree-like foliage and gracefully-shaped leaves earn for it the palm of beauty amongst Sandwich-Island trees. I may mention incidentally that its ribbed nuts are largely used in the manufacture of native jewellery, and also that the same nuts pounded are considered to be a great aid to digestion.

Besides these three, the undergrowth of a Sandwich-Island forest is chiefly composed of the following, their frequency of occurrence being indicated by the order in which their names are given:—The alii (*Dodonæa viscosa*), the aaka or neia (*Myoporum santalinum*), the iliahi or sandalwood (*Santalum album*), which is very local, the mamané (*Sophora*

*chrysophylla*), confined to the higher region of Hawaii only, the ohia ai (*Eugenia malaccensis*), another very local tree, but the deep green foliage and pink fruits of which combine to make it very attractive. To these must be added the numerous species of gigantic tree-lobelias and the huge tree-ferns, which latter are often over twenty feet in height and four to five feet in circumference, the dark brown stems and feathery fronds adding greatly to the beauty and tropical aspect of a Hawaiian forest. These ferns are, moreover, interesting from an ornithologist's point of view, as being the favourite hunting-ground of the Akihiloa (*Hemignathus obscurus*), which bird finds a soft material for its slender bill to work in, and also insects innumerable, in the brown stems of these graceful plants.

I have now enumerated most of the trees to be found in any quantity in the island of Hawaii, which may be said to be fairly typical of the entire archipelago, although, as is the case with its avifauna, the several islands each possess peculiar species. But I must leave this for my forthcoming work, in which I propose to describe in detail the forests found on the different islands of the group.

Although these are the principal trees constituting a forest on Hawaii, one must not pass over the numberless creepers which, especially in the lower and damper forest-zone, hang in festoons from tree to tree, and thus form a complete network of graceful greenery. Nor must one omit to make mention of that most graceful of Hawaiian ferns, *Gleichenia hawaiiensis*, to the tangled masses of which is due the impenetrability of parts of the forests on the Sandwich Islands, and especially on Lauai, which possesses but few feral cattle. This fern seems to revel alike in damp and dry soil, as it is as often found in great masses on the comparatively dry sides of the steep ravines, as in great fantastic festoons hanging over the forest streamlets. The filmy ferns and the moisture-laden mosses, which find their homes on the tree-trunks in the sombre forest-depths, are interesting alike to the botanist and to the lover of the beautiful in nature. And it is in a great measure to the numerous

species of ferns and graceful creepers that a Hawaiian forest owes much of its beauty, though one cannot help lamenting the absence of epiphytal orchids, which form such a lovely feature in many tropical forests. In some few favoured spots the broad-leaved banana rears its stately head, and here, in these sheltered spots, its grand leaves are perfect in their beauty, not torn to ribbons by the blustering wind, as one sees them around Honolulu and in other exposed positions. Among other fruits found in the lower forest-zone are the prolific guava, the orange, and the mango, on the fruits of all of which in their season certain birds delight to feed.

But now to turn to the birds which inhabit the forests whose beauties I have just endeavoured to indicate. I intend the present paper as a slight sketch to be elaborated in the large work which in due time I hope to publish on the ornithology of the Sandwich Islands; and accordingly I shall not here attempt any critical examination of the distribution of the species among the different members of the group, nor to treat any of the species in an exhaustive manner. Indeed, on this occasion, I shall merely mention a few, of which my knowledge is, I trust, sufficient to guard me against the commission of any grave errors, while most of them are also birds concerning which I do not expect to gain much more information from investigations which, at my request, are still being carried on in regard to other species.

I may add that what I have to say of the habits of the birds is derived entirely from my own observations.

1. *ACRULOCERCUS*\* *NOBILIS*. "O-o."

This, the Royal Bird of modern times, is perhaps the best known of any species to both the natives and foreign resi-

\* As, in my forthcoming work, I intend to adopt Prof. Cabanis's generic term *Acruloercus* in place of *Moho* or *Mohoa*, one or the other of which has been commonly used, I may here give my reasons for preferring the former. Prof. Newton has pointed out to me that, as a generic name, *Moho* dates only from Gray's 'Genera of Birds' (i. p. 96) in 1847, in which year Prof. Cabanis published *Acruloercus* (*Archiv für Naturgesch.* xiii. p. 327). Gray was careful not to quote *Moho* as a "genus" founded

dents in the islands. It is doubtful whether in ancient days it was from the yellow feathers that grow beneath its wings, or from the still more beautiful yellow feathers of the now extinct *Drepanis pacifica*, next to be mentioned, that the state robes of kings and chiefs were wrought. It was the privilege of those classes alone to wear them; and it cannot be denied that they formed a becoming apparel, as magnificent and beautiful as anything that the triumphs of civilized art can now produce. The fine statue of King Kamehameha I., which stands in front of the Government House in Honolulu, represents the great conqueror who first consolidated the sovereignty of the various islands, draped in his *Mamo*—as this feathered cloak is called in the Hawaiian language—and its texture is wonderfully represented by the sculptor's art. Looking upon it, and remembering that the kings and chiefs of Hawaii-*nei* were a race of giants, most of them being over six feet in height, we can well understand what an imposing effect must have been produced by one of them thus clad. The fabrication of the great yellow war-cloak of Kamehameha I. had been going on through the reign of eight preceding monarchs. The ground-work is of coarse netting, to which are attached, with skill, now impossible to be applied, the delicate feathers, those on the border being reverted. Its length is four feet,

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by Lesson (Tr. d'Orn. p. 302) in 1831, as has been commonly supposed; and, indeed, those who turn to Lesson's work will find that he simply under this name indicates a group of the genus *Philedon* of Cuvier, and abstains, both in this passage and in his later work of 1837 (Compl. Buffon, Oiseaux, p. 149), from using *Moho* in a strictly generic sense. The amendment of *Moho* into *Mohoa*, proposed in 1852 by Reichenbach (Handb. sp. Ornithol. p. 333), brings the name dangerously near *Mohoua* of Lesson (1837), which is as valid or invalid as his *Moho*. Furthermore it is certain that *Moho* applied to this bird originated in an error, possibly a misprint for "Hoho"—an old form of writing its native name—perpetrated by Ellis (Narrat. Voy. Cook and Clerke, ii. p. 156) in 1782, unfortunately repeated by Latham (Gen. Synops. Suppl. p. 120), and thence copied by Sonnini (Hist. Nat. Buffon, xviii. p. 286) and others. "Moho" is the Hawaiian name for *Rallus ecaudatus*, King, and applied to any other bird only excites a smile.

and it has a spread of eleven feet and a half at the bottom, the whole having the appearance of a mantle of gold. The examples of the cloaks and capes which I examined were all of the lighter shade of yellow which belongs to the feathers of the present species; and though it is possible that those of both this and *Drepanis pacifica* were used indiscriminately, one can hardly doubt that the preference would not be given to those of the latter, so long as they were procurable.

The ancient kings had a regular staff of bird-catchers, who were expert in their vocation. They made use of the sticky juice of the bread-fruit, called in Hawaiian "Pilali," and of the tenacious gum of the fragrant "olapa," a common tree in some parts of the forests, smearing the stuff about the branches of a flower-covered ohia, often fastening an example of the scarlet *Vestiaria coccinea*, of which more presently, as an additional attraction to the Royal Bird, whose pugnacity was well known; and in his eagerness to attack his brilliant rival, he would fall an easy victim to the device. That large numbers of the O-o must have been taken in old days is clear from the numbers of "leis," or wreaths of feathers, that now remain in the possession of the natives, who still set so great a store by them that it is but rarely that a traveller is able to purchase one as an interesting relic of a past state of things. I was fortunate in obtaining a small one at the price of fifty dollars, for the construction of which it is reckoned that two hundred birds must have been sacrificed. The Hon. C. R. Bishop possesses some very fine examples, and the contents of a small tin box of them I estimated at being worth ten thousand dollars. What the value of a cloak or cape may be it is impossible to say. At the ceremony of opening the Hawaiian Legislature in 1888, two capes were donned by two of the native officials, and very imposing they looked, though the effect could not be compared with that produced by the flowing war-cloak.

This very striking and, to Hawaiians, most interesting bird is preeminently a Honey-sucker, extracting the nectar

with its long tubular tongue from the flowers of the ohia and from the great tree-lobelias, of which the curved tubular corollas are perfectly adapted in shape to the O-o's bill; and though I have on several occasions observed it feeding on the fruit of the banana, I believe honey to be its principal sustenance. In a state of captivity it has been kept with success by feeding it on the juice of the sugar-cane.

It has a very peculiar call-note, whence its native name is derived; but here I may insert some extracts from my notes taken in the district of Kona, where it is still fairly common:—

“We shot two O-os to-day; but these birds are extremely difficult to obtain, as they are constantly on the move from tree to tree, hardly ever at a less height than 90 feet from the ground. Their cry is somewhat harsh and resembles the sound of the letter O, repeated twice, with a well-marked pause between; it is, however, extremely difficult of imitation by the human voice. The yellow axillary tufts are very conspicuous when this bird is on the wing, and its dipping mode of flight somewhat resembles that of the Magpie, while its long tail still further suggests a resemblance to that bird. The O-o exhibits a decided preference for the extreme top of any tree on which it alights, and when thus perched may be seen continually jerking its long plume-like tail up and down at a right angle to its body, all the while uttering its harsh cry.”

As mentioned above, it is an extremely wary bird and most difficult of approach when met with in the ohia-forest, so that the only occasions on which I was enabled to watch it at close quarters were amongst the foliage of the arborescent lobelias, of which plants it is particularly fond.

The males vary considerably in length, the finest specimen I obtained measuring 13 inches from bill to tip of tail; but most of those I shot were considerably smaller. The female is smaller than the male. I never obtained a bird in immature plumage, nor did I find a nest; but from its evident preference in the breeding-season, May and June, for the topmost branches of the lofty ohia trees, I conclude that it

chooses its nesting-place amongst their highest branches, which are some 90 to 100 feet from the ground. I venture to say that its nest will never be taken, as not even a Hawaiian, bold, skilful, and withal utterly reckless climber as he is, would be able to scale these forest giants.

The ordinary vertical range of this bird is from 1200 to 4000 feet; but I am told by my friend Mr. Ashford Spencer that he has observed it at certain seasons of the year in the forest around the sheep-station of Kalicha, which is above 6000 feet.

It is probable that the O-o, like other birds, follows its food, migrating to this high mountain-region as soon as the ohia tree is out of flower in the lower forest-zone.

I only met with this species in the island of Hawaii.

### 2. DREPANIS PACIFICA. "Mamo."

Of this extremely rare and apparently extinct species I procured a single specimen from a collection which was formed by Mr. Mills, of Hilo in Hawaii, some thirty years ago or more. The fact of its native name being the same as that of the war-cloaks already spoken of, seems to suggest that they must have received it from this bird, and that probably in olden times they were chiefly wrought of the beautiful golden-yellow feathers from its back, which are much deeper in colour, as they are larger and longer, than the axillary tufts of *Acrulocercus nobilis*.

I could obtain no information as to the period when this species was last observed, but I saw some feather-wreaths ("leis") which were composed of its plumes.

The specimen I brought home has since been beautifully remounted by Mr. Cullingford of Durham, and is now in the Museum of the University of Cambridge. I am not aware of the existence of a second in this country.

### 3. VESTIARIA COCCINEA. "Iiwi."

This beautiful species, which is generally distributed throughout the entire archipelago, is by far the most conspicuous of its birds on account of its gorgeous scarlet plumage, the brilliancy of which is greatly heightened by

the contrast of its deep black wings and tail. It is a bird well known to every Hawaiian, owing to its attractiveness of colour, but still more from the fact that its breast-feathers were largely used in the fabrication of the famous feather capes and helmets of ancient times, which were worn only by the chiefs, and thus its name "Iwi" occurs in many an ancient tale of Hawaiian chivalry, and in their "meles" or songs, which every native loves so well to chant.

The immature birds are not so well known to the natives, or are else referred by them to a distinct species called in Hawaiian "Iwipopolo," an error into which Mr. Dole, in his well-known 'Catalogue of Hawaiian birds,' also falls, describing a young specimen of the present species under the name of *Drepanis rosea*; and that he fell into this error is hardly to be wondered at, seeing that the yellowish and spotted plumage of the immature birds is so very unlike that of the adult. The note of the "Iwi" is a very peculiar one, clear and powerful for so small a bird—*ta-weet, ta-weet, ta-wee-ah*. The flute-like clearness of this call-note is unsurpassed by that of any other Sandwich-Island species.

The "Iwi" has, however, besides this note a somewhat sweet and plaintive song, which I heard on a few occasions, usually soon after sunrise. The call-note first mentioned is, however, by far the most characteristic, and is the most frequently heard. I regret to say that I did not obtain the eggs of this bird, but I found a nest which seems to have belonged to it. Perhaps I may as well quote from my notes made at the time (June 10, 1887, Kona, 5000 feet):—

"There are a number of stunted ohia trees (*Metrosideros*) growing right among the clinker beds of a comparatively recent lava-flow, which is as yet destitute of any herbaceous vegetation save for a few ferns growing here and there in the crevices of the lava blocks. These trees are a mass of crimson blossom, and among their branches the Iwi was in great numbers busily engaged in probing the flowers in search of nectar. We found a nest in one of the small trees, which probably belonged to this bird, as it was the only species we observed in this vicinity; and this supposi-

tion is strengthened by the fact of our shooting two quite young birds soon afterwards."

As I feel sure that this nest belongs to *Vestiaria coccinea*, I may briefly describe it as a round and shallow cup, 4 inches in-diameter, composed of mosses and dry bents of grass, the inside being lined with slender rootlets.

The food of the Iwi consists chiefly of honey, which it finds in the blossoms of the ohia; no doubt it also preys on the small insects found in the flowers of this tree; but I should be inclined to say that it lives on honey to a greater extent than does any other Sandwich-Island species; and I am led to this conclusion by the fact that a stream of honey will usually drip from the bill of a freshly killed specimen, which I have but rarely observed to occur in any other species—once only, indeed, with *Himatione sanguinea*, and twice with *Acrulocercus nobilis*.

I have seen this bird at an elevation of 6000 feet in the district of Kona in Hawaii, and I am informed that it is abundant at certain seasons of the year above Kalicha, a sheep-station on the same island at a higher elevation still. The fact to be noted is that *Vestiaria* follows its food, and when the ohia is over at 2000 feet it is in full flower at 5000; thither therefore it migrates.

There is a tree, *Strongylodon lucidum*, found on the island of Hawaii, the scarlet leguminous flowers of which mimic in a most perfect manner, both in colour and shape, the curve of a liwi's bill, and is therefore known by the natives by the name of "Nukuiwi" (bill of the Iwi). I must also note with regard to its vertical range that this bird is frequently to be observed on the sea-beach, to which uncongenial region it is driven by the high winds from its forest home. The same remark applies to the "Apapane," *Himatione sanguinea*.

#### 4. HIMATIONE SANGUINEA. "Apapane."

This species, like the *Vestiaria*, in company with which it is commonly seen, is distributed throughout the whole group, and the vertical range is practically identical. Its

principal food is also honey, which it obtains from the flowers of the ohia; but I have no doubt it feeds also on the small insects with which those flowers abound, and I have often found insects in dissecting it. Although I did not find a nest of the Apapane, I shot a female on May 24th, 1887, at Kaáwaloa, in the district of Kona, in the ovary of which was an egg almost ready for expulsion, a circumstance which enables me to fix approximately its breeding-time, which seems to be rather later than that of the Iiwi, for I had shot several of the young of that species before this date. I never, however, obtained specimens of the Apapane so young as those of the Iiwi, although I have many immature examples in which not a trace of the crimson plumage is to be seen. In this stage they differ so much from the adult (as is also the case with *Vestiaria*) that it is not easy at first to believe they are of the same species, and my natives were quite sure I was wrong when I told them so. The note of the Apapane is a feeble though clear *tweet, tweet*, but it also has a pretty simple song generally heard soon after sunrise or towards sunset. In its flight the white under tail-coverts are very conspicuous and serve to easily determine this species on the wing. I am quite unable to distinguish between specimens from the various islands.

##### 5. HIMATIONE VIRENS. "Amakihi" \*.

So far as I have observed, this little bird feeds almost entirely on insects and finds its favourite hunting-grounds on the oaka or bastard sandalwood (*Myoporum santalinum*), the alii (*Dodonaea viscosa*), the opiku, the orange, the koa (*Acacia koa*), and the mamané (*Sophora chrysophylla*). It also frequents the ohia, preferring its lower branches and the stunted form of the mountain district. Very unobtrusive in its movements, this species may be seen among the undergrowth of the forest diligently searching every limb and the slenderest branches for its prey. At Mana (3500 feet) in January I found it in great numbers on the mamané trees which abound in that district, and are at that season

\* The name applied to most of the yellow-green species of *Himatione*.

in full bloom. I suppose it may occasionally feed on honey, but I never found it so doing, and at any rate it must do so much less than its ally *H. sanguinea*. Moreover it hunts rather among the ground foliage of the trees than the flowering branches. Its commonest note is a low "tweet," which is something like that of a European Goldcrest (*Regulus cristatus*), but it has besides a sweet though short song. It is peculiar to the Island of Hawaii and ranges from the lowest forest-zone to 5000 feet or higher.

#### 6. HIMATIONE CHLORIS. "Amakihi."

This species is found on the islands of Oahu, Molokai, and Lanai, and, I believe, on Maui, but not on Hawaii or Kauai, and I have often with delight watched it searching for its insect food among the low shrubs of ohia which cover the sunny slopes of the ravines on Molokai, an island better known, alas! to the world as the Leper Island, but which, in my opinion, is the most lovely island of the group. It is seldom visited by travellers on account of the leper-settlement being situated on its shores, and thus the beauties of its forest scenes are but little known. On Oahu, in the district of Halemanu (house of the birds), this species seems to frequent more especially the depths of the steep and densely wooded ravines, and loves above all trees the gigantic *Lobeliaceæ*, the strange foliage and great heads of the purple flowers of which plants are so striking a feature of a Sandwich-Island forest, and one, I believe, only to be met with in these Pacific isles. On the island of Lanai all the specimens which I obtained were shot in some fine guavas quite 30 feet in height, which fringed the edge of the streamlet of the deeply wooded Waiapáa ravine. The birds were so busily engaged in hunting for insects which abound in the guavas, that I had an excellent opportunity of observing their graceful movements. Here I saw the old birds feeding the young with small flies, larvæ, and other insects. Examples of this species obtained on the three islands already named are distinguished from each other according to locality, and I have elsewhere indicated the

differences which enable them to be separated (see P. Z. S. 1889, p. 446). In general appearance a brightly coloured example of this species strongly reminds one of the Willow Wren, particularly in form. I hope in my forthcoming work to figure specimens from the different islands, and thus to aid in distinguishing between the several forms.

The vertical range of the species is from the lowest forest-zone up to 2500 feet.

7. *HIMATIONE MACULATA*. "Amakihi."

*Himatione maculata*, Cab. Mus. Hein. i. p. 160 (jr.).

This species is peculiar to the island of Oahu, and is fairly common in the district of Halemanu (house of the birds), where there is still some forest remaining. Of its habits, I have only to remark that they seemed to be identical with those of *Himatione chloris*, but as at the time I did not recognize the fact of their being distinct species, perhaps not much reliance is to be placed on this observation. The specific name applied to this bird is unfortunate, and was founded on immature specimens, as the adult male has no traces of spots. I myself only obtained immature specimens, but thanks to the kindness of the authorities of the Museum of the Academy of Natural Sciences of Philadelphia, I have been enabled to examine an adult male obtained by Townsend, of which the following is a brief description:—Very similar to adult male of *H. chloris*, but with the olive upper plumage darker and tinged with yellow; forehead hardly brighter than the crown of the head, but a distinct though indefinitely marked yellowish streak over the eye; lores brownish black; chin, cheeks, auriculars, and throat clear golden yellow, which colour pervades the breast and belly, becoming very pale, almost white, on the abdomen; lower tail-coverts pale yellow.

8. *HIMATIONE MONTANA*.

*Himatione montana*, Scott Wilson, P. Z. S. 1889, p. 446.

This hitherto undescribed species I obtained in the mountain-region at Lanai, at a spot called Lanaihale (the house

of Lanai), at an elevation of about 3000 feet. The brilliant yellow of the underparts of the male caused the late Mr. W. M. Gibson (to whom the greater part of the island of Lanai belonged), in a conversation which I had with him soon after my landing in Honolulu, to refer to this bird as the *Canary-like* Amakihi, and when I held the freshly-killed male in my hand his accurate description of its brilliant yellow colour made me feel sure I had obtained the bird he had spoken of. As I only obtained two specimens, male and female, and these on the same day and in the same locality, I can say nothing of its habits; but I may as well quote from my journal some short notes, taken on the spot where we found this species:—

“1st June, 1888.—To-day we took two natives, one of them armed with an axe with which to clear the path for us. The day was fine, and the trail by which one ascends to the plateau was consequently in good order, and we arrived there without accident. Here we tied up our horses, and then all of us started down a narrow forest-path, the same which we had followed the day before. For a few hundred yards it is very much overhung with ferns (*Gleichenia*) and the climbing tree (*Freycinetia arborea*), and we had to stoop down almost on our knees, which was very tiring work.

“After this thick bit it becomes opener, owing to the number of wild pigs; and here F. and I, with one of the natives, waited, as it was at this spot that Mr. Gibson had shot some birds the previous day. I was very unlucky in shooting several birds which I could not find: Mr. Gibson soon returned with several birds, but of the same species that I had already obtained in Hawaii. From here we started about 12 o'clock, following the path, to try to make the summit of the mountain. The path soon emerges from the thick scrub and comparatively tall trees on to a plateau, where the scrub only reaches one's knees. From this open plateau we had a magnificent view of the west side of the island, with Molokai and Maui in the far distance, surrounded by a bright blue sea. The path then ascends gradually till we reach a point overlooking Palawai Valley,

which looks a mere dot in the landscape, so far is it below us. We followed the path a little higher, where it becomes very steep, and the rich light-yellow soil is very slippery from here to the top of the mountain; the ohia and other trees are here of considerable size, but we could neither hear nor see any birds. However, at a point called Lanaihale, on our return journey, I caught sight of a bright yellow bird in an ohia bush, a few yards down the side of the gulch: I put my gun instantly to my shoulder and fired, down came the bird; F. and I scrambled down the gulch, and fortunately found it. Its breast was of a brilliant yellow, far brighter in tint than the plumage of any other species I have as yet obtained; its legs and bill were a light pink; in dissecting it I found some small larvæ."

No words of mine can convey an idea of the difficulties and dangers of collecting in the mountains of Lanai, difficulties due to the almost impenetrable bush which covers the mountain-plateau, to the fogs which render riding extremely dangerous, and to the rains which make the nearly perpendicular mountain-trails dangerous even to a sure-footed Lanai horse. Indeed, hardened as I was to "steep bits" in my island travels, I must confess that the first trip we made into these mountains surprised me. I must here mention that the discovery of this interesting species is due to the kindness of my friend Mr. Henry Gibson, in kindly acting as our guide on our explorations of these mountain-regions, and also to Mr. Jesse Moorhead's unvarying kindness to me during a stay of some weeks' duration under Mr. F. H. Hayselden's hospitable roof.

#### Genus HEMIGNATHUS. "Akihiloa."

Thanks to the authorities of the Museums of Liverpool and Berlin, I have been able to demonstrate, I think indubitably, the existence of *six* perfectly distinct species of this remarkable genus in place of the two, or at most three, which had been before recognized. The paper containing my remarks on the subject was printed in 'The Annals and Magazine of Natural History' (ser. 6, vol. iv. pp. 400-402) for November

1889, and I here need only give a brief summary of the chief facts. I found each of the islands of Hawaii and Kauai to be inhabited by two distinct species, a large one and a small one, and obtained examples of all four; while I have ascertained that the island of Oahu also had two other species, specimens of which I have examined, though I myself did not meet with a single bird of the genus there, owing, no doubt, to the destruction of the forests on that island. These six species are as follows:—

- |                                    |           |
|------------------------------------|-----------|
| 1. <i>H. obscurus</i> (Gmel.).     | } Hawaii. |
| 2. <i>H. olivaceus</i> (Lafr.).    |           |
| 3. <i>H. lichtensteini</i> , mihi. | } Oahu.   |
| 4. <i>H. lucidus</i> , Licht.      |           |
| 5. <i>H. stejnegeri</i> , mihi.    | } Kauai.  |
| 6. <i>H. hanapepe</i> , mihi.      |           |

Of which nos. 2, 4, and 6 may be regarded as belonging to the subgenus *Heterorhynchus*. All the birds of this genus are very shy and difficult of approach, and consequently my notes on their habits are meagre; but as no observations of the kind seem to have been ever made before, my own will be almost like the breaking of new ground. I propose to treat of these species according to what seems to be their affinity, and begin with No. 1 of the above list, which, as it happens, is also the species which has been known for the longest time: indeed Latham's type specimen, procured on Cook's third voyage, when the Sandwich Islands were first discovered, still exists in very decent condition in the Liverpool Museum, and through the kindness of Mr. T. J. Moore I have been able to compare it with my own specimen obtained over one hundred years later.

#### 9. HEMIGNATHUS OBSCURUS.

*Hookbilled Green Creeper*, Latham, Synops. i. p. 703.

*Certhia obscura*, Gmelin (*ex* Latham).

This is the larger of the two species peculiar to the Island of Hawaii, where it occupies the lower forest-zone, say from 1100 to 2500 feet, among the large ohia trees. It invariably chooses a rotten or half-dead tree for its hunting-ground, and

this, I imagine, is because its slender bill, of which the maxilla does not very greatly exceed the mandible in length, requires soft material to attack.

It is more unobtrusive and quiet in its movements than any other member of the genus which I saw, and its sombre colour is so nearly that of the tree-trunks, that but for its clear and characteristic call-note, I doubt whether I should have obtained a single example. At Olaa in the district of Puna, a place renowned in ancient times for its bird-catchers, lived, when I was there, an old native, by name Hawelu, an excellent observer and well skilled in the almost forgotten art\*, who told me that this was an extremely rare species.

It was he who obtained the only specimens known to be in existence of the "Moho," or short-winged Rail, of which one was exhibited by Prof. Newton at a meeting of the Zoological Society in January, 1889 (Proc. Zool. Soc. 1889, p. 5) †.

#### 10. HEMIGNATHUS LICHTENSTEINI.

*Hemignathus lichtensteini*, Wilson, Ann. & Mag. N. H. ser. 6, vol. iv. p. 401.

*H. obscurus*, Lichtenstein, Abhandl. k. Akad. Berlin, 1838, p. 449, t. v. fig. 1 (*nec* Gmelin).

This species, mistaken by Lichtenstein for the last, was obtained by Deppe in Oahu many years ago. I did not meet with it in a brief expedition made in the remaining forests in that island, and I believe that it must be nearly, if not quite, extinct. I am only aware of the existence of a single specimen—the type, which Prof. Möbius most kindly gave me the opportunity of comparing with the true *H. obscurus*. Unfortunately it seems to be a female.

#### 11. HEMIGNATHUS STEJNEGERI. (Plate VI. fig. 2.)

*Hemignathus obscurus*, Stejneger, Proc. U.S. Nat. Mus. 1887, p. 93 (*nec* Gmelin, *nec* Licht.).

\* Poor Hawelu, since my return to England, has been removed to Molokai as a leper.

† This species received from Mr. Dole the name of *Pennula millsii* (see Ibis, 1880, p. 241); but it is undoubtedly the "Rail with very short wings and no tail" of Captain King (see the narrative of Cook's 'Third Voyage,' vol. iii. p. 119), whose name for it, *Rallus ecaudatus*, applied in 1784, antedates even that of Gmelin. Cf. Newton, P. Z. S. 1889, p. 5.



J. G. Keulemans del et lith.

Mintern Bros. imp.

1. HEMIGNATHUS HANAPEPE, ♂.
2. HEMIGNATHUS STEJNEGERI, ♂.

*H. stejnegeri*, Wilson, Ann. & Mag. N. H. tom. cit. p. 400.

Of this well-marked species, which I am now enabled to figure for the first time, Mr. V. Knudsen sent specimens to Dr. Stejneger, who showed them to me in Washington, and described them, though with some doubt, as belonging to *H. obscurus*. Having met with that species on Hawaii, it was plain to me, so soon as I got the present one in Kauai, that they were absolutely distinct, and as such I have described them, dedicating this one to Dr. Stejneger, who has done so much for the ornithology of the Sandwich Islands that he well deserves the honour of having this finest species of the genus named after him.

In regard to its habits I cannot give much information, as it is a very scarce bird and shy of approach. It lives on insects, which it finds under the bark of half-rotten trees, particularly of the ohia, the chief forest-tree on Kauai, the island to which this species is peculiar, and it there seems to range from the lowest forest-zone to 3000 feet or perhaps higher, the greatest height on Kauai (Waialeale) being 4000 feet.

Through the kindness of Prof. Möbius, I have been able to state that the *Hemignathus procerus* of Prof. Cabanis—a description of which I have not yet been so fortunate as to meet with—is identical with *H. stejnegeri*.

Being thus furnished with the species of *Hemignathus* proper, I now come to those which may form the subgenus *Heterorhynchus*, and the first of these, I take, is

## 12. HEMIGNATHUS OLIVACEUS.

*Heterorhynchus olivaceus*, Lafr. Mag. de Zool. 1839, pl. x.; Rev. Zool. 1840, p. 321.

This is the second and smaller species of the Island of Hawaii, to which I believe it to be peculiar, and the first specimens of it that I obtained were from the district of Kona at a height of about 5000 feet. In this district it frequents only the koa trees, running up and along their great smooth trunks and limbs in its search for insects. In the mamané woods, near Mana, I subsequently found it in con-

siderable numbers in the month of January, when these trees are in full flower, resembling laburnums with their golden clusters. The bark of large examples of this tree is easily detachable, but although I was never able to approach near enough to watch the precise way in which the extraordinarily-shaped bill of this species is brought into play, I conclude that therewith it does detach the bark, and then seizes the insects beneath with its long tongue.

13. HEMIGNATHUS LUCIDUS.

*Hemignathus lucidus*, Licht. Abhandl. Akad. Berl. 1838, p. 451, t. v. figs. 2, 3.

This species has been most wrongly confounded with the preceding, as anyone may perceive who examines specimens of the two, for the present has by no means the same very remarkable form of mandible as *H. olivaceus*. I hope to give figures of both in my forthcoming work. *H. lucidus* formerly inhabited Oahu, but I did not meet with it, and fear that, like *H. lichtensteini*, it may have become extinct; there are, however, many more specimens of *H. lucidus* existing in collections than of *H. lichtensteini*.

14. HEMIGNATHUS HANAPEPE. (Plate VI. fig. 1.)

*Hemignathus hanapepe*, Wilson, Ann. Mag. N. H. tom. cit. p. 401.

This species is the only one of the genus to which the natives have given a different name—"Akihiloa," or "Aki-aloa, as it is often called, being applied by them to all the rest, while "Nukupuu" (from *Nuku*, bill) is used for this alone. That it is a very scarce bird in the forests of Kauai is pretty clearly shown by the fact that my friend Mr. Francis Gay, of Makaweli, in that island, who for some years past has paid attention to its birds, had never seen specimens of this one, until I showed him those which I had been fortunate enough to procure in the forest surrounding the little mountain-house belonging to the Sinclair family in the district of Hanapepe, after which I named my new discovery. In this house, to which Mr. Robinson most kindly accompanied me, some five hours' ride from any other habitation, and at an

elevation of some 3000 feet, I stayed for ten days. It is completely surrounded by forest on three sides, but on the fourth has a fine outlook to the sea, and across a stupendous and thickly-wooded ravine, which separates the mountain-plateau from that on which Mr. Knudsen's small mountain-residence is situated, and where he forms the collections he has sent to Dr. Stejneger in Washington.

In coloration this species much approaches *H. olivaceus*, but differs chiefly in the form of its bill. The male, as will be seen by the Plate (Plate VI. fig. 1), shows a very brilliant yellow, and I may say that on this account when I shot my first specimen, which was on a lofty ohia tree, I thought it was a *Himatione parva*, and was therefore greatly delighted to find, in picking it up, that I had secured a specimen which was quite new to me. It was, however, known to my native guide, who at once gave me his name for it; and this, as I subsequently learned through Mr. Gay, was correct.

The female, which I intend to figure in my work, is of a much duller colour, and the slaty colour of her upper parts enables one to distinguish her easily enough even when she is engaged in hunting for insects at a great height from the ground. I am assured by the natives that this species also lives upon oranges and bananas, and I have every confidence in the assertion.

#### 15. OREOMYZA BAIRDI. "Alakihi."

This species was first obtained by Mr. Knudsen in Kauai, to which island it is peculiar, and an excellent description given of it by Dr. Stejneger (Proc. U.S. Nat. Mus. x. pp. 99, 100), to which I can only add that the bill is light brown tinged with pink, and the legs are light pink. It is usually met with in small flocks of from eight to twelve, and is a particularly active bird in running up and down the limbs and trunks of the high trees in search of insects. Its short tail, in Dr. Stejneger's opinion, indicates its terrestrial habits; but I only observed it at some considerable height from the ground, in the lofty ohia trees, for the dead branches of which it evinces a decided preference. It is the most active

bird of the Hawaiian forests in its movements, and from its short tail and compact form bears a decided resemblance to our Nuthatch (*Sitta europæa*). Its note is a simple *twit, twit, twit*, repeated constantly.

It seems to range to the elevation of 3000 feet.

Some examples of this bird have the forehead white, and Dr. Stejneger, in a letter to Professor Newton, raises the question of there being two distinct species. I do not think there is more than one species, as all my examples were obtained in one locality; but at the same time the variation in plumage does not seem to be due to sex.

#### 16. PSITTIROSTRA PSITTACEA. "Ou."

This well-known species is distributed throughout the group, and I obtained specimens from every island, save from Oahu, where I have good reason to believe it has become extinct, or else extremely scarce. I do not detect any appreciable difference between specimens from the various islands, although I think those I obtained on Lanai are brightest in plumage. The size and shape of the curiously-formed bill of this species varies considerably, especially in the males, in some of which the maxilla is remarkably elongated and de-curved.

Next to *Vestiaria coccinea* it is perhaps the most noticeable of the forest-birds of the islands, the bright yellow head and neck of the adult males rendering them very conspicuous in their straight dashing-flight from tree to tree. The immature males and the females, which want this distinctive feature, might easily be mistaken for the sombre-clad *Phæornis obscura*, but the constant twittering the Ou almost invariably makes while feeding at once betrays its identity. Freshly killed examples possess a peculiar scent, which I did not observe as belonging to any other forest-dwelling species, and which is probably due to their extremely varied fruit-diet. Necklaces ("leis") used sometimes to be made from the bright green feathers of the back and underparts of this bird, but they were commonly used in combination with the black feathers of *Acrulocercus nobilis* and the scarlet feathers of *Vestiaria*

*coccinea*. I saw a feather wreath thus made at Oloo, in the district of Puna, which I attempted to purchase; but the native woman wanted a very high price for it, which I was disinclined to give. Though *Psittirostra*, as remarked above, is generally distributed throughout the group, in no districts does it seem to be abundant. I think that the locality, in which I found it in the greatest numbers was among the trees clothing the abrupt sides of the deep ravine which runs down to the leper-settlement on the island of Molokai. Very lovely these little birds looked, flying continually to and fro, up and down this stupendous gorge, their yellow necks flashing in the bright sunlight, as they darted out from among the dark green ohias or from the silvery foliage of the kuhui (*Aleurites triloba*).

The food of *Psittirostra* consists entirely of fruits, and chiefly of that of the *Freycinetia arborea*, the ripe red seeds of which I in most cases found when dissecting them. I noticed also, particularly in one locality, on the outskirts of a forest in the district of Kona, that a very large proportion of the fruits of this climber were eaten away at the apex, and in this wood *Psittirostra* was especially abundant. I, however, shot examples as they were busily engaged in feeding on the small crimson fruit of the wild mulberry (*Morus papyrifera*), the juice of which had dyed their throats a deep crimson. In districts where the guava is found, *Psittirostra* also feeds on its fruits; and I kept one alive for several days, feeding it solely on the fruit of this tree.

The vertical range of this species extends from the lowest forest-zone up to 3000 feet.

#### 17. PHÆORNIS OBSCURA. "Omao."

This sombre-coloured bird is still fairly common in the forests of Hawaii, while a very nearly allied species, *P. myadestina*, recently described by Dr. Stejneger (Proc. U.S. Nat. Mus. x. p. 90), inhabits the island of Kauai. The Omao is a very tame bird, and though it does not court mau's society, it shows little fear of him. Indeed, it was no uncommon occurrence for one to alight within a few yards of

me and begin its melodious song, which much resembles that of our Common Thrush, though inferior in volume. It is, nevertheless, so varied and sweet, that the bird is fairly entitled to be called Hawaii's Nightingale. Mr. D. H. Hitchcock of Hilo told me that many years ago the natives used to bring him the young of this species, which, for the sake of their song, he kept in a cage.

The habit of singing, like a Lark on the wing, possessed by *P. myadestina*, as mentioned by Dr. Stejneger on Mr. Knudsen's authority, was observed by me in both species; but the gentleman last named is incorrect in applying the name of "Uapauau" or "Ou" to the one recently described. The call-note of *P. obscura* is a particularly clear *tweet*, very easily recognized, but it also utters a very remarkable hissing sound when approached. Its flight is slow, and I have frequently shot it as it was flying from tree to tree. It possesses also the very peculiar habit (not noticed by Mr. Knudsen in regard to *P. myadestina*) of shaking its wings when perched on a branch, as if it were shivering with cold or seized with an attack of ague.

The vertical range of this species extends from the lowest forest-zone up to 5000 feet.

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XVII.—On the Development of the Feet of *Cypselus melba*.

By L. ZEHNTNER, Cand. Phil., of Bern.\*

BEING at present engaged in a study of the development of *Cypselus melba*, especially directed towards the elucidation of its osteological peculiarities, I publish the following interesting results, reserving details for a forthcoming work.

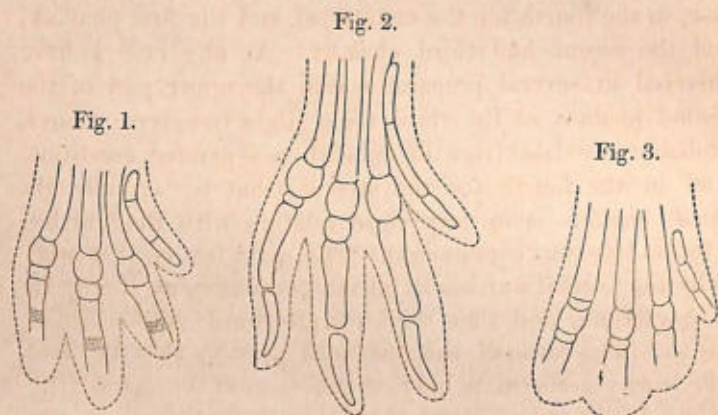
As is well known, the genus *Cypselus* is distinguished from all others by the remarkable reductions in the feet. According to Huxley's law, we find in birds the first toe provided with two, the second with three, the third with four, and the

\* Translated (by permission) from a paper in the 'Zoologischer Anzeiger' (No. 319, 1889), entitled "Zur Entwicklung von *Cypselus melba* (Alpensegler)," von L. Zehntner, Cand. Phil. in Bern.

fourth with five phalanges. *Cypselus* and also, according to Selater (P. Z. S. 1865, p. 596) and Forbes (Ibis, 1882, p. 390), *Panyptila* so far differ from this plan that the third and fourth toe have each only three phalanges, while the other Cypselidæ display the normal condition. The genus *Cypselus* thus lacks one phalanx in the third toe and two in the fourth. This reduction has been long known, but never more closely investigated. It was to be expected that embryology would lead to the required explanation, and I therefore undertook the research, the more readily as material was easy to be obtained in Bern, where, on the tower of the cathedral, *Cypselus melba* nests. All the extremities were investigated, and the following is a brief statement of the result:—

In embryos of the 5th and 6th days the skeleton of the foot shows a series of continuous and diverging bars of cartilage, which could only be partially followed into the toes. On the 8th day the appearances are changed. Not only are the three principal divisions of the limb plainly separated, but also to a certain extent the phalanges (see fig. 1, p. 198). *Metatarsale* 1. corresponds in position to about the middle of *M.* 11., and bears the two phalanges of the first toe. *M.* 11., 111., and 1v. are connected proximally by the distal tarsal row, distally they are free. Their phalanges are plainly recognizable; only the boundary between the last phalanx but one and the one which bears the claw has quite vanished, and is represented by a broad dark band; the distal end of the claw-bearing phalanx is not sharply marked. On the other hand an embryo of ten days shows an appearance (fig. 2) which leaves little to be desired in the way of clearness. I find the first toe with two, the second with three, and the third and fourth with four phalanges each. These numbers are repeated in the adult Pteroclidæ and in most Caprimulgidæ. The difference from the normal bird's foot is now reduced to a single phalanx missing in the fourth toe. I believe I have also found this. Fig. 3 represents a condition which is slightly younger than fig. 1. In the second toe we see one, in the third two, and in the fourth three separate phalanges. After these there follows in each toe (the first is unfortunately injured)

an unjointed cartilaginous streak, which in the next stage (fig. 1) is divided into two phalanges. We have thus also in the fourth toe, at a certain period, the normal number of phalanges, viz. three separate phalanges and a bit of cartilage which corresponds to two phalanges, into which it is later split up. The first phalanx, however, comes into very near relation with *metatarsale* iv., and finally fuses with it, before the claw-bearing phalanx is differentiated. In fig. 1 there is no longer any trace of this phalanx. To return to fig. 2, the first phalanx of the second and third and the



Embryonic feet of *Cypselus melba*.

Fig. 1. Of the eighth day.

2. Of the tenth day.

3. Of a stage rather earlier than in fig. 1.

first (really *second*) of the fourth toe are spherical, with nearly even articular surfaces. The second phalanx of the third toe is very short, broader than long, in fact disk-shaped. This is the case to a greater extent with the second phalanx of the fourth toe. The two terminal phalanges of the three outer toes are much more slender and are all of a similar form.

The question now arises—What is the fate of the second phalanx of the third and fourth toe? In an embryo of the 12th day they are present, and even more conspicuous than on the 10th day. In the third toe the phalanx in question gets more quadrangular in form, in the fourth rounder. The

first phalanx of the three outer toes has lost its spherical form and become cubical. In the unguis phalanges, in which the bending towards the lower side may be seen, the formation of the nail has begun. In nestlings of the 14th day a fusion has commenced. Unfortunately the limbs in this and in older stages, on account of their thickness, do not allow of a sufficiently accurate observation of the process of fusion. Sections, which I have not yet been able to prepare, would probably give the desired result. Yet I believe that I may safely say that in the third toe the second and third phalanges fuse, in the fourth toe the metatarsal and the first phalanx, and the second and third phalanx. At any rate I have observed in several preparations in the upper part of the second phalanx of the third toe a slight transverse groove, probably the last trace of an earlier separated condition. And in the fourth toe the second (that is, actually the *third*) phalanx is in very close relation with the fourth—a fusion has thus commenced. The main fact is, that originally the normal number of phalanges is present, if only for a short time, and that they are afterwards diminished by fusion. The cause of this fusion is possibly that the foot, which serves to catch hold of rocks, walls, beams, &c., requires to be strengthened, and this strengthening is produced by a reduction of the joints.

A further peculiarity of *Cypselus* is the short strong humerus and the disproportionately long hand. In the full-grown wing the length of the hand to that of the arm is as 7 : 5. This remarkable condition is only found in *Cypselus* and in the Trochilidæ. It is interesting to find that this condition is only the result of secondary modifications. I find in a series of stages the following proportions:—

	Humerus.	Radius.	Manus.
8 days' embryo . . . . .	1	0·86	1·71
10 " " . . . . .	1	1·12	2·31
12 " " . . . . .	1	1·12	2·32
14 " " . . . . .	1	1·12	2·30
16 " " . . . . .	1	1·12	2·36
Newly hatched young . .	1	1·27	2·43
Chick of three weeks . . .	1	1·42	3·10
Full-grown . . . . .	1	1·44	3·47

It follows from this table that in an 8 days' chick, contrary to what we find in the adult, first the humerus is longer than the radius, and secondly the arm is longer than the hand. The contrast would be greater in this stage if the length of its skeleton could be taken as representing the length of the hand. But this is impossible owing to the absence of a definite boundary to the skeletal parts distally, and therefore the length of the wing from the radial carpal is taken to represent that of the hand. This stage (that of the 8 days' embryo) lasts but a short time. As the above table shows further on, the proportions alter in an embryo of 10 days; the radius is longer than the humerus and the hand longer than the arm—not strikingly so, but still distinctly. From the 10th day onward to hatching there is no further change in the proportions. All three regions of the wing grow at a nearly equal pace. Afterwards, during the nesting-stage, the forearm and, to a much greater degree, the hand grow out of these proportions. It appears that the nestling, as far as its anterior extremity is concerned, becomes a *Cypselus* after the time of hatching. The humerus, even on the 16th day, has much resemblance to the definite form, while the hand has to grow considerably.

As Jeffries ("On the Claws and Spurs of Birds' Wings," Proc. Bost. Soc. Nat. Hist. vol. xxi. p. 301) has already pointed out, the thumb of *Cypselus* has a claw. This is first formed on the 10th day. In this stage the second finger also has a slender claw, as I have discovered by a suitable preparation. The claw of the pollex remains for some weeks after hatching; the claw of the index finger very rapidly disappears. As regards the carpus and tarsus, I shall treat of this subject in my complete memoir.

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XVIII.—*An Attempt to Diagnose the Subclass Coraciiformes and the Orders, Suborders, and Families comprised therein.*

By HENRY SEEBOHM.

THE Coraciiformes differ from all other birds in the arrangement of their deep plantar tendons. There is amongst birds,

as well as amongst mammals, some variation, even amongst allied species, in the modification of these muscles; but this variation only occurs within comparatively narrow limits. In nine genera of Accipitres I have found that the inside or front plantar (*flexor perforans digitorum*) divides into three tendons at the foot of the tarsus, the three tendons leading to the 2nd, 3rd, and 4th digits respectively; whilst the outside or hind plantar (*flexor longus hallucis*) divides into two tendons at the foot of the tarsus, one leading to the hallux and the other to the 2nd digit. In the Osprey (*Pandion haliaetus*) this arrangement is modified; the front plantar is the same as in the nine other genera of Accipitres; but the hind plantar, instead of dividing into two, divides into four, and leads to each of the four digits. The Scansorial arrangement of the deep plantar tendons is very different from this; the front plantar leads to the 3rd digit only, whilst the hind plantar leads to the 1st, 2nd, and 4th digits. The heterodactyle arrangement differs, again, from all these modifications; the front plantar leads to the two front toes (the 3rd and 4th digits), whilst the hind plantar leads to the two hind toes (the 1st and 2nd digits). But all these apparently wide deviations from the common type may be generalized as follows:—The *flexor perforans digitorum* never leads to the hallux, and the *flexor longus hallucis* always does, except in those cases where the hallux is absent or so small that it does not receive any tendon from either of the deep plantars. In the Coraciiformes exactly the opposite is the case. The hallux is always present, and always receives its tendon from the *flexor perforans digitorum*, and not from the *flexor longus hallucis*. The two plantars are always more or less coalesced, as they are in the Accipitres, Anseres, &c., but may easily be separated by gently tearing them asunder. In very many cases it is not necessary to do this, inasmuch as the tendon to the hallux branches off from the *flexor perforans digitorum* before the two plantars coalesce.

It is scarcely possible that such a remarkable condition of the deep plantar tendons could have been independently acquired by two groups of birds.

It is now fifteen years since this unique arrangement of the deep plantar tendons in certain birds was recorded (Garrod, Proc. Zool. Soc. 1875, p. 344), but there are sufficient reasons to account for the small importance which was attached to the discovery. Two years before Garrod published his paper on the deep plantar tendons, he promulgated a new classification of birds, founded chiefly on the muscles of the thigh, the presence or absence of cæca, and the condition of the oil-gland, whether nude or tufted. Amongst the birds which possess the Coraciine arrangement of the deep plantar tendons are some with cæca and a nude oil-gland, some with no cæca and a tufted oil-gland, and others with no cæca and a nude oil-gland. There is also one group with an ambiens muscle, which none of the others possess. It is therefore quite obvious that Garrod could not give to this feature of the arrangement of the deep plantar tendons the importance which I have ventured to attach to it, without completely throwing overboard the main characters upon which his new classification was based.

It does not appear that either Garrod or Forbes ever examined the deep plantar tendons of the Humming-birds. The Trochilidæ and the Cypselidæ constitute the Cypseliformes of Garrod, and the Macrochires of Nitzsch, and have been regarded by most ornithologists as closely allied families. Two important papers, however, have taken up a contrary opinion (Shufeldt, Proc. Zool. Soc. 1885, p. 886, and Journ. Linn. Soc., Zoology, 1889, p. 374), and in the latter the author mentions the arrangement of the deep plantar tendons. To verify the statement there made I have had the feet of three Humming-birds dissected by three independent experts, and in every case it has been found that the deep plantar tendons are not Coraciine, but very closely resemble those of the Eurylæmi.

I propose therefore to remove the Trochili from the companionship of the Cypselidæ and place them as a suborder of the Pico-Passeres.

If the Coraciiformes be regarded as one of the six sub-classes into which the class Aves is divided (and the import-

ance of the character appears to warrant such a course), we may divide it into two orders, which may be diagnosed as follows :—

**MIMOGYPES.**—No lateral bare tracts on the neck ; front plantar leading to hallux ; basipterygoid processes present ; to which may be added, ambiens muscle present.

This order contains the Cathartidæ of the New World. I have examined the feet of several species and find that the *flexor perforans digitorum* always leads to the 1st, 2nd, and 3rd digits, whilst the *flexor longus hallucis* sometimes leads to the 3rd and 4th, and sometimes to the 2nd, 3rd, and 4th digits, but never to the hallux.

The Scansores having been disposed of amongst the Pico-Passeres, and the Coccyges having been elevated to the rank of an order, the Picariæ, as thus restricted, appear to form a natural group, which may be diagnosed as follows :—

**PICARIÆ.**—Hallux always present, and connected with the *flexor perforans digitorum*, and not with the *flexor longus hallucis* : no ambiens muscle.

This order may be divided into three suborders, which may be diagnosed as follows :—

**HALCYONES.**—Front plantar leading to hallux ; well-defined lateral bare tracts on the neck ; spinal feather-tract not forked on the back : to which may be added, palate desmognathous ; vomer not ossified ; basipterygoid processes absent.

**CORACIÆ.**—Front plantar leading to hallux ; well-defined lateral bare tracts on the neck ; spinal feather-tract forked on the upper back ; oil-gland nude or absent.

**BUCEROTES.**—Front plantar leading to hallux ; no lateral bare tracts on the neck ; no basipterygoid processes ; to which may be added, episternal processes perforated to receive the feet of the coracoids.

It is possible that the Halcyones and the Coraciæ ought not to be divided upon their spinal feather-tracts, but upon the condition of their young at birth. The Caprimulgidæ are born covered with down. It is possible that this may also be the case with the Podargidæ and the Steatornithidæ.

*Leptosomus*, with its powder-down patches like the Podargidæ, seems to have so many affinities with the Coraciidæ that, in the absence of information as to the condition of their young at birth, I have not ventured to separate them.

The Halcyones contain four families :—

*Todidæ*.—Halcyones with cæca and large tufts to the oil-glands ; two notches on each side of the posterior margin of the sternum.

*Momotidæ*.—Halcyones with no cæca ; tufts of oil-gland very small or absent ; one or both of the notches on each side of the posterior margin of the sternum converted into foramina.

*Coliidæ*.—Halcyones with neither central nor lateral bare tracts on the breast.

*Alcedinidæ*.—Halcyones with tufted oil-gland and no cæca ; two notches on each side of the posterior margin of the sternum ; well-defined central and lateral bare tracts on the breast.

The Coraciæ consist of seven families :—

*Cypselidæ*.—Coraciæ with no cæca ; all four toes directed forwards.

*Caprimulgidæ*.—Coraciæ with cæca and basipterygoid processes ; dorsal vertebræ heterocœlous.

*Steatornithidæ*.—Coraciæ with cæca and basipterygoid processes ; dorsal vertebræ opisthocœlous.

*Podargidæ*.—Coraciæ with a powder-down patch on each side of the rump ; ten rectrices ; no oil-gland.

*Leptosomidæ*.—Coraciæ with a powder-down patch on each side of the rump ; twelve rectrices ; nude oil-gland.

*Coraciidæ*.—Coraciæ with no powder-down patches ; no basipterygoid processes ; well-developed cæca ; episternal processes not perfected to receive the feet of the coracoids.

*Meropidæ*.—Coraciæ with the episternal process perforated to receive the feet of the coracoids.

The Bucerotes consist of only one family, the Bucerotidæ.

The importance of the character upon which I have ventured to found the subclass Coraciiformes has been to some extent admitted by some American ornithologists (*cf.* Stejneger,

Stand. Nat. Hist. iv. p. 371), but it seems to me that it is not a natural arrangement to associate with the Coraciiformes birds with galline plantars, like the Cuculi, the Musophagi, and the Trochili; birds with Passerine plantars, like the Upupæ; birds with Picine plantars, like the Scansores; and birds with Trogonine plantars, like the Trogones; whilst birds with Coraciine plantars, like the Cathartes, are excluded. This is, of course, a matter of opinion; but to include the Meropidæ and the Bucerotidæ in the Halcyones (or Alcedinoideæ, *op. cit.* p. 395), which are described as having the "dorsal tract simple between the shoulders," appears to me to be inconsistent with fact. So far as I can judge from an examination of specimens of three species of *Merops*, the spinal feather-tract is forked between the shoulders in the Meropidæ, though perhaps not quite so far forward as in the Coraciidæ, whilst the spinal feather-tract of the Bucerotidæ is described by Nitzsch as double in some species and simple in others on the interscapular region. After the Bucerotidæ and the Meropidæ have been removed from the Halcyones, the remaining families can be described as not having the spinal feather-tract forked either on the upper or lower back, a character which greatly simplifies their diagnosis.

In conclusion, I take the opportunity of correcting an unfortunate blunder in my paper on the Pico-Passeres (Ibis, 1890, p. 36). At the bottom of the page the names Bucconidæ and Galbulidæ should be transposed.

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XIX.—*Descriptions of three new Species of Flycatchers.*

By R. BOWDLER SHARPE, F.L.S., F.Z.S., &c.

AMONGST a few birds presented to the British Museum by Dr. G. Vorderman is an example of a small *Siphia* from Mount Gedeh, in Java, which appears to me to be undescribed. It belongs to the plain-coloured group of the genus, and its nearest ally seems to be the female of *Siphia cæruleata* (Cat. B. iv. p. 457), which has also whitish legs, but which differs in having a blue tail.

I propose to attach the name of Dr. Vorderman to this new Flycatcher, in recognition of his twelve years' work in the Indo-Malayan Archipelago.

(1) *SIPHIA VORDERMANI*, sp. n.

*Adult male* (Mount Gedeh). General colour above brown, the head like the back; the upper tail-coverts bright ferruginous, contrasting with the back; tail also ferruginous, dusky brown on the inner web; lesser wing-coverts like the back; remainder of coverts and quills dusky brown, edged with brown like the back, a little more rufous on the margins of the secondaries; the median series tipped with fulvous spots, slight traces of which are seen on the greater coverts; lores fulvescent; ear-coverts and sides of face dark brown, with fulvous shaft-stripes; cheeks and chin whitish, becoming tinged with orange-rufous on the throat, this colour spreading over the breast; lower breast and abdomen pure white, including the under tail-coverts; thighs ashy; sides of body and flanks olive-brown; under wing-coverts white, with dusky bases: "lores yellow" (*A. G. Vorderman*). Total length 4.1 inches, culmen 0.5, wing 2.21, tail 1.8, tarsus 0.6.

*Hab.* Java.

(2) *SIPHIA ELOPURENSIS*, sp. n.

*Adult.* Similar to *S. vordermani*, but distinguished by its olive-brown upper tail-coverts and outer web of the tail-feathers, which resemble the back, and do not show the rufous of *S. vordermani*. Total length 4.3 inches, culmen 0.55, wing 2.25, tail 1.6, tarsus 0.6.

*Hab.* Elopura, N.E. Borneo (*H. Pryer*).

I have had an example of this little Flycatcher for some time in the Museum, but have hesitated to describe it, as it looks so much like the female of one of the other species. Now that Dr. Vorderman has discovered an allied species in Java, and has sent the male, it is evident that there is a representative form in Borneo which is worthy of a name.

(3) *PIEZORHYNCHUS FLORENCIÆ*, sp. n.

*Adult male.* Above blue-grey, the lesser wing-coverts like

the back; the rest of the wing-coverts and quills dusky brown, edged with grey; tail-feathers blackish, with grey margins; crown of head a little more dusky grey than the back, especially on the forehead, lores, cheeks, and throat, the two latter being blackish; below the eye a white spot; ear-coverts slaty grey, surmounted by a broad white eyebrow, the white extending a little behind the ear-coverts on the sides of the neck; lower throat, fore neck, and chest blue-grey; breast and remainder of under surface of body bright cinnamon-rufous, including the under tail-coverts; thighs grey; under wing-coverts blue-grey, washed with cinnamon; quills dusky, ashy along the inner web: "bill and legs slaty blue; iris black" (*C. M. Woodford*). Total length 6.3 inches, culmen 0.65, wing 3.1, tail 2.45, tarsus 0.7.

*Adult female.* Like the male, but entirely grey on the head and neck, and without black on the cheeks or throat; no white on the eyebrow or sides of neck: "bill and legs slaty blue; iris black" (*C. M. W.*). Total length 6 inches, culmen 0.65, wing 3.0, tail 3.45, tarsus 0.7.

*Young male.* Similar to the female, but with a little black on the head and face, and some white round the eye.

*Hab.* Island of Rubiana, Solomon Archipelago.

This new species bears at first sight some resemblance to *Monarcha inornata* in the colour of the abdomen and the grey upper surface, but the close-set plumage of the forehead and the white eyebrow serve to distinguish *P. florenciæ*, the former character placing it in the genus *Piezorhynchus*. Here its nearest ally is *P. richardsi*, but it is grey instead of black, and has only a white eyebrow instead of a white hinder crown.

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XX.—On the Young of Pallas's Sand-Grouse (*Syrrhaptes paradoxus*). By ALFRED NEWTON.

(Plate VII.)

PENDING the publication of Dr. Rudolf Blasius's promised report, which I trust will enable me to discharge the duty,

laid upon me by the Editor of 'The Ibis,' of telling, from the beginning, in its pages the story of the latest irruption of *Syrrhaptes* into Europe, I think it advisable to give the readers of this Journal the particulars of one of the most gratifying results of that remarkable event. This seems the more necessary since the main fact was announced by me at the last meeting of the British Association for the Advancement of Science, held at Newcastle-upon-Tyne in September 1889, when I had the pleasure of exhibiting to those present a specimen of the chick of *Syrrhaptes paradoxus*—the first, so far as I know, that had ever been brought to the notice of any body of naturalists, and, moreover, one that had been hatched in a free state in this island.

The readers of Mr. H. A. Macpherson's interesting little pamphlet\* will be aware that in 1888 Major Chadwick informed Mr. Harvie-Brown that the gamekeeper of the former, with the aid of a spaniel-dog, about the end of June in that year, discovered some newly hatched Sand-Grouse on the sand-hills of Moray, which at the time were frequented by companies of from two to three hundred birds of this species. By the kindness of those gentlemen I was placed in communication with this gamekeeper, by name Alexander Scott, who in answer to my enquiries favoured me with an account so satisfactory that I had no hesitation in accepting it. Though extracts from his letters to me have been already printed by Mr. Macpherson, it seems due to the observer that all his information should be here inserted. Writing to me on the 16th of February, 1889, Scott stated:—

“About the Sand-Grouse, I may mention that one day last summer, the latter end of June, in going my rounds I started a pair of Sand-Grouse, which allowed me to get within about ten yards of them. I was surprised to see they only flew about forty yards. I went to where they got up and examined the place, when I first got one young and then another, about ten yards apart.

\* The Visitation of Pallas's Sand-Grouse to Scotland in 1888. By Rev. H. A. Macpherson, M.A. London: 1889 (Porter, Princes Street, Cavendish Square).

"I had them in my hands, and having seen the old birds several times, as well as having them dead in my possession, and knowing the peculiar foot they have got, I at once examined the young ones' feet, and found the three small toes, with the pad underneath the small foot, so that I could not be deceived. I have not the slightest doubt but that they were the young of the Sand-Grouse. I may mention that I do not think they came to maturity, as I have often seen the old birds without the young; but that I cannot be sure about, as I did not want to disturb them but as little as possible. I should also have mentioned that, as far as I could judge, the birds would be about three or four days old when I found them. You may make any use of this, as I have given a true report of what I have seen."

Again, in a letter to me, dated the 25th of the same month, he added:—

"The young Sand-Grouse, when I saw them first, were crouching close to the ground,—were it not for a dog I had with me, I might not have seen them. After I had them in my hand and put them down, they crouched again close to the ground. I did not look if there were any more of the brood, as I was afraid I might tread on them.

"The nature of the ground where they were found was sand, with tufts of bent or long rough grass growing on it, the same as generally grows on sand near the seaside."

On my making these statements known to Mr. Macpherson, he lost no time in going to Moray and in seeing Scott, of whom he writes (*op. cit.* p. 27):—"We put him through a cross-examination, with the result that he fully confirmed his oral and written statements previously received."

Satisfied as I was in my own mind as to the truth of the evidence just adduced, I could not but regret that no professed ornithologist should have seen so interesting an object as the young *Syrrhaptēs*, and I feared that a grand opportunity, never to occur again, had been lost. However, about noon on the 9th of August, 1889, there was delivered to me a small box, marked outside "Live Bird." Accustomed as I am to receive unexpected consignments of this kind, I of

course proceeded to shut the windows before I opened the package, lest the captive should escape. My precaution in this case was needless. I found the poor prisoner had been already liberated by death; but I leave my readers to judge of my feelings when, instead of the pied Sparrow or something just as valuable, which long experience has taught me to regard as the ordinary occupant of boxes similarly delivered, I found that for which I was wholly unprepared. As I carefully raised the lid there was before me the down-clad chick of what might, so far as the first glance went, be a Tern, a Plover, or a Sandpiper. But as I lifted it from its scanty bed of dry grass the next moment revealed to me

—"the feet of the Queen of the yellow sands,"

and I was certain that I had in my hand a young *Syrhaptēs*!

The following is a description which I immediately drew up:—

Weight a little more than  $\frac{1}{2}$  oz. Length, in a prone position, from tip of bill to coccyx 3·3 in.; tibia ·86; tarsus to tip of middle claw ·9; carpal joint to tip of longest digit ·68; nostril to tip of bill ·22; anterior canthus to tip of bill ·46. Outer toe united to middle toe to within ·05 of tip, inner united to middle to within ·1 of tip. No trace of hind toe.

Bill blackish-grey, paling into dusky horn-colour towards the tip, no trace of armature on culmen, mandible rather more livid. Bare skin round eyes dusky bluish-grey. Irides dull hazel. Soles pale ochre; claws dusky white.

Downy plumage. Immediately above each nostril is a cream-coloured V pointing forwards, succeeded by a rich brown triangle, also pointing forwards, with a black terminal margin produced backwards to bound on each side a cream-coloured mesial stripe. Behind these triangles a cream-coloured patch reaching to anterior canthus and succeeded by a rich brown L-shaped patch, extending from the eyebrow to the black boundary line of the mesial stripe. This patch, barred with black, on tips of down, is invaded by one arm of a cream-coloured patch, the general tendency of which is to gird the hind head like a coronet, but runs forwards in the midst to meet the mesial stripe, while the lateral patch of rich brown, interrupted on the top of the head by irregular cream-coloured frecklings, is produced backward and becomes paler, though still mottled with

black. Immediately beneath the eye is a curved brown patch, streaked with black, then a large cream-coloured space, running backward to join the coronet, bearing a quadrangular brown patch beneath the mandible and in a line with the eye, and another directly below the ear. The chin is more tinged with buff, and this colour extends all over the front and lower parts of the body and legs to the claws. Along the ridge of the neck is a light brown streak tinged with sienna, which, edged on either side by a light sienna streak, is continuous along the back till just above the lumbar region, where these streaks unite and form a conspicuous stripe that extends to the coccyx, being bordered on each side by a streak of very deep brown—almost black—slightly mottled with sienna. The upper part of the back and wings is mottled sienna and dark brown, with irregular lines or patches of cream-colour, one of which forms a crescent on the upper part of the humerus, while another is very distinct just below the edge of the forearm. The lumbar region shews two distinct pairs of cream-coloured patches, one extending over the articulation of the femur, the other further back. The flanks are covered with tufts of down of the same cream-colour, sienna, and rich brown, the first perhaps predominating so as to form a line parallel to the axis of the femur.

The forehead and chin are beset with long hairs, black on the former, but on the latter dusky at the base of the bill, and afterwards cream-coloured—the last are continued over all the throat and breast.

I had hardly finished the above description when a letter from Major Chadwick reached me by post. It was dated the 8th of August (the preceding day), and informed me that, knowing how anxious I had been the year before to see the young of *Syrhaptēs*, he had sent me the example just described, "found at Binsness to-day." I must apologize to that gentleman for disobeying his command, which was to return it to him as soon as I had looked at it, that he might have it stuffed; but I telegraphed and wrote to him that it was absolutely necessary for me to have its portrait taken before I could send it back, and accordingly, having in the meanwhile ascertained by telegraph that Mr. Frohawk was at home and willing to depict it, I forwarded it the same night to him, whereby he was able to execute, within forty-

eight hours of the bird's death, the very successful drawings which he has since transferred to stone in illustration of this paper (Plate VII.). Subsequently the bird was sent to Mr. Cullingford, of the Museum of the University of Durham, by whom it was preserved with his accustomed skill, and was exhibited by me at the meeting of the British Association as before mentioned. If my readers will take the trouble to compare Mr. Frohawk's figures with my description they will, I think, admit that the discrepancies are only those of a kind which can hardly fail to occur when a specimen is viewed by different eyes. I must add, however, that the bird being dead, the *expression* given to it in the side view of its head is, of course, imaginary—there being nothing to guide him or me as to the truth in this matter. I never saw the living chick of a Sand-Grouse, and the only representation of one with which I am acquainted is that of *Pterocles alchata* in the 'Proceedings of the Zoological Society' for 1866 (pl. ix. fig. 2), while I am not sure whether that was drawn from the living bird or not. The general resemblance in pattern of the clothing of the two will be manifest; but it is easy to observe individual differences—such, for instance, as the apparently more hooped form of the white markings on the body of *Pterocles* and the absence of the two lateral white lines on the head of *Syrrhaptes*.

An additional reason for my satisfaction at being able to give a description and figures of this little bird is that thereby may be set at rest several reports which have been current on the Continent to the effect that the young of *Syrrhaptes* had, on more than one occasion and in more than one country, been found, and that they were covered with black down. When I first heard of these reports I suspected that the young of *Crex pratensis* or of some other Ralline form had been mistaken for that of *Syrrhaptes*, and I now feel sure that it was so.

It remains to mention the circumstances under which the example sent to me by Major Chadwick was obtained. That gentleman, to whose kindness I am so much indebted, was good enough to answer my enquiries as follows:—



E. W. Steadman del. et lith.

Harhart imp.

SYRRHAPTES PARADOXUS, *parvus*

“When I returned from Norway at the end of July, I asked what had been seen at Binsness, and the keeper told me that some Sand-Grouse had appeared again, and that he had lately seen two birds fly from the water across a wood to the sandhills. So, a day or two after, I went a walk round, and at last I saw two Sand-Grouse get up together. They flew only about fifty yards, so I waited nearly an hour to try and find out where they would go to; but it was no use as they, being shy birds, had seen me. The next day I stalked them, and got to the back of a hillock close to them, where I saw them feeding on the ground. Being nearly in the same place I concluded that they must have eggs and young. I had no dog with me, so I did not try to look. Next day the keeper and I went to the same place and put the birds up. Then we began to search, and at last the dog found close to us the young one I sent to you. They are very difficult to find. We did not look for any more, as I did not wish to take any more or to disturb the birds; but I have no doubt there were two more. You are quite welcome to exhibit the bird, as I dare say not many have been seen. I fancy it is the same pair that bred here last year, as it was close to the same place.”

I subsequently learned that Major Chadwick was accompanied on this occasion by the very man and dog who found the young birds in 1888.

Mr. Cullingford, after skinning the specimen, obligingly sent me its body, and I forwarded the contents of its crop to Mr. Robert Service of Maxwelltown, who was so good as to inform me that, young as the bird was, he found it to contain 45 seeds, three of which were those of Rye-grass (*Lolium perenne*), one of Tufted Hair-grass (*Aira cespitosa*), and one of Broom (*Cytisus scoparius*)—which last I had myself seen. Though he was careful to sow all these seeds without delay, only three of them germinated, namely, two of *Poa annua* and one of *Polygonum persicaria*, the vitality of the rest having apparently been destroyed by the spirit in which they had, though only for a few hours, been immersed; but it is possible that some were unripe.

The fact of this paradoxical species having newly-hatched young—for I cannot suppose the bird sent to me could have been more than two or three days old—so late in the season as the 8th of August seems to be especially remarkable.

Magdalene College, Cambridge,  
19 January, 1890.

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XXI.—*On the Columbine Genus Macropygia and its Allies.*

By Major R. G. WARDLAW RAMSAY, F.L.S., F.Z.S., &c.

THE genus *Macropygia* is one about which but little has been written. It is at first sight a perplexing group, and this fact, perhaps, has prevented many ornithologists from even attempting to identify the specimens which they may have happened to find in local collections. Such are the variations in plumage in this genus, and so closely allied are many of the species, that it is only by an examination of a large series that satisfactory conclusions can be arrived at.

The only systematic treatment which this genus has received is that of Count T. Salvadori (Orn. Pap. vol. iii. p. 132), and perhaps may be added that of Professor Schlegel (Mus. d. Pays-Bas, Columbæ).

With a view to secure sufficient materials for a revision of this group, I have endeavoured to collect as large a number of specimens as possible; and I here take the opportunity of acknowledging the kindness and courtesy of Dr. A. B. Meyer for the loan of specimens from the Dresden Museum, of Dr. Gestro, to whom I was introduced by Count Salvadori, for an interesting series from the Museum at Genoa, and, lastly, of Canon Tristram for placing his specimens at my disposal. These examples, together with the already large series in the National Museum, augmented, as it has been of late years, by the collections of the late Marquis of Tweeddale, and Messrs. Hume, Salvin and Godman, and Seebohm, have given me an opportunity such as has not been previously enjoyed by anyone for working out the genus.

At the outset the student of *Macropygia* is apt to be perplexed by the great variations in plumage in the same species. On closer examination, however, it will be found that this difficulty is more apparent than real, and that the plumages conform to a fairly definite and uniform system. But although this is so among specimens of the same species, a real difficulty presents itself when the attempt is made to differentiate the species themselves in an intelligible manner—so inconstant are most of the characters to which many of them owe their specific rank.

It is generally in the treatment of immature specimens that most difficulty is encountered; and I would here like to note that there are certain marks indicative of immaturity, some, or all of which, are to be invariably found in birds under a certain age. Of these I may mention black bases to the feathers of the head, excess of rufous, especially on the tips of the wing-coverts, secondaries, and tertiaries, black or blackish feathers on the breast with rufous tips and sometimes rufous centres, and a white or whitish chin and throat, or the feathers of these parts having white shafts.

I find that the species, with a very few exceptions, naturally fall into several well-marked groups. In some of these groups the sexes differ, but in others they are alike. The rule holds good, I think, with two exceptions, that when the plumage of the adult is more or less of a uniform colour (as in *M. phasianella* and *M. magna*), the sexes are alike, whereas in the groups in which the adult males are parti-coloured (as in *M. tusalia* and *M. amboinensis*) the sexes differ.

The genus *Macropygia*, Swainson, is confined to the Oriental and Australian Regions of Mr. Wallace ('Geogr. Distrib. Animals'). Its known range is from Nepal on the north and west, to the New Hebrides on the east, and the Australian continent on the south.

In habits *Macropygia* is a Ground-Dove of a tame nature, very partial to open glades and clearings in dense forest, especially when covered with a secondary growth of low scrubby jungle. It is generally found singly or in pairs, and

on being flushed it only flies a short distance and alights on some convenient branch, spreading out its tail like a fan as it does so. Its food is composed of seeds and berries, one very favourite fruit being the Chilli (*Capsicum fastigiatum*), of which it consumes an enormous quantity.

A very great difficulty which I have experienced in working out this genus, has been caused by the lack of reliably sexed specimens. I regret to find that the symbols on the labels of even the best collectors are not to be implicitly trusted. Collectors are too ready, and I do not except myself from the category, to trust their native taxidermist to determine the sex; indeed, this is often unavoidable. Natives are quite capable of doing it if they will; but I know from experience that, if they have preconceived ideas as to what sex a specimen ought to belong to, very often down goes the symbol on the label without any dissection. It is also impossible to make a native understand that, if the sexual organs, from mutilation or otherwise, are not distinguishable, it is far better to record no sex than to guess it. But no, that is not "Ramasawmy's" way of reasoning! "Master" has told him to be sure and sex every bird, and "Master" will be "plenty angry" if he doesn't; and so one or other symbol, as likely as not the wrong one, is put down to perplex the unfortunate naturalists at home. If field-naturalists would append their initials to the sexual symbol, as a guarantee that the dissection was made by them personally, the value of their collections to the worker at home would be much enhanced. For the above-mentioned reasons I have had considerable difficulty, in some cases, in determining which are adult females; and it is just possible that some of my conclusions may be found to be erroneous.

There is one specific title in the genus which has caused a good deal of difficulty—*Columba macroura*, Gmel. The late Lord Tweeddale has satisfactorily cleared this up, and his views will be found recorded by Capt. Legge ('Birds of Ceylon,' p. 699).

The specimens so marked in the British Museum belong to the true *M. amboinensis*, Linn.

The geographical distribution of the genus will best be shown by the table given at the conclusion of this article.

In general appearance *Macropygia* perhaps resembles *Turtur* more than any other genus. It has 12 rectrices.

Anatomically, Professor Garrod (P. Z. S. 1874, pp. 249-251) has shown that *Macropygia* belongs to the subfamily *Columbinæ*, having *Columba*, *Ectopistes*, and *Turtur* for its allies. These genera are distinguished by the presence of an oil-gland, cæca, and an ambiens muscle.

GENUS I. *MACROPYGIA*, Swains. Class. Bds. ii. p. 348 (1837).

“Wings moderate, rounded; the first and second quills graduated, and much shorter than the third. Tail long, graduated, the feathers very broad and obtuse. The rump-feathers very thick-set. Bill short, the gonys angulated. Tarsus plumed. Hinder toe longer than the tarsus.”

Type *Columba phasianella*, Temm.

Syn. *Coccyzura*, Hodgs. J. A. S. B. xii. p. 936 (1843).

Type *Coccyzura tusalia*, Hodgs.

I shall now proceed to enumerate the species, which I have divided into five groups, with fairly well-defined distinguishing characters.

Group A.—*The head, nape, and mantle in the adult male unbroken metallic green or purple. Transverse bars on the tail conspicuous above. Sexes dissimilar.*

Confined to the Oriental Region.

I. *MACROPYGIA TUSALIA*.

*Coccyzura tusalia*, Hodgs. J. A. S. B. xii. p. 937 (1843).

*Macropygia tusalia* (Hodgs.), Jerdon, Bds. India, iii. p. 473.

*Macropygia leptogrammica*, Schleg. Mus. P.-B. iv. *Columbæ*, p. 107 (part.); Wald. Ibis, 1875, p. 459; Wardl. Rams. Ibis, 1877, p. 468; Oates, Bds. Burm. ii. p. 295.

*Adult male.* Forehead, chin, and throat vinaceous buff; head, nape, mantle, and sides of the neck shining metallic green, with purple or bronze reflections according to light; back, wings, wing- and upper tail-coverts dark brown, each feather tipped and barred with claret-brown; two central pairs of rectrices more or less clearly barred with claret-

brown above, third pair reddish brown with a slaty bar, and the three outer pairs slaty, with dark bars and a chestnut spot on the inner web: beneath the breast is vinaceous, more or less barred with dark metallic green and tipped with bronzy green or amethyst; the belly and under tail-coverts buff; axillaries and flanks slate-coloured.

*Adult female.* Somewhat like the male, but the lower surface is transversely barred, each feather being barred with buff or white and tipped with metallic green or purple; the belly and under tail-coverts buff or more or less barred.

*Young.* In the immature bird the head is transversely barred above, either with or without indications of metallic colour according to age. The plumage is more rufous beneath, especially on the breast. The chestnut spot on the outer tail-feathers is brighter, and the tail-feathers are tipped with rufous. Wing 7 to 7.5 inches, bill from gape 1, tail 7.5 to 8, tarsus 0.9.

Iris white, surrounded by a rim of pale lilac; orbital skin grey, with an inner rim of purple; bill blackish; legs purplish pink (*W. R.*).

*Hab.* This species is found throughout all the hill-ranges of Northern India (as far west as Nepal), Assam, Manipur, Burma, and Tenasserim. It probably extends across Yunnan and Southern China, but it has not been recorded thence; it reappears, however, in Hainan in the following race.

## 2. MACROPHYGIA SWINHOEII.

*Coccyzura minor*, Swinhoe, P. Z. S. 1871, p. 397 (Hainan).

This is a very dark race of *M. tusalia*, which, so far as is known, is peculiar to the island of Hainan. The transverse bars on the tail are nearly obsolete in some specimens. It is really not smaller than the typical race, although, from the make-up of the skins, it would appear so. I have therefore thought it best to supersede so inappropriate a title as "*minor*."

*Hab.* Hainan.

3. *MACROPYGIA LEPTOGRAMMICA*.

*Columba leptogrammica*, Temm. Pl. Col. 560 (1835).

? *Columba unchall*, Wagl. Syst. Av., *Columba*, no. 38 (1827).

*Macropygia walik-mehra*, Reichenb. Taubenvögel, p. 86, no. 191 (1862).

*Macropygia leptogrammica*, Schleg. Mus. P.-B. iv. *Columbæ*, p. 107 (part.).

*Macropygia*, sp., Sharpe, P. Z. S. 1887, p. 443.

*Adult male*. Like *M. tusalia* but smaller. Wing 6.5 to 7 inches. The barring of the upper surface is conspicuously broader and more rufous, and the metallic colours less bright. It is interesting to note that the Javan male has the head like the Indian bird, that is, green with purple reflections, while the Sumatran male has the reverse, purple with green reflections. The plumage is much more rufous below, and the tail-coverts cinnamon-rufous rather than buff.

*Adult female*. From want of sexual determinations I cannot write with certainty, but in an apparently adult female, so marked by Wallace, from Java, the head and mantle are barred brown and rufous like the rest of the upper surface; a slight tinge of purple is on the head; the feathers of the neck, mantle, and breast with transverse bars of golden brown, tipped metallic green with purple reflections: beneath fulvous isabelline barred with dark brown; under wing-coverts, axillaries, and flanks rufous.

*Young*. Much like the female, but with the bars on the neck and mantle pale buffy in place of rufous, and the metallic colour confined to the bars on the breast.

Iris yellow; eyelids and feet red; feet red (*Wallace*).

*Hab.* The hills of Sumatra and Java up to 7500 feet; the Malay Peninsula.

From the latter locality I have only seen one specimen, which was obtained in the hills of Larut in Perak by Mr. Wray. It is a male with a wing of 6.8 inches. It belongs to the *M. leptogrammica* and not the *M. tusalia* form, but differs in the irregularity of the tail-bars, which are bent instead of going straight across the tail.

Mr. Blyth (Ibis, 1870, p. 73) is, I believe, responsible for the statement that *M. leptogrammica* is found in Celebes. This locality is doubtless erroneous. There is a specimen from the Leiden Museum in the National Collection which is marked Celebes. But it is evident that the label has been transposed or that some mistake has occurred; for the specimen in question does not even belong to the Malayan form, but to the Indian *M. tusalia* race.

Our next group is a large one, and is found in both regions, one species, *M. emiliana*, Bp., being found on both sides of the Straits of Lombok.

Group B.—*Plumage of adults uniform or nearly so. Prevailing colour chestnut or cinnamon-rufous. Sexes alike or nearly so.*

Section a.—*Of large size.*

#### 4. MACROPYGIA PHASIANELLA.

*Columba phasianella*, Temm. Trans. Linn. Soc. xiii. p. 129; id. Pl. Col. 100; Gould, Bds. Australia, v. pl. 75.

*Adult.* General colour above chestnut-brown, below cinnamon-rufous, deepening into chestnut on the abdomen and lower tail-coverts. Occiput metallic amethyst, with green reflections; a slightly vinous tinge on the breast; primaries dark brown; under wing-coverts, axillaries, and inner margins of primaries rufous; three outer pairs of rectrices with a broad black band extending towards the base on the inner web.

According to Gould the sexes are alike.

Iris blue with an outer circle of scarlet; orbital skin bluish lilac; feet red (*Gould*). Wing 7.5 to 7.9 inches, tail 9, bill 1, tarsus 1.

*Young.* An immature bird, marked female (Port Molle, Queensland, 'Alert'), has recorded: iris red; bill reddish; legs and feet red. It is of a much redder chestnut, especially on the crown, the upper wing-, and upper and lower tail-coverts; the mantle is browner; beneath it is minutely freckled with dark brown; the sides of the head and neck

pale brown, with an appearance of bars from the feathers having dark bases and a dark spot on the outside of each web.

*Hab.* Australia.

Mr. Gould has an interesting note on the habits of this species (Handb. B. Austr. ii. p. 114). The type specimen, which is in the British Museum, is not adult, the lower surface being transversely barred; the tail-feathers are very much pointed. This latter character, as well as the shape of the rectrices, varies much in different specimens.

#### 5. *MACROPYGIA TENUIROSTRIS*.

*Columba phasianella*, Temm. Pl. Col. 100 (Manilla), nec Trans. Linn. Soc. xiii. p. 129.

*Macropygia tenuirostris*, G. R. Gray, List Bds. Brit. Mus. Columbæ, p. 39 (1856) (Philippines); Schleg. Mus. P.-B. iv. Columbæ, p. 109; Wald. Trans. Z. S. ix. p. 218 (p. 382)\*; id. P. Z. S. 1878, p. 288 (p. 594); Sharpe, Ibis, 1888, p. 203 (Palawan).

*Macropygia eurycerca*, Tweedd. P. Z. S. 1878, p. 288 (Negros) (p. 594) et p. 952 (Mindanao) (p. 643), et 1879, p. 73 (Basilan) (p. 651).

*Adult.* Like *M. phasianella*, but more purple-brown above; the head, neck, breast, and under surface cinnamon-rufous, with a vinous tinge on the occiput; the mantle brown, minutely freckled with rufous, and tipped with amethyst; wing-coverts more or less tipped with rufous.

A specimen from Luzon (*Meyer*) in the same plumage as the male, and marked female, is in the British Museum. Considering this specimen, together with the very emphatic statement of Mr. Gould (Handb. B. Austr.) as to the identity of the sexes of *M. phasianella*, and also my own experience of *M. rufipennis* in the Andaman Islands, I feel constrained to assume that the sexes are similar throughout the group. However, there are specimens, which have no appearance of youth, which differ markedly; one of them, which perhaps is a young bird, has the head bright rufous with a vinous tinge;

\* The numbers in brackets after references to Lord Tweeddale's writings refer to the 'Memoir.'

upper surface dull brown, tipped with rufous; nape and mantle pale rufous, barred with dark brown, with a metallic green tinge; upper tail-coverts freckled with rufous: beneath deep chestnut with dark transverse bars.

*Young.* One specimen marked female (Basilan, *Everett*) is evidently young; it has the throat and breast blackish brown, with a central streak or spot of rufous on each feather.

Another young *female* from S. Mindanao is brown above, edged with rufous, especially on the wing-coverts; head bright chestnut, feathers dark at the base; nape more or less broadly barred with pale rufous or chestnut. Wing 7.4 to 7.7 inches, tail 8.7, tarsus 0.9. Iris yellow, with an outer rim of crimson; orbital region and base of bill crimson; bill light brown; feet carmine (*Everett*).

*Hab.* Philippine Islands, Palawan, Sulu Islands.

The birds found in Negros and S. Mindanao have been described by the late Lord Tweeddale as *M. eurycerca*.

On examination of a series of seventeen specimens from different islands I fail to see how this species can stand. The colour of the back in all species of *Macropygia* varies much; the rufous edging to the wing-coverts, relied on by Lord Tweeddale, is also a varying quantity, and besides that, it is distinctly visible even in the type specimen, and broadly so in the S. Mindanao birds, which Lord Tweeddale has himself referred to *M. eurycerca* (*l. c.*).

The S. Mindanao birds are, however, a good deal smaller; wing 6.6 inches. Palawan and Sulu birds do not differ, but the latter agree with S. Mindanao birds in size.

#### 6. MACROPYOGIA EMILIANA.

*Macropygia emiliana*, Bp. Consp. ii. p. 58; Reichenb. Taubenvögel, p. 88, no. 197 (pt.).

*Macropygia tenuirostris*, G. R. Gray; Schleg. Mus. P.-B. iv. Columbæ, p. 109; Sharpe, Ibis, 1890, p. 137.

*Adult.* Like *M. tenuirostris*, but smaller, and at all times to be readily distinguished by its colour being both lighter and brighter and having a distinctly vinous tinge;

occiput, nape, and mantle metallic amethyst, with traces of the same on the breast; all the feathers above minutely freckled with rufous: beneath bright vinous chestnut; three outer pairs of tail-feathers broadly tipped with rufous.

I am somewhat in doubt as to what the plumage of the adult female is like.

It would seem as though in this group of *Macropygia* the sexes do not differ, but at the same time there are specimens in the British Museum which are marked female, and which show no signs of youth. They are of a duller chestnut-brown than the males; head like the male, but a little darker; upper surface without amethyst and more or less barred, especially on the nape and mantle, which are of a brighter chestnut; beneath rufous, with transverse bars on the breast. One female specimen, from Java, evidently young, has the breast-feathers blackish with rufous centres. Wing 6·7 to 7 inches, tail 7·5 to 8·2, tarsus 0·8, bill 1.

*Hab.* Lombock, Java, and Borneo.

This is the only species of the genus which is found on both sides of the Straits separating the Oriental and Australian Regions. It is the connecting-link between *M. phasianella* and its outlying races.

#### 7. *MACROPYGIA MODIGLIANII*.

*Macropygia modiglianii*, Salvad. Ann. Mus. Civ. Genova, ser. 2, iv. p. 559, pl. viii. f. 2.

This is simply a darker and rather larger race of *M. emiliana*, intermediate between it and *M. tenuirostris*. Wing 7·3 inches, tail 7·5, tarsus 1·1, bill 1.

Its coloration is also conspicuously brighter, especially in the amethystine of the upper surface, nape, and mantle, and the vinous tinge of the back and upper tail-coverts, which is much brighter on the latter. The legs and feet are much more massive. Iris, dusky blue with a double circle of white externally in the male, red in the female; bill chocolate; feet red (*Modigliani*).

*Hab.* Island of Nias.

I have to thank the officials of the Museum at Genoa for the loan of the type specimen of this species.

Count Salvadori describes the female as being like the male, but with very faint purple and golden reflections on the neck, and with transverse bars of black, especially on the nape and upper part of the back.

#### 8. MACROPYGGIA RUFIPENNIS.

*Macropygia rufipennis*, Blyth, J. A. S. B. xv. p. 371 (1846); Walden, Ibis, 1873, p. 315 (p. 247); Hume, Str. Feath. ii. p. 266 (1874).

*Adult.* General colour above chestnut, browner than in *M. emiliana*, but without the vinous tinge; the mantle minutely freckled with rufous and barred with brown: beneath, chin, throat, and sides of head paler chestnut, remainder of the lower surface chestnut, barred with brown, brighter on the abdomen, which is freckled; amethystine reflections on the breast and sides of neck; under wing-coverts, axillaries, inner webs of the primaries, and the lower tail-coverts cinnamon-rufous.

*Young.* Younger birds have the bases of the feathers of the crown and a spot on the outside of each feather dark brown, giving the head the appearance of dark striations; the back is much browner and less chestnut in some, and the breast is of a uniform bright chestnut; the mantle, as in the young of most species, is brown, transversely barred with yellowish or whitish buff or pale chestnut; the primaries are almost entirely rufous both above and below.

The sexes do not differ.

In examining the very large series in the British Museum, I have based my conclusions only on the specimens which I believe to have had their sexes determined by Mr. Davison or myself. I regret to say that little reliance can be placed on the sexual determinations of the taxidermist who made up a large proportion of the skins, at first in Mr. Davison's service, then in mine, and lastly in that of Capt. Wimberley.

I have been led to a different conclusion from Mr. Hume (*l. c.*), who thought the unbarred birds were the older. I find that excess of rufous, and especially the dark striation of the head, is nearly always indicative of youth. Wing 7·3 to 7·7 inches, tail 8, tarsus 1, bill 0·9. Iris light blue, encircled

by a ring of carmine; orbital skin leaden blue; bill and legs purplish pink.

*Hab.* Andaman and Nicobar Islands.

This is an outlying race of *M. phasianella*, and has, perhaps, departed more than any of the other races from the original type.

Mr. Blyth has an interesting note on its habits in confinement, in the J. A. S. B. vol. xv. p. 371.

The next species seems naturally to find a home in this group, but for the fact that its sexes differ. If it is not included here, it must stand in a group by itself.

#### 9. *MACROPYGGIA RUFICEPS*.

*Macropygia ruficeps*, Temm. Pl. Col. 561 (1835); Nicholson, Ibis, 1881, p. 155; Sharpe, Ibis, 1890, p. 137.

*Macropygia assimilis*, Hume, Str. Feath. ii. p. 441 (1874); Oates, Bds. Burm. ii. p. 296.

*Adult male.* General colour above dark chestnut, almost brown on the back; head conspicuously paler; nape, mantle, sides of head and breast darker, with a vinaceous tinge, and with metallic green or amethyst reflections: beneath cinnamon-rufous, with a slightly vinous tinge, whitish on the throat, and the pectoral feathers more or less broadly tipped with white.

*Younger males*, nearly adult, differ in having some of the feathers of the nape and mantle with bars of dark metallic green or purple, giving a spotted appearance, and also a trace of very dark metallic barrings on the outer edges of the breast-feathers. Wings brown, wing-coverts broadly edged with, and the margins of the inner web of the primaries and the axillaries, rufous. Yet *younger males* are rather darker in plumage and have the bars more pronounced; and the breast is also black-spotted as in the female.

*Adult female.* Head and tips of wing-coverts bright reddish chestnut; nape, back and tail brown; mantle the same, freckled with pale brown; upper tail-coverts narrowly tipped with chestnut or rufous: beneath more or less uniform cinnamon-rufous; the feathers of the throat and

breast blackish brown, with a rufous spot at the tip, giving the breast the appearance of being black-spotted.

In the *younger female* the plumage is darker and more mottled in appearance, more black showing on the throat and breast and the bases of the feathers of the head: beneath rufous, pectoral feathers blackish, tipped with rufous. One specimen from Bantam (*Forbes*) in Canon Tristram's collection, which is marked a female, is very markedly rufous above, especially on the wing- and upper tail-coverts.

Javan birds have the wing 5·8 inches, tail 7, tarsus 0·75, bill 0·85. Tenasserim and Burmah birds (*M. assimilis*, Hume) are rather larger: wing 6·1 inches, tail 6·8 to 7·1.

The only Bornean specimen which I have examined, obtained by Mr. Whitehead on Kinabalu, is a young male, and is even smaller than Javan birds, having the wing 5·3 inches and the tail 5·7.

Birds from Java, Sumatra, and Borneo seem to be all alike in plumage, and to have the dark metallic green barrings on the nape and mantle more pronounced than in those from the Burmese countries.

*Hab.* Java, Sumatra, Borneo, Malay Peninsula, Tenasserim, Burmah.

The great mass of evidence from the series of birds, many of them carefully sexed, either by Mr. Davison or myself, goes to show that in this species the sexes differ. It is true that one of Mr. Davison's Tenasserim specimens in male plumage is marked female; but it is obvious that the symbol has been added to the label by a native collector, and not by Mr. Davison himself, who made his symbols in quite a different manner.

In almost every instance in which my conclusions as regards sexual plumages have been confuted by specimens of a reliable collector, I have found something irregular about the label.

Iris pearly white (pinkish or brown in the young); orbital skin pale blue-grey, with an inner ring of blue; bill pale brown; legs and feet brownish pink or red.

Section *b*.—*Of small size.*

Confined to the Australian Region.

10. *MACROPYGGIA RUF*A.

*Macropygia rufa*, E. P. Ramsay, Pr. Linn. Soc. N. S. W. ii. p. 287 (1878) (Havannah Harbour, Sandwich I.); id. Ibis, 1882, p. 344; Tristr. Ibis, 1879, p. 194.

*Adult male* (Vaté, New Hebrides, Mus. Tristr.). Above chestnut-brown, browner on the upper tail-coverts: beneath paler and more hazel; under wing-coverts and axillaries bright rufous; tail beneath pale chestnut, three outer pairs of rectrices buff, with a broad band across the centre of the feathers and extending towards the base of the inner web. Iris orange; bill black; legs dull red. Food, seeds (*Layard*).

Another specimen (Erromanga, Mus. Salv. and Godm.) is somewhat duller in plumage and is said to have had the iris yellow; bill black; feet red.

*Adult female* (Tanna, Mus. Salv. and Godm.). Like the male, but paler and less rufous above: beneath a uniform cinnamon-brown, more rufous on the under tail-coverts; the feathers of the breast black at the base, giving it a mottled appearance, and forked as in some species of *Ptilinopus*. Iris yellow; feet cherry. Food, berries (*Richards*).

Another specimen from Aneiteum is like the last, but darker above, more fawn-colour below, some of the breast-feathers freckled with white; the lower tail-coverts rufous. Wing 5·9 to 6·3 inches, tail 6·6 to 7·3, tarsus 0·8 to 0·9, bill 0·7 to 0·8.

*Hab.* New Hebrides.

I think there is little doubt that all these specimens belong to the same species.

Mr. Layard has suggested that this species is the *Columba ferruginea*, Forster, said to have come from Tanna; but from the description of that bird in the 'Descr. Anim.' it is evidently *Treron fulvicollis* with a wrong locality.

11. *MACROPYGGIA MACKINLAYI*.

*Macropygia mackinlayi*, E. P. Ramsay, Pr. Linn. Soc. N. S. W. ii. p. 286 (1878) (Tanna).

What this bird, from the Island of Tanna, can be I do not know. Mr. E. P. Ramsay suggests (*l. c.*) the likelihood that it is the same species as the last, but it is difficult, from his description, to realize such a possibility. Certainly none of the four specimens described above approach to the remarkable characters ascribed to *M. mackinlayi*. On the other hand, it does not seem likely that an island of the size of Tanna should contain two distinct species of small *Macropygiae*.

I append Mr. E. P. Ramsay's description of his type specimen:—

“The whole of the upper surface dark ashy brown, darker on the wings, the second, third, and fourth primary quills with an inconspicuous narrow line of white on the outer edge of the outer web; the rump and upper tail-coverts, wing-coverts and scapularies minutely freckled with ashy white, giving a powdery appearance to those parts: the under surface is of a light ashy brown, blackish in the centre of the chest-feathers, which are forked; the throat and the whole of the under surface minutely freckled with a light ashy tint; under wing-coverts and inner webs of quills ashy white; tail ashy brown, lighter below the outer feathers, above blackish, the tips ash-white, and an oval cream-coloured patch occupying the central portion of the feathers and extending over the outer web to the base; the blackish colour to the inner web extends in a wedge-shaped stripe along the shaft; the next feather similar, but without the whitish mark on the inner web; an oval oblique spot of cream-colour on the inner web only on the third quill; the fourth, fifth, and sixth without spots and of a uniform ash-brown; under tail-coverts creamy white; tarsi olive-brown; bill black. Total length 12 inches; bill from forehead 0·6, from base of nostril 0·5; wing 6·1; tail to central feathers 6·8, to outer 3·6; tarsi 0·85, middle toe and nail 1·05. Sex female.

“*Hab.* Island of Tanna.

“This interesting species has the peculiarity of having the feathers forked as in some of the *Ptilonopi*.

“Notwithstanding the great differences in coloration be-

tween this and the previous species (*M. mackinlayi*) from Tanna, they may hereafter prove identical: the style of markings is very similar; but the bill in *M. rufa* is stronger and more rounded at the tip; both have comparatively weak bills, and on the whole are very slightly built birds."

#### 12. *MACROPYGIA RUFO-CASTANEA*.

*Macropygia rufo-castanea*, E. P. Ramsay, Pr. Linn. Soc. N. S. W. iv. (1880) p. 314 (read June 1879); Ogilvie-Grant, P. Z. S. 1888, p. 200.

*Macropygia arossi*, Tristr. Ibis, 1879, p. 443 (San Cristoval, Solomon Is.).

*Female, adult* (Guadalcanar, Mus. Brit.). Above reddish chestnut: beneath cinnamon-rufous, paler on the throat; tail beneath the same, much brighter on the outer pair of feathers, and the three outer pairs having a dark band across each feather extending towards the base of the inner web; primaries, beneath, bright cinnamon-rufous on the inner web; under wing-coverts and axillaries cinnamon-rufous; breast-feathers forked as in *M. rufa*, black at base and tipped with rufous. Wing 5·7 inches, tail 6·3, tarsus 0·7, bill 0·7. Iris orange; bill black; feet red (*Woodford*).

*Female, young*. Head-feathers black at base and a black spot on either web; tail-feathers more pointed. Wing 5·3 inches. Iris reddish brown; bill black; legs dull pink.

*Female, younger*. Like the last, but the breast-feathers not forked. Wing 5·7 inches. Iris brown; bill black; feet red (*Woodford*).

I have not seen an adult male, but it is probably like the female, with the exception, perhaps, of the spotted breast. I have examined an *immature male*, however, the type of *M. arossi*, in the museum of Canon Tristram; it is nearly adult and is like the female, but the breast-feathers are not forked. Another *young male* is in the British Museum: it is like the last, but slightly barred above. Wing 5·3 inches. Iris light drab; feet dark cherry. Food, berries (San Cristoval, *Richards*).

*Hab.* Solomon Islands.

13. *MACROPYGIA NIGRIROSTRIS.*

*Macropygia nigrirostris*, Salvad. Ann. Mus. Civ. Genova, vii. p. 972 (1875); id. Orn. Pap. iii. p. 149; Scl. P. Z. S. 1877, p. 111.

*Adult male* (New Guinea). Above rich chestnut-brown, darker on the head, paler on the nape and mantle, which has a shade of dark vinous or purple; upper tail-coverts and central rectrices above very distinctly barred with blackish brown, as in *M. leptogrammica*, three outer pairs above unbarred: beneath somewhat paler and more rufous; the under wing-coverts and axillaries rufous; tail rufous with a dark band across each feather extending towards the base of the inner web.

The *female* is probably similar; the one described by Count Salvadori (*l. c.*) appears to be immature.

A *young female* from N.W. New Guinea is dark brown above, obscurely barred with rufous, the head having the appearance of dark striations; the mantle is barred with light rufous, and the upper tail-coverts and tail with blackish brown: beneath pale rufous-brown, barred with dark brown, the belly and lower tail-coverts rich cinnamon-rufous. Wing 5·8 inches, tail 6·6, tarsus 0·8, bill 0·7.

The bill in the birds from New Guinea is very stout. They agree otherwise with specimens from the New Britain group, but the latter are rather browner in the back.

A *young male* from the foot of the Astrolabe Mts. (*Forbes*) is brown above, the feathers tipped with rufous, which is much paler on the nape and mantle; the tail irregularly barred with rufous, as in a specimen of *M. leptogrammica* from Perak referred to above (p. 219): beneath rufous, as in the young female, the feathers of the breast blackish, with rufous tips and rufous lines down the centres. Iris blue; bill corneous; legs and feet reddish corneous (*Forbes*). But see Salvad. (*l. s. c.*).

This specimen, at first sight, looks like a *Cacomantis* in the hepatic stage.

*Hab.* New Guinea, New Britain, Duke of York Island, New Ireland\*.

\* When habitats are given in italics it means that I have not personally examined specimens from that particular locality.

This is the only species outside the *M. tusalia* group in which the middle pairs of rectrices are conspicuously barred above.

Group C.—*Adult males chestnut-brown above, vinaceous or barred, or both, beneath. Sexes dissimilar.*

Section a.—*Breast faintly vinaceous, with transverse bars.*

Confined to the Australian Region.

14. *MACROPYGIA AMBOINENSIS.*

*Columba amboinensis*, Linn. S. N. i. p. 286 (1766) (Amboina).

*Macropygia amboinensis*, Wall. P. Z. S. 1863, p. 34; id. Ibis, 1865, p. 389 (Bouru); Salvad. Orn. Pap. iii. p. 132.

*Macropygia albiceps*, Temm. Mus. Lugd. (Bp. Consp. ii. p. 56); Gray, List Bds. Trop. Is. p. 43 (error?).

*Macropygia turtur* (pt.), Schleg. Mus. P.-B. iv. Columbæ, p. 110.

*Macropygia buruensis*, Salv. Ann. Mus. Civ. Genova, xii. p. 428; id. Orn. Pap. iii. p. 135.

*Adult male.* Head bright cinnamon-rufous, with a vinous tinge, paler on the forehead, buffy white on the throat; whole upper surface bright chestnut-brown, the feathers of the nape and mantle tipped with shining metallic greyish green or amethyst; faint, nearly obsolete, bars on the tail: beneath tawny buff, paler on breast, where many of the feathers are tipped with white, and deepening into rufous on the abdomen and under tail-coverts; under wing-coverts and axillaries bright chestnut; tail beneath brown, the three outer pairs of rectrices with the basal half and tip more or less rufous; the breast distinctly and the abdomen and under tail-coverts faintly barred with dark brown.

In one specimen from Amboina, marked male, the under surface is of a nearly uniform cinnamon-rufous brown, barred, but without white tips to the pectoral feathers.

*Adult female.* Head and upper tail-coverts bright reddish chestnut, tail browner; back and wings brown, feathers broadly tipped with chestnut, especially on the wing-coverts.

and secondaries; nape and mantle pale buffy, barred with very dark metallic green or purple or freckled with brown without bars: beneath light chestnut-brown, darkest on the abdomen and under tail-coverts, barred as in the male.

*Younger birds* are like the female, but less bright, the feathers of the head being dark brown at the base and only tipped with chestnut; the breast not barred or only faintly in some specimens, but breast and throat-feathers blackish brown tipped with chestnut, giving a mottled appearance. Wing 6.6 to 7.1 inches, tail 8 to 9, tarsus 0.9, bill 0.9.

*Adult.* Iris brown, with inner ring of grey; bill pinkish corneous with tip sooty colour; legs and feet faded pink.

*Young.* Iris lake-red; bill pink; legs and feet coral-red (*Forbes*).

*Hab.* Amboina, Ceram, Bouru.

I cannot separate the Bouru birds from those of Ceram and Amboina; the number of bars on the breast-feathers, which Count Salvadori gives as the difference in his Key to the genus, is not constant in a series from either localities.

This may be conveniently taken as the central species of which the following nine may be regarded as outlying races. Together they form a well-marked group of the genus *Macropygia*.

#### 15. MACROPYGIA ALBICAPILLA.

*Macropygia albicapilla*, Temm. Mus. Lugd. (Bp. Consp. ii. p. 57 (Celebes)); Walden, Trans. Z. S. viii. p. 85 (p. 185); Meyer, Ibis, 1879, p. 137; Blas. Zeitschr. ges. Orn. iii. p. 133 (1886).

*Macropygia turtur* (pt.), Schleg. Mus. P.-B. iv. Columbæ, pp. 111, 112.

*Adult male.* Allied to *M. amboinensis*, but smaller, and the upper surface more claret-brown, the head grey or greyish buff in some, and whitish on the forehead; the breast with a metallic vinous tinge, in bold contrast to the rufous throat.

*Adult female.* A bird marked female, apparently adult, is like the female of *M. amboinensis*, but darker; beneath

rufous, unbarred, becoming ochreous brown on the abdomen and under tail-coverts, which are irregularly barred or freckled.

A *young male* (*Wall.*), Tondano, is like the female, but faintly barred on the breast, and greyish, faintly metallic, on the nape and mantle.

A *yet older male* (*Wall.*), Macassar, has the nape more metallic, and a few feathers on the breast albescent. A still older bird, male, Minahassa (Dresden Museum), is taking on the claret-brown feathers above, as well as the metallic vinous tinge on the breast, which is becoming distinctly barred. It still retains the chestnut head.

A male a stage further on has nearly acquired its dark adult plumage above, the head being in process of change from rufous to grey, the lower surface as in the adult male.

There is, according to Professor Blasius, another variety of plumage to which this species is liable, in which the head is reddish brown in the adult male. I have not had the opportunity of seeing such a specimen, but one or two of the young birds described above have pale rufous heads. In any case Professor Blasius is wrong in assuming that this variety is the *M. macassariensis*, *Wall.*, which, as I shall presently show, is quite a different bird. Wing 6.1 to 6.3 inches, tail 7.6 to 8.4, tarsus 0.9, bill 0.9.

Birds from the Sula Islands seem a trifle smaller, wing 6 inches in a male, but otherwise identical.

*Hab.* Celebes, Sula Islands, *Togian Islands*.

#### 16. *MACROPYGIA SANGHIRENSIS*.

*Macropygia turtur* (pt.), Schleg. Mus. P.-B. iv. Columbæ, p. 111 (Sanghir and Siao).

*Macropygia sanghirensis*, Salvad. Atti Acc. Torino, xiii. p. 1185 (1877-78); Blas. Ornis, 1888, p. 619, pl. iii.

*Adult male.* A representative of *M. albicapilla*, but larger and easily distinguished by its darker colour, almost purplish brown above, the head cinereous, paling to buff on the forehead; a vinous tinge on the crown blending into plumbeous on the nape; bright metallic amethyst on the mantle, with

bronzy-green reflections, which is faintly continued across the breast; beneath also somewhat darker and more boldly marked, the throat and upper part of the breast a kind of greyish buff, in sharp contrast to the barred breast, which has a decidedly vinous tinge, becoming metallic amethyst on the sides; the under wing-coverts, axillaries, as well as the flanks, and thigh-coverts in some specimens, chestnut-brown.

*Adult female.* A specimen in the Dresden Museum I am inclined to consider as an almost adult female. It is not quite adult, as the bases of the head-feathers are still brown or blackish. It is like the female *M. albicapilla*, but darker chestnut above, the lower surface as well as the under wing-coverts and axillaries being of a deeper rufous or red-brown, barred only on the lower tail-coverts.

*Young.* Another specimen, which looks like a young male, also in the Dresden Museum, is very dark brown above, and in transition to the purplish brown of the adult; the head chestnut as in the female, and the mantle in process of acquiring the metallic lustre: beneath ochreous brown, distinctly barred; the under wing-coverts, axillaries, flanks, and thigh-coverts deep chestnut-brown. Wing 6.9 inches, tail 8 to 8.5, tarsus 1, bill 0.9.

*Hab.* Sanghir Islands.

#### 17. *MACROPYGGIA DOREYA.*

*Macropygia doreya*, Bp. Consp. ii. p. 57 (1854) (New Guinea); Salvad. Orn. Pap. iii. p. 140; Nehrck. J. f. O. 1885, p. 34 (Waigiou).

*Macropygia turtur* (pt.), Schleg. Mus. P.-B. iv. Columbæ, p. 115.

*Macropygia*, sp., Meyer, Zeitschr. ges. Orn. i. p. 215 (Aru).

I have found the treatment of the *Macropygia* inhabiting New Guinea and the adjacent islands very difficult. A prolonged study of a large series of about fifty specimens (not including those from Batchian, Gilolo, Miosnom, and the New Britain Group, which are more easily distinguished), from New Guinea (North-west and South-east), Aru Islands,

Ké Islands, Jobi, Misor, and Mafor Islands, leads me to the conclusion that they are all races of one species; but it will be most convenient to consider them as distinct, for in the genus *Macropygia*, if you once begin "lumping," it would be difficult to know where to stop, and they are fairly constant local races.

*Adult male* (N.W. New Guinea). Upper surface much as in *M. amboinensis*, bright chestnut-brown, but the head decidedly cinereous, the feathers tipped with vinous; the forehead paler; nape and mantle bright metallic green, with lilac reflections; beneath the throat and breast rich vinaceous, each feather with two dark metallic-green cross bars, blending into tawny buff on the abdomen and deepening into rich reddish chestnut on the vent and lower tail-coverts; under wing-coverts, axillaries, and thigh-coverts chestnut.

*Adult male* (Mysol, Wall., Mus. Brit.). Rather darker brown above, but with traces of metallic green on the head.

Some male specimens are more cinereous on the head, nape, and mantle, some more or less brown, vinous, or lilac on the head, or more or less barred beneath; but the above-described specimen from N.W. New Guinea may be taken as typical.

In the S.E. promontory occur birds which are otherwise typical, but without the faintest indications of barring, and with the upper tail-coverts in the males much brighter rufous. Alongside of these occur birds of which the males have the breast barred, and the head and nape a deep slate-colour; these are identical with the bird which inhabits the D'Entrecasteaux Islands (*M. cinereiceps*, Tristr.).

In the Aru Islands is found almost typical *M. doreya*.

*Adult female*. General colour above chestnut-brown, head rich reddish chestnut; upper surface brown, feathers tipped with chestnut, broadly so on the wing-coverts; the nape and mantle paler, barred with dark metallic green and rufous; upper tail-coverts chestnut-brown; beneath uniform rufous, very faintly barred and freckled, especially on the breast, deepening to chestnut on the under tail-coverts.

*Younger birds* are more mottled and freckled above with

rufous and brown, and beneath the breast-feathers are blackish, with white shafts, and the chin and throat white. Wing 6·3 inches (N.W. Guinea), 6·8 to 6·6 (S.E. New Guinea), tail 8, tarsus 0·9, bill 0·8.

*Hab.* The mainland of New Guinea and many of its adjacent islands, including the Aru group.

The next three species are more or less closely allied to *M. doreya*.

#### 18. MACROPYGIA KEYENSIS.

*Macropygia phasianella* (pt.), Wall. Ibis, 1865, p. 389.

*Macropygia turtur* (pt.), Schlegel, Mus. P.-B. iv. Columbæ, p. 114.

*Macropygia keyensis*, Salvad. Ann. Mus. Civ. Genova, ix. p. 204 (1876); id. P. Z. S. 1878, p. 89; id. Orn. Pap. iii. p. 146.

*Adult male.* Like the typical *M. doreya*, but has the brighter rufous upper tail-coverts of the birds of that species from the S.E. Peninsula. The head pale cinnamon-brown, with a cinereous shade on the occiput, and the nape and mantle metallic green. Beneath it differs from all the specimens I have seen in its pale colour and the conspicuous barring on the whole lower surface, the breast being faintly vinaceous.

It somewhat resembles *M. maforensis*, Salvad.

The type, which was collected by the 'Challenger' Expedition, is in the British Museum.

A *young* specimen from Ké, in the Genoa Museum, is very dark in plumage, and the head beautifully mottled with chestnut and black, from the bases being black and the tips chestnut. There is a trace of metallic green on the mantle, the feathers of which are dark brown with pale tips.

*Hab.* The Ké Islands.

#### 19. MACROPYGIA MAFORENSIS.

*Macropygia turtur* (pt.), Schleg. Mus. P.-B. iv. Columbæ, p. 115 (Mafoor).

*Macropygia maforensis*, Salvad. Ann. Mus. Civ. Gen. ix. p. 204 (1876); id. Orn. Pap. iii. p. 148.

*Adult male.* Like *M. doreya*, but with the head and nape

rich blue-slate, buffy brown on the forehead. Beneath very pale tawny buff, the breast faintly vinaceous.

*Female*. I have seen one specimen, belonging to the Genoa Museum, which, however, is not quite adult, having still the chin and throat white.

*Hab.* The Island of Mafor.

20. *MACROPYGIA CINEREICEPS*.

*Macropygia cinereiceps*, Tristr. Ibis, 1889, p. 558 (Fergusson Island).

Another outlying race of *M. doreya*, like *M. maforensis* and *M. keyensis*, with the breast barred, but the head and nape deep slate-colour.

*Hab.* The D'Entrecasteaux Islands, South-eastern New Guinea.

I have not been able to examine the types, which are in the York Museum, but Canon Tristram assures me that the S.E. New Guinea bird in the British Museum is identical.

Section *b*.—*Breast conspicuously vinaceous, without or with only traces of transverse bars.*

21. *MACROPYGIA BATCHIANENSIS*.

*Macropygia amboinensis*, var. *batchianensis*, Wall. Ibis, 1865, p. 389.

*Macropygia turtur*, Schleg. Mus. P.-B. iv. Columbæ, p. 112.

*Macropygia batchianensis*, Salvad. Orn. Pap. iii. p. 136.

*Adult male*. Very similar to *M. amboinensis*, from which it differs by the breast being conspicuously vinaceous, the feathers tipped with whitish, unbarred, the head generally paler, but in one specimen as in that species.

In two specimens the chin and throat are very rufous, and there are faint traces of barring on the breast. A third specimen, marked *female* (Wallace), is like the male, but slightly barred below. I do not consider this reliable. It is evidently a bought skin. It has, moreover, the largest measurements in the series.

*Adult female*. Another specimen, so marked by Wallace, is of the general rufous-brown type of the females of this group.

Young birds the same, more or less mottled according to age.

Wing 6·4 to 6·8 inches, tail 8·5, tarsus 0·9, bill 0·9.

*Hab.* Batchian, Ternate, Gilolo, *Morty*, *Kajoa*.

## 22. MACROPYGIA GRISEINUCHA.

*Macropygia griseinucha*, Salvad. Ann. Mus. Civ. Gen. ix. p. 204 (1876) (Miosnom), et xii. pp. 430, 431; id. Orn. Pap. iii. p. 140.

This species somewhat resembles *M. doreya*, but is browner above, and the metallic nape and mantle are much more conspicuous.

Two *adult males* are unbarred beneath, as in *M. batchianensis* and *M. carteretia*, which they also resemble in the pale tips to the vinaceous breast-feathers, but they have not the rusty throat of *M. batchianensis*. A third specimen is slightly barred below, and the breast-feathers have no pale tips, in fact it is more like a typical *M. doreya*, intermediate between it and *M. batchianensis*. Wing 6·5 to 6·8 inches, tail 7·7.

The above specimens are in the Genoa Museum, but I have not had the opportunity of seeing a female. It is, however, almost sure to be of the usual type.

*Hab.* The Island of Miosnom.

## 23. MACROPYGIA CARTERETIA.

*Macropygia carteretia*, Bp. Consp. ii. p. 57 (New Ireland); Sci. P. Z. S. 1877, p. 111, et 1879, p. 447 (New Britain).

A well-defined species of the *M. batchianensis* type, but of a much duller and less chestnut-brown above.

*Adult male.* Head of a light vinous brown, paling on the forehead, and conspicuously set off by the broad nuchal patch of plumbeous metallic green, with purple reflections; beneath pale buff, breast clear vinaceous, very markedly tipped with white in adult specimens, getting darker towards the under tail-coverts, which are pale rufous; under wing-coverts and axillaries chestnut.

*Adult female.* Like the females of the whole group.

One *nearly adult* (Mus. Tristr.). Above chestnut-brown; nape and mantle brown, freckled with paler, and slightly barred with darker brown; beneath rufous-brown, slightly

mottled with darker colour on the breast, showing the last traces of immaturity.

*Young.* Of the typical mottled plumage.

Iris lavender, with an outer circle of yellow.

A *young male*, Mowda Island (*Richards*), also in Canon Tristram's Collection, has the iris light red and the bill and feet cherry-red. It is like the adult, but retains traces of the barred nuchal patch, slight traces of barring on the breast, and a few of the head-feathers have black bases.

Wing 7 inches, tail 9, tarsus 0·9, bill 0·85 to 1.

*Hab.* New Britain, New Ireland, Duke of York Island, *New Hanover*.

Group D.—*Adults earthy or rufous brown above, barred beneath, no metallic colours. Sexes alike.*

#### 24. MACROPYGIA MAGNA.

*Macropygia magna*, Wall. P. Z. S. 1863, p. 497 (Timor); id. Ibis, 1865, p. 389; Schleg. Mus. P.-B. iv. Columbæ, p. 108.

*Male, apparently adult.* Head dark cinnamon-rufous; nape and mantle minutely freckled and barred with dark brown and buff; remainder of the upper surface brown, more or less clearly barred and tipped with rufous, especially on the wing-coverts: beneath buff, conspicuously barred with dark brown, the breast-feathers tipped with paler; chin, throat, and lower tail-coverts more rufous and unbarred; under wing-coverts, axillaries, and inner webs on the inner sides of the primaries bright cinnamon-rufous; tail, two outer pairs of feathers rufous, with a long marginal dark spot on the inner web.

Specimens presumably adult seem to vary somewhat, especially in the depth of rufous beneath and the barring of the nape and mantle, which is sometimes almost white.

*Young.* A young male is paler rufous above, and the head has the black mottled appearance of immaturity; the upper tail-coverts are barred; beneath rufous, the breast-feathers being blackish, with rufous tips.

Iris pale golden orange; bill, legs, and feet pinkish purple (*Forbes*). Wing 7·7 inches, tail 8·6 to 9, tarsus 0·95, bill 0·95.

*Hab.* Timor.

25. *MACROPYGIA MACASSARIENSIS.*

*Macropygia macassariensis*, Wall. Ibis, 1865, p. 389.

*Macropygia albicapilla*, Temm. (pt.), Blas. Zeitschr. ges. Orn. iii. pp. 133, 179; Meyer, Ibis, 1879, p. 137.

Allied to *M. magna*. Above mouse-brown, minutely freckled with yellowish buff on the nape and mantle, the shoulder-coverts with traces of rufous tips; beneath, throat and sides of head buffy brown, remainder of the lower surface buff, barred with brown; tail beneath with two outer rectrices rufous, marked with a brown spot on the inner web as in *M. magna*; under wing-coverts, axillaries, and margin of the inner web of the primaries rufous; the shoulders dark brown. Wing 7.5 inches, tail 8, tarsus 0.95, bill 0.95.

Professor Blasius and Dr. Meyer have been in error (*ll. cc.*) in assuming that because there are two varieties in the adult plumage of *M. albicapilla*, one of them must be *M. macassariensis*, Wall.

One specimen, which I presume is the type, is in the British Museum. It is marked *M. macassariensis* in Mr. Wallace's writing. It does not belong to the same group as *M. albicapilla*, but to the small group of which *M. magna* and *M. timor-laoensis*, Meyer, are the only other species.

*Hab.* Macassar.

26. *MACROPYGIA TIMOR-LAOENSIS.*

*Macropygia*, sp., Scl. P. Z. S. 1883, pp. 51, 195, 200.

*Macropygia timor-laoensis*, Meyer, Zeitschr. ges. Orn. i. p. 214 (1884).

*Adult male.* Above, head dark brown, tipped with rufous, buff, or white; nape and mantle barred with white and brown or dark metallic green; rest of the upper surface pale hair-brown freckled with white or buff; wing-coverts, secondaries, and tertiaries darker, broadly tipped with rufous; beneath buffy brown, broadly barred with dark brown, which has metallic purple reflections on the breast; lower tail-coverts rufous, unbarred; under wing-coverts bright cinnamon-rufous; the two outer tail-feathers only, as in the last two

species, with marks on the inner web. Wing 7·5 to 7·7 inches, tail 8 to 8·3, tarsus 1, bill 1.

The sexes appear to be alike. Specimens vary considerably in the shade of brown as well as in the degree of barring.

Dr. Meyer has kindly lent me the types from the Dresden Museum; one is much darker than others above and much more rufous below, most likely a younger bird.

*Hab.* Timor-laut.

The next group is a well-marked one, and has been separated by Bonaparte as *Reinwardtænas*. It looks exactly like *Macropygia* except in plumage. I have retained the generic title because it may be found, when *Reinwardtænas* is anatomically examined, that it differs from *Macropygia*, and, further, had I suppressed it, a new title would have become necessary for *R. minor*, Schlegel, since that name is already preoccupied by Swinhoe for the Hainan race of *M. tusalia*. The tail is exactly as in *Macropygia*.

Group E.—*Of two colours, chestnut or slate and white; of large size.*

GENUS II. REINWARDTÆNAS, Bp. Consp. ii. p. 59 (1854).

I. REINWARDTÆNAS REINWARDTI.

*Columba reinwardti*, Temm. Pl. Col. 248 (Celebes); Knip, Fig. ii. pl. 6.

*Reinwardtænas reinwardti*, Wald. Trans. Z. S. viii. p. 85 (p. 185); Salvad. Orn. Pap. iii. p. 126.

*Adult.* Head, neck, and mantle pale lavender, darkest on the latter; primaries and wing-coverts dark brown, with a purplish tinge; the remainder of the upper surface rich chestnut; beneath nearly pure white as far as the abdomen, which is lavender, getting deeper on the lower tail-coverts; rectrices, two outer pairs pale lavender, with a transverse bar and tip of brown, the next pair barred with brown and tipped with chestnut, the two next pairs chestnut, with a brown base and a lavender bar; under wing-coverts dark slaty, axillaries lavender.

Sexes alike.

Specimens from New Guinea have the breast pale lavender in place of pure white.

*Young.* A young female from Andai has the upper surface brown, changing into chestnut, the tail and wing-coverts as in the adult, but much deeper chestnut; beneath, from the breast, as in the adult: otherwise all the parts which are lavender or white in the adult are dull earthy brown, with a few lavender feathers tipped with rufous appearing on the head and neck. Wing 8·7 to 9·3 inches, tail 10 to 12, tarsus 1·1, bill 1 to 1·1.

*Hab.* Lombock, Flores, Celebes, and New Guinea, including nearly all the intervening islands from Morty in the north to Amboina in the south.

## 2. REINWARDTÆNAS MINOR.

*Macropygia reinwardti minor*, Schleg. Mus. P.-B. iv. Columbæ, p. 106 (Soëk).

*Reinwardtænas minor*, Salvad. Orn. Pap. iii. p. 129.

I have not had the opportunity of examining specimens of this species, but it is described by Count Salvadori as being much smaller than the last and of a much purer white.

*Hab.* The Island of Misor.

## 3. REINWARDTÆNAS BROWNI.

*Macropygia browni*, Scl. P. Z. S. 1877, p. 110.

*Reinwardtænas browni*, Salvad. Orn. Pap. iii. p. 130.

*Adult* (type). Like *R. reinwardti*, but all the chestnut parts replaced by slaty black; the four outer tail-feathers with a pale slaty patch across the middle.

Sexes alike.

Wing 9 inches, tail 10, tarsus 1·1, bill 1·1. Iris light yellow, bill and feet cherry (*Richards*). Iris blue, with a broad orange margin; legs red (*Brown*).

*Hab.* New Britain, Duke of York Island.

## GENUS III. TURACÆNA, Bp.

It has been the custom hitherto to treat *Turacæna* as an ally of *Macropygia*; and perhaps rightly so, for its habits

seem to be somewhat similar. On the other hand, the tail is not that of *Macropygia*, being quite plain and much less graduated.

I am not aware that the anatomy of *Turacæna*, as distinguished from *Macropygia*, has ever been described, but I fully expect to find that when its internal structure is examined it will be found necessary to remove it from its present position.

GENUS *TURACÆNA*, Bp. Consp. ii. p. 58 (1854).

“Orbitæ nudæ, pedes brevissimi, cauda minus graduata.”

Type *Columba manadensis* (Q. & G.).

Confined to the Australian Region.

I. *TURACÆNA MANADENSIS*.

*Columba manadensis*, Quoy et Gaim. Voy. Astrolabe, Zool. i. p. 248, pl. 30 (1830) (Manado).

*Turacæna manadensis* (Q. & G.), Wald. Trans. Z. S. viii. p. 85 (p. 185); Meyer, Ibis, 1879, p. 137.

*Adult*. Head and throat white; occiput, nape, mantle, and breast bright metallic green, the feathers being brown at the base, and metallic green at the tip, with a shade of dark blue between. Remainder of the plumage very dark slate, with a shade of purple on the upper surface, and the metallic green breast gradually blending into purplish slate on the belly.

Sexes alike.

Wing 7·5 to 8 inches, tail 9, tarsus 1, bill 1. Iris red (*Meyer*). Orbits bare, red; bill and feet black (*Wallace*).

Birds from the Sula Islands are a trifle smaller, but otherwise identical.

It feeds on different fruits, especially that of *Capsicum fastigiatum* (*Wallace*).

*Hab.* Celebes, Sula Islands.

All the birds in the British Museum seem to be adult except one, which is much browner in plumage, especially on the wings and tail; the neck and mantle more plumbeous, with green and bluish-purple reflections.



Australia.	
New Hebrides.	
D'Entrecasteaux Islands.	*
Solomon Islands.	·
New Britain Group.	· * ·
Mafor.	* · ·
Misor.	· · ·
Misonom.	· · * ·
New Guinea.	* · * ·
Batchian, Ternate, Gilolo.	· · * ·
Aru Islands.	* · · ·
Ké Islands.	· * · ·
Bouru, Ceram, Amboyna.	· · · ·
Sanghir Islands.	· · · ·
Sula Islands.	· · · ·
Celebes.	· · · · * ·
Timor-laut.	· · · · * ·
Timor.	· · · · * ·
Flores.	· · · · * ·
Lombok.	· · · · ·
Sulu, Palawan, Philippines.	· · · · ·
Borneo.	· · · · ·
Java.	· · · · ·
Nias.	· · · · ·
Sumatra.	· · · · ·
Malay Peninsula.	· · · · ·
Andamans, Nicobars.	· · · · ·
Burma, Tenasserim.	· · · · ·
Hainan.	· · · · ·
India, Assam.	· · · · ·
I. <i>MACROPYGIA (continued)</i> .	
17. <i>doreya</i> . . . . .	
18. <i>keyensis</i> . . . . .	
19. <i>maforensis</i> . . . . .	
20. <i>cinereiceps</i> . . . . .	
21. <i>batchimensis</i> . . . . .	
22. <i>griseinucha</i> . . . . .	
23. <i>cartaretia</i> . . . . .	
24. <i>magna</i> . . . . .	
25. <i>macassarensis</i> . . . . .	
26. <i>timor-laoensis</i> . . . . .	
II. REINWARDTGENAS.	
1. <i>reinwardti</i> . . . . .	
2. <i>minor</i> . . . . .	
3. <i>browni</i> . . . . .	
III. TURACCENA.	
1. <i>manadensis</i> . . . . .	
2. <i>modesta</i> . . . . .	

2. *TURACÆNA MODESTA.*

*Turacæna modesta*, Temm. Pl. Col. 552; Knip, Fig. ii. p. 31; Wall. Ibis, 1863, p. 486.

Slate-colour, with reflections of green and lilac on the head, nape, and mantle; primaries and tail brown, quite plain.

Sexes alike.

Wing 8 inches, tail 8, tarsus 1, bill 1. Iris brick-red, with an inner tinge of yellow; orbits yellow; bill and feet black (*Wallace*).

*Hab.* Timor.

XXII.—On a new Genus of the Order Columbæ. By Major R. G. WARDLAW RAMSAY, F.L.S., F.Z.S.

In the 'Proceedings of the Linnean Society of New South Wales,' vol. vii. p. 116 (1883), Mr. W. A. Haswell has a paper on the "Anatomy of *Turacæna*," relating to the so-called *Turacæna crassirostris*, Gould, which in reality does not belong to that genus, as the tail alone is sufficient to show.

Mr. Haswell proves that this species is not a *Macropygia*, and moreover belongs to the subfamily *Phapinæ* rather than to the *Columbinæ*, having no cæca, while an ambiens muscle is present. The shape of the gizzard also removes it from *Macropygia*.

The general appearance of *Turacæna crassirostris* is that of *Macropygia*, and it has a tail resembling that genus; but it has a very massive bill, resembling *Didunculus*, and the occipital feathers are lengthened into a crest, somewhat as in *Ocyphaps lophotes*.

For this bird I propose the new generic name

CORYPHENAS, gen. nov.

1. CORYPHENAS CRASSIROSTRIS.

*Turacæna crassirostris*, Gould, P. Z. S. 1856, p. 136 (Gua-

dalcanar); Wall. Ibis, 1865, p. 391; Sclat. P. Z. S. 1878, p. 673; Ogilvie-Grant, P. Z. S. 1888, p. 199.

*Reinwardtænas crassirostris*, Salv. Orn. Pap. iii. p. 131.

*Adult.* Above, head dusky brown; occipital feathers lengthened into a greyish-brown crest; whole plumage slate-colour, darkest on the upper surface; three outer pairs of tail-feathers with a lavender central bar. Sexes alike.

*Young.* A young male (Guadalcanar, 'Voy. of Herald') in the British Museum, which is the type of the species, has the head dark brown, tipped with dark chestnut; the general plumage above of a much darker slate-colour; beneath dark brown, passing into the slate of the adult. Iris reddish brown; bill and legs carmine (*Woodford*). Iris and orbital skin carmine; bill and legs bright red.

*Hab.* Guadalcanar, Solomon Islands.

### XXIII.—Notices of recent Ornithological Publications.

[Continued from p. 124.]

#### 34. *Allen on the Genus Elainea.*

[Remarks on Individual and Seasonal Variation in a large Series of *Elainea* from Chapada, Matto Grosso, Brazil, with a Revision of the restricted Genus *Elainea*. By J. A. Allen. Bull. Amer. Mus. Nat. Hist. ii. p. 183.]

The receipt of a fine series of Tyrants of the genus *Elainea* in Mr. H. H. Smith's extensive collection from Matto Grosso has induced Mr. Allen to take up this difficult subject. Drawing upon other sources besides, Mr. Allen accumulated about 400 specimens for comparison, and amongst them several important types.

Amongst the conclusions arrived at by Mr. Allen is that the concealed white crest of *Elainea* is merely a feature of the breeding-plumage in both sexes. This enables him to unite *Elainea mesoleuca* with *E. pagana*, as has been already suggested might have to be done, or rather with *E. albiceps*, which is treated as a subspecies of *E. pagana*. The other species of *Elainea* are noted and commented upon. As Mr. Salvin has now positively decided that his *Elainea*

*arenarum* = *Sublegatus glaber*, we do not see why Mr. Allen should demur to accepting this identification, in spite of the apparent dissimilarity of the two figures.

35. *Bocage on Birds new to the Island of St. Thomas, West Africa.*

[Sur deux espèces à ajouter à la Faune Ornithologique de St. Thomé. Par J. V. Barboza du Bocage. Journ. Sci. Math. Phys. e Nat. Lisboa, 1889, p. 142.]

Prof. Barboza du Bocage adds two species to the avifauna of the West-African island of St. Thomas. One of these is *Euplectes aureus* (Gm.), also known from Benguela, and the other *Nectarinia thomensis*, a new species, peculiar to the island.

36. *Bartlett on Weavers and Finches.*

[A Monograph of the Weaver-birds (Ploceidæ) and Arboreal and Terrestrial Finches (Fringillidæ). By Edward Bartlett. Parts III.-V. 4to. Maidstone: 1889.]

We are glad to see that Mr. Edward Bartlett is making good progress with his illustrated work on the Weaver-birds and Finches. Three parts were issued in 1889. The drawings by Mr. F. W. Frohawk are in many instances very good, and the colouring is generally well executed.

The species figured in the three parts are the following:—

PART III., Jan. 1889.

<i>Munia fuscata.</i>	<i>Coccothraustes personatus.</i>
— <i>malacca.</i>	— <i>melanurus.</i>
<i>Phrygilus fruticeti.</i>	<i>Euplectes flammiceps.</i>
<i>Pyrrhula erithacus.</i>	

PART IV., Aug. 1889.

<i>Malimbus malimbicus.</i>	<i>Pyrrhula erythrocephala.</i>
— <i>cristatus.</i>	<i>Cardinalis phœniceus.</i>
<i>Munia atricapilla.</i>	<i>Phrygilus alaudinus.</i>
— <i>sumatrensis.</i>	

## PART V., Nov. 1889.

Ploceus nigerrimus.	Munia ferruginosa.
— castaneofuscus.	— maja.
Paroaria dominicana.	— pallida.
Munia minuta.	— melæna.
— brunneiceps.	— forbesi.
— formosana.	— spectabilis.

37. Chapman on *Amazilia æneo-brunnea*.

[Further Note on *Amazilia æneo-brunnea*. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist. ii. p. 182.]

Mr. Chapman has discovered that his *Amazilia æneo-brunnea* (*op. cit.* p. 163) is an "artefact," composed of the body of *Chrysolampis moschita* and the head and neck of *Chlorostilbon hæberlini*.

## 38. Hickson's 'Naturalist in North Celebes.'

[A Naturalist in North Celebes, a Narrative of Travels in Minahassa, the Sangir and Talaut Islands, with Notices of the Fauna, Flora, and Ethnology of the districts visited. By Sydney J. Hickson. London: Murray, 1889.]

Mr. Hickson's principal object in visiting the Malay Archipelago was to study coral-reefs and their structure, for which purpose he selected Talisse Island, situated in the Straits of Banka, north of Celebes, as his principal residence. He also visited the Sangir and Talaut Islands, between Celebes and the Philippines, and made an excursion into Minahassa. Mr. Hickson naturally devoted his chief attention to marine animals, but gives an excellent chapter on the land-fauna of Talisse Island, and introduces other remarks about birds. Mr. Hickson is decidedly of opinion that the white-billed *Tanygnathus* of Celebes, which has been called *T. albirostris*, and is regarded by Mr. Wallace as "certainly distinct," is only the hen of *T. muelleri* (*cf. op. cit.* p. 86). At Salibabu, one of the Talaut Islands, the brilliant little red and blue Lory, *Eos indica*, was found to be abundant, and numerous living specimens were obtained from the natives. Mr. Hickson observes that it is curious that this bird should be so

common in the Talaut Islands, comparatively rare in the neighbouring group of Sangir, and unknown in the Celebes.

39. *Kempen on Pallas's Sand-Grouse in Northern France.*

[Séjour des *Syrnhaptés* dans le Nord de la France en 1888. Par Ch. Van Kempen. Bull. Soc. Zool. France, xiii. p. 145, et xiv. p. 18.]

M. Kempen gives particulars of the occurrence of *Syrnhaptés paradoxus* at Dunkirk, St. Omer, and in other localities in the north of France, from May to December 1888.

40. *Lumholtz's Adventures in Queensland.*

[Among Cannibals: an account of Four Years' Travels in Australia and of Camp-Life with the Aborigines of Queensland. By Carl Lumholtz. London: Murray, 1889.]

It has been left to a Norwegian naturalist to give us the most graphic and entertaining account that has yet been written of the wilds of the English colony of Queensland and its native tribes. Mr. Lumholtz's narrative of his life and adventures in company with the blacks of the Herbert-River district will interest and instruct every one, and his pages are full of information on the animal and vegetable life of the country which he visited.

Many passages relate to the bird-life of Northern Queensland, where the avifauna has many peculiarities and possesses a strong Papuan element, as evidenced by the presence of the Cassowary and the Megapode. The playing-place of a rare Bower-bird (*Scenopæus dentirostris*) was discovered (p. 139); the "monotonous and persistent chattering" of the "Towdala" (*Orthonyx spaldingi*) was listened to; the King-Pigeon (*Megaloprepia magnifica*) was found breeding (p. 214); and the beautiful Parrot, *Platycercus pulcherrimus*, was observed to excavate its nest in the hillocks raised by the Termites or white ants. Numerous other allusions to birds will be found in Mr. Lumholtz's pages, and the whole volume is well worthy of perusal for those who have any taste for natural history.

## 41. Meyer on rare Paradise-birds.

[Beschreibung der bisher unbekanntenen Weibchen von *Astrarchia stephaniae* und *Epimachus macleayanae*. Von A. B. Meyer. J. f. O. 1889, p. 321.]

Dr. Meyer describes the hitherto unknown females of *Astrarchia stephaniae* and *Epimachus macleayanae* from specimens obtained by Mr. Goodwin when in company with Sir William Macgregor on his recent expedition up the Owen-Stanley Mountains in South-eastern New Guinea\*.

## 42. Meyer and Helm's Report on the Ornithological Observing-Stations for Saxony for 1888.

[IV. Jahresbericht (1888) der ornithologischen Beobachtungstationen im Königreich Sachsen, bearbeitet von Dr. A. B. Meyer und von Dr. F. Helm. Abb. u. Bericht d. k. zool. u. anthropol.-ethnograph. Mus. Dresden, 1889.]

Of this report we wish only to repeat the terms of commendation which we had the pleasure of bestowing on the last of the same series (see *Ibis*, 1889, p. 120). The observers on the present occasion were 122 instead of 134 in number. The observations were made at 111 stations, and relate to 213 species. Nineteen of these are new to the Saxon list.

## 43. Nicholson's Translation of Sundevall's 'Tentamen.'

[Sundevall's Tentamen. [Methodi Naturalis Avium disponendarum Tentamen.] Translated into English, with Notes, by Francis Nicholson, F.Z.S. London: R. H. Porter, 1889.]

We cannot say that we think that there was any absolute necessity for a translation into English of Sundevall's well-known work. The most important parts of the 'Tentamen' are given in Latin, and even Swedish itself is not a very difficult language for an educated Englishman. But we must nevertheless thank Mr. Nicholson for the pains he has taken in the production of the present volume, and agree

\* Similar specimens were exhibited by Mr. Goodwin at the Meeting of the Zoological Society of London on November 19th last (see P. Z. S. 1889, p. 451). These were subsequently purchased by Mr. Seebohm and presented to the British Museum of Natural History.

with him in the desire that its issue may tend to familiarize ornithological students in this country with Sundevall's very important work.

Mr. Nicholson has added some appropriate footnotes to the translation, and has prefaced it with a portrait of the author and a notice of his life. Two appendices contain a summary of Sundevall's system and the outlines of two amended arrangements of the Accipitres and Thrushes, which were published subsequently to the 'Tentamen.'

#### 44. Ninni on the Venetian Long-tailed Titmouse.

[Sulle recentissime opinioni intorno alle Specie Venete del Genere *Acredula*, breve note di A. P. Ninni. 8vo. Venezia: 1889.]

Sign. Ninni maintains, in contradiction to what is stated in the 'Inchiesta Ornitologica' (v. s. p. 114), that the prevalent form of *Acredula* in Venetia is *A. irbii*, not *A. rosea* nor *A. caudata*.

#### 45. Noll on Extinct Birds.

[Die Veränderungen in der Vogelwelt im Laufe der Zeit. Von F. C. Noll. Bericht d. Senckenb. naturf. Gesell. Frankfurt am M. 1889, p. 77.]

A good popular essay on "the alterations of the Bird-world during the progress of time" was read by Dr. F. C. Noll at the Anniversary Meeting in 1888 of the Senckenbergian Society of Naturalists of Frankfort-on-the-Main, and is now published, with additions, in their 'Bericht.' It contains nothing novel. A useful list of the literature on the subject is appended.

#### 46. Oates's 'Birds of British India.'

[The Fauna of British India, including Ceylon and Burma. Published under the authority of the Secretary of State for India. Edited by W. T. Blandford. Birds.—Vol. I. By Eugene W. Oates. London: Taylor and Francis. 1889.]

More than twenty-five years have now elapsed since Jerdon's well-known 'Handbook of Indian Birds' was completed. This is a long period for the progress of modern

science, and it was quite time that another book on the avifauna of British India should be written to take its place. No one will dispute the sagacity of Mr. Blanford in selecting the well-known author of the 'Birds of British Burmah' to undertake this arduous task, of which the first instalment is now before us.

Three volumes only have been allowed for the portion of the 'Fauna of British India' relating to the Birds. As the number of species added to the list since Jerdon's time has been increased "by more than one half," this will make it rather a "tight fit," we should say. But after our friend Mr. Howard Saunders has performed the feat of compressing the birds of Great Britain into a single volume, Mr. Oates may well hope to be able to get through his task in three.

In the present volume Mr. Oates treats of the first half of the Passeres, and gives an account of the Corvidæ, Crateropodidæ, Sittidæ, Dicruridæ, Certhiidæ, Regulidæ, Sylviidæ, Laniidæ, Oriolidæ, Eulabetidæ, and Sturnidæ belonging to the Indian avifauna.

The Passeres and their subdivisions are discussed in some preliminary remarks, but the scheme of general classification of Birds to be adopted is postponed pending the complete elaboration of Mr. Seebohm's new 'Systema Avium.' Mr. Oates shortly defines the Passeres as having the "deep plantar tendons passerine; the palate ægithognathous." The first part of this definition is not, we think, very successful, as the plantar tendons of the "Passeres" must necessarily be "Passerine," but the peculiar structure of these tendons is subsequently clearly explained.

As regards the difficult question of the arrangement of the Acromyodian Passeres, Mr. Oates proceeds by dividing off the Diccæidæ as possessing a serrated mandible, and the Alaudidæ as having a scutellated tarsus. The remaining families then fall into two groups, according as they have nine or ten primaries. While these characters and others subsequently mentioned seem to answer well for the purpose of forming an analytical key, we must say that the result arrived at by their aid is not a very natural classification.

For example, we do not think the Dicruridæ are well placed between the Sittidæ and Certhiidæ or the Hirundinidæ between the Ploceidæ and Fringillidæ. We are also a little surprised to find the Paridæ placed in the same family as the Corvidæ, though we fully admit that there is something to be said in favour of the affinities of these two groups. But the fact is that the Acromyodian Passeres are all so closely allied that the exact arrangement to be adopted is a matter of comparatively little moment.

As regards the general execution of the work, we think that Mr. Oates deserves the greatest credit for the labour and pains he has bestowed upon it. The descriptions are nicely written and concise, and the accounts of the distribution and habits well drawn up. The woodcuts and keys to the species add greatly to the value of the book, which will be of the utmost value to the progress of Indian ornithology.

The following generic terms appear to be used for the first time:—

1. *Scaerhynchus*, fam. Corvidæ: type *Paradoxornis ruficeps*, Blyth.
2. *Thringorhina*, fam. Crateropodidæ: type *Turdinus guttatus*, Tickell.
3. *Rhopocichla*, fam. Crateropodidæ: type *Brachypteryx atriceps*, Jerdon.
4. *Sittiparus*, fam. Crateropodidæ: type *Minla cinerea*, Blyth.
5. *Lioparus*, fam. Crateropodidæ: type *Proparus chryseus*, Hodgson.
6. *Hilarocichla*, fam. Crateropodidæ: type *Pteruthius rufiventer*, Blyth.
7. *Alophoiscus*, fam. Crateropodidæ: type *Ixos phaeocephalus*, Hartlaub.
8. *Xanthiscus*, fam. Crateropodidæ: type *Pycnonotus flavescens*, Blyth.
9. *Dissemurulus*, fam. Dicruridæ: type *Dicrurus lophorinus*, Vieill.
10. *Elachura*, fam. Certhiidæ: type *Troglodytes punctatus*, Blyth.

11. *Agropsar*, fam. Sturnidæ: type *Gracula sturnina*, Pallas.

We may remark that *Sittiparus* has been already used by Selys-Longchamps for a genus of Paridæ. See Bull. Soc. Zool. France, ix. p. 58 (1884).

47. *Oates's 'Matabele-land.'* (Second edition.)

[Matabele-land and the Victoria Falls, a Naturalist's Wanderings in the Interior of South Africa, from the Letters and Journals of the late Frank Oates, F.R.G.S. Edited by C. G. Oates. Second edition. London: French & Co., 1889.]

We noticed in 1882 the first edition of this interesting account of the journeyings of the late Frank Oates, who died of fever in Matabele-land in 1875 (see *Ibis*, 1882, p. 109). The unsold copies of the first edition having been destroyed by fire at the publishers, Mr. C. G. Oates has prepared a second, to which certain ameliorations and additions have been made. In his essay on the birds collected by Frank Oates, Mr. Sharpe, as we are informed in the preface, has "reconstructed the classification of the species on what he conceives to be a sounder basis, has brought the nomenclature up to date, and has made some necessary revisions."

48. *Pleske's 'Ornithographia Rossica.'*

[*Ornithographia Rossica*. Die Vogelfauna des Russischen Reichs von Th. Pleske. Band II. Lief. 2. Laubsänger (*Phylloscopus*). 4to. St. Pétersbourg: 1889.]

The second part of this important work, of which we have already spoken (see *Ibis*, 1889, p. 566), is now before us. It contains an account of the *Phylloscopi* of the Russian Empire, which are numerous, and form a highly characteristic group of the Palearctic avifauna. Mr. Pleske recognizes 17 species, and divides them into three subgenera—*Acanthopneuste*, *Phylloscopus*, and *Reguloides*.

The single plate contains figures of the following species:—*Phylloscopus* (*Acanthopneuste*) *borealis*, var. *xanthodryas*; *P.* (*Acanthopneuste*) *nitidus*; *P.* (*Acanthopneuste*) *viridanus*;

*P. (Acanthopneuste) plumbeitarsus*; *P. (Acanthopneuste) tenellipes*; *P. (Acanthopneuste) occipitalis* (2 figs.).

49. *Pleske on the Birds of Prjevalski's Journeys in Central Asia.*

[Wissenschaftliche Resultate der von N. M. Przewalski nach Central-Asien unternommenen Reisen. Auf Kosten einer von seiner kaiserlichen Hoheit dem Grossfürsten thronfolger Nikolai Alexandrowitsch gespendeten summe herausgegeben von der kaiserlichen Akademie der Wissenschaften—Zoologischer Theil. Band II., Vögel. Bearbeitet von Th. Pleske. Lief. I. Folio. St. Petersburg: 1889.]

We are much pleased to find that a complete account of the valuable zoological results of Prjevalski's expeditions into Central Asia has been planned and commenced. It will be issued by the I. Academy of Sciences of St. Petersburg, at the cost of the Crown Prince Nicholas, who could hardly have devoted his means to a more worthy object. The second volume, devoted to the birds, is being prepared by Herr Th. Pleske, who is in charge of the Bird-Collection of the Academy's Museum, and the first livraison is now before us.

The present number commences with the Turdoid Passeres, and treats of the genera *Turdus*, *Cinclus*, *Saxicola*, *Ruticilla*, and their allies. The text is in Russian and German, in parallel columns, and is thus accessible to the whole civilized world. Detailed lists are given of the specimens of each species obtained by Prjevalski. The following species are figured in this part:—

Plate I.: *Pratincola insignis*, *Calliope tschebaiewi*, and *Dumeticola major*.

Plate III.: *Arundinax ædon*, *Herbivocula armandi*, *H. indica*, *H. fuscata*, and *H. affinis*.

50. *Ridgway on the Genus Xiphocolaptes.*

[A Review of the Genus *Xiphocolaptes* of Lesson. By Robert Ridgway. Proc. U.S. Nat. Mus. xii. p. 1.]

Twelve species and subspecies of this giant genus of the Dendrocolaptidæ are admitted as valid in Mr. Ridgway's

essay, and amongst them *Xiphocolaptes sclateri*, of Mexico, *X. virgatus* (locality unknown), *X. ignotus*, from Ecuador (?), *X. cinnamomeus*, from Eastern Brazil, and *X. major castaneus*, from Bolivia, are described as new. We may perhaps venture to question the advisability of founding new species of this excessively difficult group upon single specimens from uncertain localities.

#### 51. Ridgway on the Genus *Sclerurus*.

[A Review of the Genus *Sclerurus* of Swainson. By Robert Ridgway. Proc. U.S. Nat. Mus. xii. p. 21.]

Mr. Ridgway reviews the members of this somewhat difficult genus of Dendrocolaptidæ, and recognizes 9 species. He describes as new *S. canigularis*, from Costa Rica, and *S. lawrencii*, from "Bahia," but "locality probably erroneous." He also resuscitates *S. fuscus*, from the "Upper Amazons" (= *Tinactor fuscus*, Max., part.), but it is difficult to understand how Pr. Max.'s type can have come from such a locality.

#### 52. Ridgway on Birds from Galapagos.

[Scientific Results of Explorations of the U.S. Fish-Commission Steamer 'Albatross.'—I. Birds collected on the Galapagos Islands in 1888. By Robert Ridgway. Proc. U.S. Nat. Mus. xii. p. 101.]

In April 1888 the U.S. Fish-Commission s.s. 'Albatross' visited the Galapagos Islands, and the naturalist of the Expedition, Prof. Leslie A. Lee, assisted by Mr. Charles H. Townshend and Mr. Thomas Lee, made a very interesting collection of birds there, which, we are told, "would have been more extensive had not other duties more closely connected with the objects of the cruise prevented." Be this as it may, examples of 47 species were actually obtained, out of 69 now known to inhabit the group, and of these several are new to science. Besides this two islands were visited upon which no previous collections had been formed, and considerable additions have been made to our knowledge of the exact localities of the Galapagan species, so that Prof. Lee and his

assistants have accomplished a most meritorious piece of work, of which Mr. Ridgway now gives us the results.

The new species described are :—*Nesomimus macdonaldi*, from Hood I. ; *N. personatus*, from Abingdon I. ; *Geospiza conirostris* and *G. media*, from Hood I. ; *Cactornis brevirostris*, from Chatham I. ; *C. hypoleuca* (if not *C. pallida*, Sel. et Salv.), from James I. ; *Camarhynchus townsendi*, from Charles I. ; *C. pauper*, from Charles I. ; *Pyrocephalus minimus*, from Chatham I. Besides these the form of *Pæcilonetta bahamensis* of the Galapagos is separated as *P. galapagoensis*. The Galapagan *Mimi* are constituted a new genus, *Nesomimus*, distinguished by their longer and more compressed bill and longer tarsus. Two specimens of the rare Gull *Creagrus furcatus*, an adult male and an adult female in perfect summer plumage, were obtained on Dalrymple Rock, Chatham I., and are fully described by Mr. Ridgway. A table, showing the different islands of the group in which the 69 species now known to occur in the Galapagos have been found, is added, and is followed by lists of the species met with on each island. "It is very evident," says Mr. Ridgway in his concluding remarks, with which we quite agree, "that the avifauna of the Galapagos is by no means yet exhausted as a field for promising research in the problem of derivative origin of species." Albemarle Island, the largest of the group, is still almost untouched, two others (Wenman and Culpepper) have not been explored at all, whilst "it can safely be said that on none of the islands has anything like a thorough investigation yet been made."

### 53. *Salvadori on Additions to Papuan Ornithology.*

[Aggunte alla Ornitologia della Papuasias e delle Molucche. Per Tommaso Salvadori. Parte prima: *Accipitres, Psittaci, Picarie*. 4to. Torino: 1889.]

Seven years are past since the third and last volume of Count Salvadori's 'Ornitologia della Papuasias e delle Molucche' was published. The author now proposes to issue a supplement to his former excellent piece of work, in order to bring our knowledge of the subject up to the present period. Of

this supplement, the present part, now before us, contains an account of the recent contributions made to our knowledge of the Rapaces, Parrots, and Picarians of the Papuan Sub-region. The additional species are 35 in number, amongst which four receive new names, namely, *Urospizias polionotus*, from Timor-laut, *Cacomantis arfakianus*, from New Guinea, *Lamprococcyx poliurus*, from Taraway I., and *Tanysiptera meyeri*, from New Guinea.

54. *Salvadori on Pallas's Sand-Grouse in Italy.*

[Le ultime notizie intorno al Sirratte in Italia negli anni 1888 e 1889, raccolte da Tommaso Salvadori. Boll. Mus. Anat. Comp. Torino, vol. iv. no. 70.]

This is a second supplement to Count Salvadori's account of the occurrences of Pallas's Sand-Grouse in Italy in 1888 and 1889. We have already noticed the original paper (see Ibis, 1889, p. 130) and the first supplement (*op. cit.* p. 391). Some of the few survivors of the invasion were met with in the first three months of 1889, since when nothing more has been heard of them. Count Salvadori appends to this paper a very convenient tabular statement of all the Italian occurrences.

55. *Saunders's 'Manual of British Birds.'*

[An Illustrated Manual of British Birds. By Howard Saunders. Parts XVI.-XX. 8vo. London: 1889.]

Our former colleague's 'Manual of British Birds' is now complete, and the author has retired to the continent for a short period to enjoy a better climate and well-earned repose. The compact volume thus quickly elaborated has met with universal and well-merited approval. The first number was issued on April 1st, 1888, and the twentieth and last on Nov. 1st, 1889. The birds considered by the author, in this last authority on the subject, to be entitled to be called "British" are 367 in number, exclusive of several doubtful forms on which opinions differ. The species ascertained to have bred within the United Kingdom during the present century are, as we

are informed in the preface, about 200 in number. Seventy more are "non-breeding wanderers" which have occurred fewer than six times, and 59 others "more or less infrequent visitors," while 38 annually make their appearance on migration or during the colder months.

We are much pleased to hear that Mr. Howard Saunders has it in contemplation to prepare another volume, containing a similar condensed account of such European species of birds as are not yet known to occur in the British Islands.

#### 56. *Shufeldt on the Osteology of the Water-Birds.*

[Contributions to the Comparative Osteology of Arctic and Sub-Arctic Water-Birds. Part IV. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Anat. & Physiol. xxiii. p. 537.]

Dr. Shufeldt continues his studies on the osteology of the Arctic and Subarctic Water-birds (*cf.* Ibis, 1889, p. 568). He now discusses the Auklets (*Ceratorhyncha*, *Ptychorhamphus*, *Simorhynchus*, &c.), of which, however, he has failed to secure a good series for examination, except in the case of *Simorhynchus*. He describes the skeletons of *Simorhynchus pusillus*, *S. cristatellus*, and *Cyclorhynchus psittaculus*, and makes various remarks as to their resemblances.

#### 57. *Shufeldt on the Macrochires.*

[Studies of the Macrochires, Morphological and otherwise, with the view of indicating their Relationships and defining their several Positions in the System. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Linn. Soc. (Zoology) xx. p. 299.]

This long and elaborate memoir contains a mine of wealth in the way of observations, and, as is always the case in Dr. Shufeldt's papers, is excellently illustrated, but is, perhaps, deficient in definite conclusions. The author harps upon his old theme of the distinctness of the Swifts and Humming-birds. He now, however, we are pleased to see, withdraws from his former position that the Swifts should be arranged among the Passeres, near the Swallows, and proposes to form them into an Order of themselves under the title "Cypseli," to be placed "just outside the enormous

Passerine circle." The "Trochili," as already suggested, should form a separate order, as he is now more than ever convinced. In the skeleton of the Trogons Dr. Shufeldt finds nothing "that in any way points to their being related, even remotely, to the Caprimulgi."

58. *Shufeldt on the Herons.*

[Osteological Studies of the Subfamily Ardeinae. Parts I. & II. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Comp. Med. & Surg. x. pp. 218, 287.]

In these two articles Dr. Shufeldt discusses the osteological characters of *Ardea* and its near allies. The woodcut illustrations are of the usual excellence. At the conclusion the chief points are summarized in a series of twenty-six definite statements.

59. *Smith on the Birds of Lake Brunner District, New Zealand.*

[On the Birds of Lake Brunner District. By W. W. Smith. Trans. New-Zealand Inst. xxi. p. 205.]

Mr. W. W. Smith gives us some very nice field-notes on the birds of the district of Lake Brunner, Grey County, on the west coast of the South Island of New Zealand, where "the bush still remains in its primeval state, and many of the anomalous and more specialized forms, now extinct east of the Alps, enjoy in it a fairly genial home." Among the species still to be met with here are *Stringops habroptilus*, *Nestor meridionalis*, *Orthonyx ochrocephala*, *Xenicus longipes*, and *Creadion carunculatus*, while *Apteryx australis* "exists in considerable numbers in the bush round the Lake." But the new "Midland Railway is now being pushed on through the valley, so that many of these rare forms will very shortly disappear."

## XXIV.—Letters, Extracts, Notices, &amp;c.

WE have received the following letters :—

Northrepps,  
16 December, 1889.

SIR,—A short time since, Mr. H. E. Dresser very kindly permitted the Norwich Museum to acquire by exchange a specimen from Jeddah of the Owl described by Mr. Sharpe and figured in 'The Ibis,' 1886, pl. vi., under the name of *Bubo milesi*.

Mr. Dresser informs me that this specimen has been compared with the type in the British Museum and agrees with it; but I find, on examination, that it also agrees (I think, closely) with the original description of "*Otus abyssinicus*," given by Guérin-Méneville in the 'Revue de Zoologie' for 1843, p. 321.

Mr. Dresser has been good enough to refer, at my request, to the plate of *Otus abyssinicus* in the 'Voyage Abyss.,' Zool. iii. Ois. pl. 3, and writes as follows:—"It is figured without ear-tufts, which is noted in the letterpress as an error, otherwise it would do pretty well for *Bubo milesi*."

In the accompanying letterpress the wing-measurement of *Otus abyssinicus* is given as "35 cent." (nearly equivalent to  $13\frac{3}{4}$  inches), but in the 'Revue de Zool.' no measurements are given.

The following figures relate to the measurements of the wing and tarsus only :—

	Wing. in.	Tarsus. in.
<i>Otus abyssinicus</i> , as given in the 'Voyage Abyss.' . . . .	13·75	.....
<i>Otus abyssinicus</i> , as given by v. Heuglin, and quoted by Sharpe, Striges, p. 227 ..	13 to 15	1·70 to 2
Type of <i>Bubo milesi</i> as described by Mr. Sharpe ..	12·70	2·40
<i>B. milesi</i> from Jeddah, in Norwich Museum .....	13·20	2·40

If the type of *Otus abyssinicus* still exists in Paris, it would be very desirable that an Arabian specimen of *Bubo*

*milesi* should be compared with it; but meanwhile I am disposed to consider *Otus abyssinicus* and *Bubo milesi* as one and the same species, which, in that case, ought to stand as *Bubo abyssinicus*.

I am &c.,

J. H. GURNEY.

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SIR,—I beg leave to point out that Capt. Shelley's identification of my *Estrela nonnula* with *Habropyya tenerrima* (P. Z. S. 1888, p. 31) is an error. In *H. nonnula* the ground-colour of the back is brownish olive; in *H. tenerrima* of Reichenow it is grey, and on this grey there are dark fasciæ not found in *H. nonnula*.

I believe these two species to be quite distinct, and Dr. Reichenow is of the same opinion.

Bremen, Feb. 15th, 1890.

Yours &c.,

G. HARTLAUB.

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Labuan, Borneo,  
Jan. 20, 1890.

SIR,—I wish to place on record the occurrence in Borneo of *Fuligula cristata* (Leach) and of a Phalarope, probably *Lobipes hyperboreus* (Linn.), which has already been indicated as a probable visitant to Borneo by Count Salvadori. The latter specimen was shot at Baram Point in October, but was too much mutilated for preservation. The Duck was shot at Labuan in October, and identified by comparison with the description in the last edition of Yarrell's 'British Birds.'

Yours &c.,

A. H. EVERETT.

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*Birds of the Bellenden-Ker Range, Queensland.*—Appended to the Report of Mr. A. Meston on the Government scientific expedition to the Bellenden-Ker Range in Northern Queensland, which has recently been presented to the Parliament of Queensland, is a report on the zoology of the expedition by Mr. C. A. De Vis, Curator of the Queensland Museum, Brisbane. The expedition started from Cairns on

the sea-coast on June 20th, 1889, and kept the field ten weeks. The well-known Australian collector Mr. Broadbent was attached to it. It is stated that at the height of 5000 feet (nearly the limit of the height of the range) no change of fauna takes place, some of the most familiar birds of Queensland (such as *Pachycephala gutturalis*) being met with in numbers on the top of the mountain, and other more local kinds (e. g. *Scenopæus dentirostris*, *Prionodura newtoniana*, and *Sericornis gutturalis*\*) having been found at all heights and on the summit. The list of birds of which specimens were obtained embraces 79 species, amongst which is an Owl, described as new under the name *Ninox lurida*. Other rare species besides those above mentioned are *Cracticus quoyi*, *Colluricincla boweri*, and *Gerygone flavida*. Nineteen other species are enumerated as observed on Bellenden-Ker by Mr. Broadbent, but not obtained. Mr. Meston also procured a nest and eggs, believed to be those of the remarkable Bower-bird *Prionodura newtoniana*.

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*New extinct Swan in New Zealand.*—At a meeting of the Philosophical Institute of Canterbury, New Zealand, on October 3rd, 1889, Mr. H. O. Forbes, Director of the Canterbury Museum, Christchurch, described an extinct species of Swan from osteological remains which he had discovered while excavating a cave recently exposed at Sumner, on the estuary of the Heathcote and Avon Rivers, a few miles distant from Christchurch.

The bones discovered consisted of three complete coracoids and the proximal and distal portions of the humerus. They differ very little from those of *Chenopsis atrata* of Australia, except in their greater size. The new species has been named *Chenopsis sumnerensis*. The Sumner cave was stated to have been closed before the introduction of *Chenopsis atrata* into New Zealand. The extension of the Swans

\* A new species lately described by Mr. De Vis in the 'Proceedings' of the Royal Society of Queensland from specimens obtained at Herberton by Mr. Broadbent.

to New Zealand in a former epoch was therefore a very interesting fact in ornithology.

*The Generic term Calodromas.*—In February 1884, Mr. Ridgway proposed to change the generic term *Calodromas*, employed by Messrs. Sclater and Salvin in 1873 for a genus of Tinamous, into *Calopezus*, stating that *Calodromas* was preoccupied, "having been used for a genus of Coleoptera by Goudot, 1832 (Rev. et Mag. de Zool.)."

This suggestion unfortunately escaped my notice, and was not alluded to in 'Argentine Ornithology,' where the species in question is called *Calodromas elegans* (Argentine Ornithology, ii. p. 214)\*.

My attention now having been called to this point, I am not quite sure that I can agree with Mr. Ridgway. The term in question was used in the 'Magasin de Zoologie' for 1832 by Guérin (not by "Goudot in the Revue et Mag. Zool. 1832"), and is there written *Calodromus* not *Calodromas*.

As the terms are not quite identical, and as, judging from what Guérin says in his footnote, the derivations are not the same, I see no difficulty in retaining *Calodromas*.

Had both terms been proposed in the same branch of zoology the case might have been different.

P. L. SCLATER.

*Obituary.*—GEORGE CAVENDISH TAYLOR, JOSÉ AUGUSTO DE SOUSA, CARL HUNSTEIN, LADISLAS TACZANOWSKI, JOSÉ ARÉVALO Y BACA, EDWARD THOMAS BOOTH.—We regret, through inadvertence, to have hitherto omitted to record the death of Mr. GEORGE CAVENDISH TAYLOR, formerly a member of the B. O. U., and well known to many of us. Mr. Taylor died at his residence, 42 Elvaston Place, Queen's Gate, on the 30th of July last, at the age of 63 years.

The second son of the late Mr. Frederic Farmer Taylor, of Chyknell, Salop, Mr. Taylor passed the first portion of his life

\* The term was also omitted in Mr. Waterhouse's 'Index Generum Avium,' and although duly mentioned in the 'Zoological Record' for 1884 (Aves, p. 67), was not registered in the Index of New Generic Names to that volume.

as an officer in the 95th Regiment, and served his country in the Crimea and elsewhere. After retiring from the army, he became a director of the London, Chatham, and Dover Railway, and of other commercial undertakings.

Mr. Taylor was an ardent sportsman and an excellent shot, and from early life was a collector of birds, more especially those killed by his own gun, and a skilful preparer of their skins.

In 1857-58 he visited Honduras in connection with the scheme then afloat for carrying an inter-oceanic railway across that country. In company with the preliminary surveying expedition for the proposed line, he crossed that Republic from Fonseca Bay to Omoa, and made a considerable collection of birds, of which he subsequently published an account in this Journal.

In 1861 Mr. Taylor made an expedition to Florida, of which also an account was given to the readers of 'The Ibis.' One of the specialities of Mr. Taylor's private collection of birds was a series of Ruffs (*Machetes pugnax*), illustrative of the highly variable plumage of the male of this bird. This series, we are pleased to be able to announce, has been secured by Prof. Flower for the National Collection.

We subjoin a list of Mr. Taylor's ornithological publications.

- (1) "Account of a Visit to a Nesting-place of the Frigate-bird (*Fregata aquila*, L.)," *Ibis*, 1859, p. 150.
- (2) "On Birds collected or observed in the Republic of Honduras, with a short account of a Journey across that country from the Pacific to the Atlantic Ocean," *Ibis*, 1860, pp. 10, 110, 222, 311.
- (3) "Five weeks in the Peninsula of Florida during the spring of 1861, with Notes on the Birds observed there," *Ibis*, 1862, pp. 127, 197.
- (4) "Birds observed during two Voyages across the North Atlantic," *Ibis*, 1869, p. 388.
- (5) "Ornithological Observations in the Crimea, Turkey, Sea of Azov, and Crete, during the years 1854-55; with Remarks on the Sivash, or Putrid Sea," *Ibis*, 1872, p. 224.

JOSÉ AUGUSTO DE SOUSA, one of the Conservators of the National Museum at Lisbon, and specially in charge of the collection of birds, died at Lisbon on the 13th of June last, at the age of 52 years. When, on the death of Pedro V. of Portugal in 1863, the zoological collections formed by that monarch were transferred to the National Museum, Senhor de Sousa, then one of the two conservators of the Royal Gallery, entered the service of the museum and took charge of the bird-collection. Since that period Senhor de Sousa has been a frequent contributor of short papers on ornithological subjects to the 'Jornal de Sciencias Mathematicas, Physicas e Naturaes.' Most of these refer to specimens in collections received by the National Museum from Angola, Mozambique, and other Portuguese colonies in Africa. Senhor de Sousa also contributed a paper on the ornithology of Timor to the 'Bulletin da Sociedade de Geographia' in 1883, and prepared catalogues of specimens of birds in the National Museum of Lisbon—the Parrots and Birds of Prey in 1869, and the Pigeons and Gallinaceous birds in 1873.

CARL HUNSTEIN, the well-known German bird-collector, perished, as has been lately ascertained, in a cataclysm, on the west coast of New Britain, on the 14th of March, 1888. Hunstein was born about 45 years ago at Homburg, in Hesse-Cassel, and although a man of good education and some means, commenced life as a house-painter. Being unable to indulge his love of sport and out-door life in Europe, he emigrated to America and subsequently proceeded by San Francisco to New Zealand, in order to join the Thames Gold-fields diggings. Thence he passed to Queensland on a similar occupation, and when the New Guinea gold-fever broke out, joined the second or third lot of diggers who started from Cookstown to Port Moresby. As is well known, the gold in New Guinea proved a failure, and Hunstein took to his old occupation of collecting specimens of natural history, sometimes in company with Goldie or Captain Redlich and at other times alone. Most of the discoveries commonly attributed to Goldie are said to have been made by Hunstein,

who was an ardent collector and a faithful and accurate observer of nature. In 1882 Hunstein accompanied Dr. Finsch on his trip up the Laloki River in British New Guinea. In 1884, when Dr. Finsch was proceeding in the 'Samoa' to annex the German portion of New Guinea (now Kaiser-Wilhelm's-land), he met Hunstein at Cookstown, just returned from a most successful collecting-trip in the Horse-shoe Mountains of the Owen-Stanley Range, and obtained from him a splendid series of specimens, which were afterwards described by Dr. Finsch and Dr. Meyer\*.

Knowing the practical value of a man of Hunstein's calibre, Dr. Finsch engaged him for the service of the New Guinea Company of Berlin, but did not succeed in getting him such an appointment as a man of his great experience with natives deserved. Hunstein knew the Papuans and their ways really well, and during nearly seven years' sojourn amongst them never once had occasion to use violent means of defence. When the great tidal wave occurred on the west coast of New Britain, on the 13th of March, 1888, Hunstein was in company with Herr von Below, a coffee-planter from Celebes, along with four Malays and twelve natives prospecting for coffee-lands on that coast. The whole party was overwhelmed, and only two of the natives were saved. No traces have ever been discovered of the victims, and it was long before it was known what had become of them.

LADISLAS TACZANOWSKI.—With much regret we announce the death, on the 17th of January last, after a short illness, of the well-known ornithologist Ladislas Taczanowski, Conservator of the Warsaw Museum. We are indebted to Dr. A. Wrzesniowski, Professor in the University of Warsaw, for the following particulars of his life.

Ladislas Taczanowski was born the 17th March, 1819, at Jablona, in the Palatinate of Lublin. He began his education at home, and was then admitted into the Gymnasium at Lublin, which he left in 1838. After the death of his

\* See *Ibis*, 1886, p. 237, and *Zeitschr. f. d. ges. Orn.* 1885, p. 369.

father, between 1839 and 1859, he cultivated the land to which he had succeeded. He then entered the public service and was employed in special missions for the governor of Radom, where he was entrusted with the formation of a collection of the animals of the Palatinates of Lublin and Radom, as the Government had intended to place similar collections in the chief places of each Palatinate. But this intention was not carried out. In 1855 Taczanowski was appointed Conservator of the Zoological Museum of Warsaw and remained in that post until his death.

From his childhood Taczanowski was distinguished by his love for the study of nature; the habits of birds above all interested him. At first, for want of other materials, he devoted himself to the study of the ornithological fauna of the kingdom of Poland, especially of the Palatinates of Lublin, Radom, and Augustovo. His transference to Warsaw enabled him to pursue his studies with a scientific method. In 1857, the directors of public education in Warsaw delegated Taczanowski to proceed to Paris, where he learnt the best methods of skinning and preserving animals.

The sphere of Taczanowski's scientific studies was considerably extended when, in 1865, Dr. Benoit Dybowski (Professor of the University of Léopol) and Victor Godlewski began to study Eastern Siberia, and when, in 1866, Constantin Jelski established himself at Cayenne and formed, with an admirable zeal and with great success, collections of the representatives of the fauna of that country. All the acquisitions made in Siberia and in Cayenne were sent to Taczanowski, who devoted himself to the study of the ornithological faunas of these countries as well as to that of the Araneids of Cayenne.

In 1863, Counts Alexander and Constantine Branicky made a voyage to the Upper Nile and gathered a rich collection, which they presented to the Zoological Museum of Warsaw. From that time the beneficent influence of the Counts Branicky, especially that of Constantine, began to aid the activity of Taczanowski, an influence which they exercised by furnishing him with the best scientific materials

for his studies. The two Counts provided him with the means of taking a voyage to Algeria, where he spent the winter of 1866-67.

When, in 1871, Jelski moved his quarters to Peru, Count Constantine Branicky made him an allowance on condition that he sent his zoological collections to Taczanowski. In 1875 Jelski was succeeded by Jean Stolzmann, who remained in Peru till 1882, when, in consequence of the war with Chili, he travelled from 1883 to 1885 in Ecuador.

In this way Taczanowski became possessed of rich materials for his great works on the Birds of Siberia and of Peru.

The study of birds was the principal object of Taczanowski's labours, but he also devoted himself to the study of the Araneids. He made a large collection of these animals in the neighbourhood of Warsaw, and published a list of known species; afterwards he described the species of certain families from Cayenne and from Peru.

To Taczanowski the Warsaw Museum is principally indebted for its rich collections; for his relations with the Counts Branicky were turned to the profit of the Museum. But amongst private individuals should be also mentioned the names of Professor Dybowski and M. C. Jelski, who, although not in good circumstances, sent all their collections to the Museum. Count Muiszech and Prince Ladislas Lubomirski also enriched it with their contributions.

Taczanowski was a member of the Society of Naturalists of St. Petersburg, the German Ornithological Society, the Zoological Society of France, the Zoological and Botanical Society of Vienna, the Zoological Society of London, and the American Ornithologists' Union. In 1887 he was made honorary Dr. of Philosophy of the University of Cracow.

His published works and memoirs were numerous, altogether about fifty. Of these the most important are his 'Birds of Poland' (published in 2 vols. at Cracow, in 1882), his 'Ornithology of Peru' (4 vols., 1884-86), and his memoirs on the "Birds of Siberia," in the 'Bulletin of the Société Zoologique de France' and in the 'Proceedings of the Zoological Society of London.'

JOSÉ ARÉVALO Y BACA.—With most sincere sorrow, Lord Lilford writes to us, I announce the death of my esteemed friend Don José Arévalo y Baca, Professor of Zoology in the University of Valencia, who died on January 9th ult. of the prevalent epidemic complicated by affection of the lungs, in his 44th year. His memoir on the Birds of Spain, published in 1887 \*, is, so far as I know, the only one that has hitherto appeared on the ornithology of the whole Iberian Peninsula, and although not devoid of error, is a work of very considerable merit and much laborious research. In judging of this book, English ornithologists must take into consideration not only the very meagre salaries of Spanish University Professors, but also the very scanty supply of modern works of zoological reference that are accessible to them. In the case of Señor Arévalo these difficulties were aggravated by delicate health, and his untimely death has left a void in the ranks of European ornithologists that will not easily be filled up.

MR. EDWARD THOMAS BOOTH, the founder and owner of the well-known "Dyke Road Museum" of British Birds at Brighton, died on the 8th of February last. Mr. Booth was born at Chalfont St. Giles, in Buckinghamshire, on June 2nd, 1839, the only child of his father, Mr. Edward Booth, of Marina, St. Leonards, by Miss Beaumont, of a well-known Northumberland family. He was educated at Harrow and Trinity College, Cambridge. Mr. Booth learnt bird-stuffing when a boy, from Kent, the well-known bird-stuffer of Hastings, and, commencing at an early period in life, spent the greater part of his time in the field, studying our native birds in their haunts in every part of the United Kingdom, and collecting and preserving the specimens that fell to his gun. These specimens were mounted in an artistic way, each species in a separate case, with objects and painted backgrounds so arranged as to represent the birds in situations similar to

\* *Aves de España*.—Memoria premiada con accésit por la Real Academia de Ciencias Exactas, Físicas y Naturales en el concurso público de 1882 escrita por D. José Arévalo y Baca. 4to. Madrid, 1887.

those in which they were actually obtained, the arrangements being in many instances copied from sketches taken on the actual spots where the birds themselves were shot. In making this collection Mr. Booth spared neither personal trouble nor expense of any kind, and the results of his energy and devotion to this one object were the finest and most nearly complete collection of British Birds of this special character ever yet formed.

About 15 years ago, his house in Vernon Terrace, Brighton, being too small for his increasing collection, Mr. Booth purchased some freehold land on the Dyke Road, and erected a residence for himself and a special building for his birds. Of the latter he issued a catalogue in 1876, which describes the contents of 306 cases and gives exact particulars of the mode in which the specimens were obtained\*. The Museum was open to the public at a fee of one shilling a head, and the proceeds from admission were given to Brighton charities.

The Booth Collection is stated to have been bequeathed to the Trustees of the British Museum, but with restrictions on its use which make it doubtful whether they will accept the offer. Mr. Booth also issued, in numbers, between the years 1881 and 1887, a well-illustrated work entitled 'Rough Notes on the Birds observed during twenty-five years' shooting and collecting in the British Islands,' the nature of which is correctly indicated by the title. Completed, it forms three handsome folio volumes, the plates of which, lithographed and coloured from sketches by Neale, represent the specimens in the Dyke Road Museum.

Mr. H. E. Dresser, who was well acquainted with the late Mr. Booth, describes him, in his prime, as a strongly built, very active and intelligent man, an excellent sportsman, and one of the best field-naturalists he ever knew. A few years ago Mr. Booth met with an unfortunate accident, and injured his spine in a fall. This brought on partial paralysis, and ultimately led to his death at the early age of 50 years.

\* 'Catalogue of the Cases of Birds in the Dyke Road Museum, Brighton.' By E. T. Booth. (Brighton, 1876.)

# THE IBIS.

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## SIXTH SERIES.

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No. VII. JULY 1890.

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XXV.—*On the Ornithology of Northern Borneo.* By R. BOWDLER SHARPE, F.L.S., F.Z.S., &c., Zoological Department, British Museum. *With Notes* by JOHN WHITEHEAD.—Part VII.\*

(Plate VIII.)

I HAVE come to the end of my description of Mr. Whitehead's grand collection, and I have now only to present to the readers of 'The Ibis' a *résumé* of the scientific results of this memorable expedition. To do this in the most comprehensible manner, I have borrowed a leaf from the book of my friend Mr. Osbert Salvin, F.R.S., whose comparative tables of the avifauna of Cozumel and the other islands of the Bay of Honduras (Ibis, 1890, pp. 86-89) gave such a concise view of the zoo-geographical relations of those islands with the neighbouring continent, that I feel that I cannot do better than imitate it.

In the accompanying list the new species are printed in black type, and those discovered for the first time in Borneo by Mr. Whitehead are printed in small capitals.

\* Concluded from p. 149.

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-5000 ft.	Kina Balu, 8000-13,000 ft.
†	†	†	...	...	†	†	...	1. Circus .....	†					
†	†	*	...	...	*	...	†	1. spilonotus .....	†					
*	*	*	*	*	*	...	...	2. Astur .....	*	†				
†	†	*	*	*	*	...	...	2. trivirgatus .....	*	*				
*	*	*	*	*	*	...	†	3. soloensis .....	*	*				
							†	3. Accipiter .....	†	†	†	†		
							*	4. virgatus .....	*	*				
								5. rufotibialis, sp. n. ....	...	...	*	*		
†	†	†	†	†	†	†	...	4. Spizaetus .....	†					
†	*	*	*	*	*	...	...	6. limnæus.....	*					
†	...	†	†	...	...	...	...	5. Lophotriorchis.....	†	†				
*	...	*	*	...	...	...	...	7. kieneri .....	†	*				
†	†	†	†	†	†	†	...	6. Neopus .....	†					
*	*	*	*	*	...	*	...	8. malayensis .....	*					
†	†	†	†	†	†	†	...	7. Spilornis .....	†	...	...	†		
		*	*	*	*	...	...	9. BACHA .....	...	...	...	*		
		*	*	*	*	...	...	10. pallidus .....	*	...	...	*		
†	†	†	†	†	†	†	†	8. Butastur .....	†	†				
	*	*	*	*	*	*	†	11. indicus .....	†	*				
	†	†	†	†	†	†	†	9. Haliaetus .....	†					
	†	*	*	*	*	*	*	12. leucogaster.....	*					
†	†	†	†	†	†	†	†	10. Polioæetus .....	†					
*	*	*	*	*	...	...	...	13. ichthyaetus.....	*					
†	†	†	†	†	†	†	†	11. Haliaetor .....	†	†				
†	†	*	*	*	*	*	*	14. intermedius ...	†	*				
†	†	†	†	†	†	†	...	12. Pernis .....	†	†				
*	*	...	*	*	*	...	...	15. ptilonorhynchus	†	*				
†	†	†	†	†	†	...	...	13. Microhierax .....	†					
†	†	†	†	†	†	†	...	16. latifrons .....	*					
†	†	*	*	*	*	...	...	14. Falco .....	†					
*	*	*	*	*	*	...	...	17. communis .....	*					
†	†	...	†	†	...	†	†	15. Cerchneis .....	†					
*	*	...	...	...	...	...	...	18. tinnunculus ...	*					
†	†	†	†	†	†	†	...	16. Pandion .....	†					
†	†	*	*	*	*	*	...	19. haliaetus.....	*					
†	†	†	†	†	...	...	...	17. Ketupa .....	†					
		*	*	*	*	...	...	20. ketupa.....	*					
†	†	†	†	†	†	...	...	18. Bubo .....	†	†	†			
	*	*	*	*	...	...	...	21. orientalis .....	†	*	*			
		*	*	*	*	...	...	19. <b>Heteroscops</b> , g. n.	...	...	...	...	...	†
		*	*	*	*	...	...	22. luciae, sp. n. ...	...	...	...	...	...	*
†	†	†	†	†	†	...	...	20. Scops .....	†	†				
	*	*	*	*	...	...	...	23. lempiji .....	*	*				
	*	*	*	*	*	...	...	24. rufescens .....	*					
†	†	†	...	†	†	†	†	21. Ninox .....	†					
					*	...	...	25. japonicus .....	*					
					*	...	...	26. borneensis .....	*					
†	†	†	†	†	†	...	...	22. Syrnium .....	†					
			*	*	...	...	...	27. leptogrammicum	*					
9	15	18	18	18	13	7	3	Carried forward ...	24	9	2	2	0	1

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
9	15	18	18	18	13	7	3	Brought forward ...	24	9	2	2	0	1
†	†	†	†	†	†	†	†	23. <i>Corone</i> ...	†	†				
		*	...	...	...	...	...	28. <i>tenuirostris</i> ...	*	*				
		...	...	†	...	...	...	24. <i>Dendrocitta</i> ...			†	†	†	†
				*	...	...	...	29. <i>cinerascens</i> ...			*	*	*	*
					...	...	...	25. <i>Cissa</i> ...			†	†	†	†
					...	...	...	30. <i>minor</i> ...			*			
					...	...	...	31. <i>jefferyi</i> , sp. n.			...	*	*	
					...	...	...	26. <i>Platysmurus</i> ...	†	†				
					...	...	...	32. <i>aterimus</i> ...	*	*				
					...	...	...	27. <i>Oriolus</i> ...	†	†	†	†	†	†
					...	...	...	33. <i>xanthonotus</i> ...	*	*	*	*	*	*
					...	...	...	34. <i>vulneratus</i> , sp. n.	...	...	...	*	*	*
					†	†	†	28. <i>Chibia</i> ...		†	†	†	†	†
					...	...	...	35. <i>borneensis</i> ...		*	*	*	*	*
					...	...	...	29. <i>Buchanga</i> ...		†	†			
					...	...	...	36. <i>stigmatops</i> ...		*	*			
					...	...	...	30. <i>Dissemurus</i> ...	†					
					...	...	...	37. <i>brachyphorus</i> ...	*	†	†			
					...	...	...	31. <i>Tephrodornis</i> ...	†	†				
					...	...	...	38. <i>gularis</i> ...	*	*	*			
					...	...	...	32. <i>Hemipus</i> ...	†	†	...	†		
					...	...	...	39. <i>obscurus</i> ...	*	*				
					...	...	...	40. <i>PICATUS</i> ...	...	...	...	*		
					...	...	...	33. <i>Platylophus</i> ...	†	†	†			
					...	...	...	41. <i>coronatus</i> ...	*	*	*			
					...	...	...	34. <i>Artamides</i> ...	†	...	...	†	†	†
					...	...	...	42. <i>normani</i> , sp. n.	...	...	...	*	*	*
					...	...	...	43. <i>sumatrensis</i> ...	*					
					...	...	...	35. <i>Chlamydochæ-</i> <i>ra</i> , gen. n.	...	...	...	†	†	†
					...	...	...	44. <i>jefferyi</i> , sp. n.	...	...	...	*	*	*
					...	...	...	36. <i>Pericrocotus</i> ...	†	...	†	†	...	†
					...	...	...	45. <i>igneus</i> ...	*					
					...	...	...	46. <i>xanthogaster</i> ...	*	...	...	*		
					...	...	...	47. <i>cinereigula</i> , sp. n.	...	...	*			
					...	...	...	48. <i>MONTANUS</i> ...	...	...	...	...	...	*
					...	...	...	37. <i>Lalage</i> ...	†	†	†			
					...	...	...	49. <i>culminata</i> ...	*	*	*			
					...	...	...	50. <i>terat</i> ...	*					
					...	...	...	38. <i>HEMICHELIDON</i> ...	...	...	†			
					...	...	...	51. <i>cinereiceps</i> , sp. n.	...	...	*			
					...	...	...	39. <i>Alseonax</i> ...	†	...	†			
					...	...	...	52. <i>latirostris</i> ...	*	...	*			
					...	...	...	40. <i>Poliomyias</i> ...	†	...	†			
					...	...	...	53. <i>luteola</i> ...	*	...	*			
10	19	31	23	33	17	7	3	Carried forward ...	38	18	14	11	5	3

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
10	19	31	23	33	17	7	3	Brought forward ...	38	18	14	11	5	3
†	†	†	†	†	...	...	...	41. MUSCICAPULA .....	...	...	...	...	†	†
*	...	*	*	*	...	...	...	54. HYPERYTHRA .....	...	...	...	...	*	*
†	...	†	†	...	†	...	...	55. WESTERMANNI .....	...	...	...	...	*	*
†	...	*	*	...	...	...	...	42. Xanthopygia .....	†	†	...	...	...	...
†	...	*	*	...	...	...	...	56. NARCISSINA .....	*	*	...	...	...	...
†	...	*	*	...	...	...	...	57. cyanomelena .....	*	*	...	...	...	...
†	...	...	...	...	...	...	...	43. TARSIGER .....	...	...	...	...	†	...
†	...	...	...	...	...	...	...	58. HODGSONI .....	...	...	...	...	*	...
†	†	†	†	†	†	†	...	44. Hypothymis .....	†	†	...	...	...	...
†	†	†	†	†	†	†	...	59. occipitalis .....	*	*	...	...	†	†
†	†	†	†	†	†	†	...	45. Rhipidura .....	†	†	...	...	†	†
†	†	†	†	†	†	†	...	60. ALBRICOLLIS .....	...	...	...	...	*	*
†	†	†	†	†	†	†	...	61. perlata .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	62. javanica .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	46. Terpsiphone .....	†	†	...	...	...	...
†	†	†	†	†	†	†	...	63. affinis .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	47. Philentoma .....	†	†	...	...	...	...
†	†	†	†	†	†	†	...	64. pyrrhopterus .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	48. Rhinomyias .....	†	†	...	†	†	...
†	†	†	†	†	†	†	...	65. ruficrissa, s.n. ....	...	...	...	*	*	...
†	†	†	†	†	†	†	...	66. pectoralis .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	67. gularis, sp. n. ....	...	...	...	*	*	...
†	†	†	†	†	†	†	...	49. Culicicapa .....	†	†	...	...	...	...
†	†	†	†	†	†	†	...	68. ceylonensis .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	50. CRYPTOLOPHA .....	...	...	...	...	†	†
†	†	†	†	†	†	†	...	69. TRIVIRGATA .....	...	...	...	...	*	*
†	†	†	†	†	†	†	...	70. montis, sp. n. ....	...	...	...	...	*	*
†	†	†	†	†	†	†	...	51. Abornis § .....	...	...	...	...	*	*
†	†	†	†	†	†	†	...	71. schwaneri .....	...	...	...	...	†	†
†	†	†	†	†	†	†	...	52. Stoparola .....	...	†	...	...	†	†
†	†	†	†	†	†	†	...	72. cerviniventris, sp. n. ....	...	...	...	...	*	*
†	†	†	†	†	†	†	...	73. thalassinoides .....	...	*	...	...	...	...
†	†	†	†	†	†	†	...	53. Siphia .....	†	...	†	...	...	...
†	†	†	†	†	†	†	...	74. elegans .....	*	...	*	...	...	...
†	†	†	†	†	†	†	...	75. banyumas .....	*	...	...	...	...	...
†	†	†	†	†	†	†	...	54. Locustella .....	†	†	...	...	...	...
†	†	†	†	†	†	†	...	76. ochotensis .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	55. Phylloscopus .....	†	†	...	...	...	...
†	†	†	†	†	†	†	...	77. xanthodryas .....	*	*	...	...	...	...
†	†	†	†	†	†	†	...	56. Acrocephalus .....	†	...	...	...	...	...
†	†	†	†	†	†	†	...	78. orientalis .....	*	...	...	...	...	...
†	†	†	†	†	†	†	...	57. HORORNIS .....	...	...	...	...	†	†
†	†	†	†	†	†	†	...	79. oreophila, s.n. ....	...	...	...	...	*	*
†	†	†	†	†	†	†	...	58. GEOCICHLA .....	...	...	...	...	†	†
†	†	†	†	†	†	†	...	80. aurata, sp. n. ....	...	...	...	...	*	*
†	†	†	†	†	†	†	...	59. Merula .....	†	†	†	†	†	†
†	†	†	†	†	†	†	...	81. seebohmi, s.n. ....	...	...	...	...	...	*
†	†	†	†	†	†	†	...	82. obscura .....	*	*	*	*	*	*
15	26	45	36	47	21	9	3	Carried forward ...	53	27	17	17	16	9

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.
15	26	45	36	47	21	9	3	Brought forward ...	53	27	17	17	16
†	†	...	...	...	...	...	...	60. Erythacus .....	†	†			
	*	...	...	...	...	...	...	83. cyaneus .....	*	*			
†	†	†	...	...	†	†	...	61. Monticola .....	†				
	*	*	...	...	*	*	...	84. solitaria .....	*				
†	†	†	...	†	...	...	...	62. Myiophoneus .....	...	...	†	†	†
		†	...	†	...	...	...	85. borneensis .....	...	...	*	*	*
	*	*	...	*	...	...	...	63. Trichixus .....	†				
†	†	†	†	†	...	...	...	86. pyrrhopygus .....	*				
†	†	†	†	†	...	...	...	64. Copsychus .....	†	†			
	*	*	...	*	...	...	...	87. amoenus .....	*	*			
†	†	†	†	†	†	...	...	65. Cittocincla .....	†	†			
	*	*	...	*	...	...	...	88. stricklandi .....	*	*			
†	†	†	†	†	†	...	...	66. Egithina .....	†				
	*	*	...	*	...	...	...	89. viridissima .....	*				
†	†	†	†	†	†	...	...	90. viridis .....	*				
	*	*	...	*	...	...	...	67. Chloropsis .....	†	...	†	†	
	*	*	...	*	...	...	...	91. zosterops .....	*				
	*	*	...	*	...	...	...	92. cyanopogon .....	*				
†	†	†	...	†	...	...	...	93. kinabaluensis, sp. n. ....	...	...	*	*	*
	*	*	...	*	...	...	...	68. Hemixus .....	†	...	...	†	†
	†	†	...	†	...	...	...	94. connectens, sp. n. ....	...	...	...	*	*
	*	*	...	*	...	...	...	95. malaccensis .....	*				
†	†	†	...	†	...	...	...	69. Micropus .....	†	†			
	*	*	...	*	...	...	...	96. melanoleucus .....	*				
	†	†	...	†	...	...	...	97. melanocephalus .....	*	*			
	*	*	...	*	...	...	...	70. Criniger .....	†	...	†		
	†	†	...	†	...	...	...	98. phaeocephalus .....	*				
	*	*	...	*	...	...	...	99. ruficrissus .....	...	...	*		
	†	†	...	†	...	...	...	71. Tricholestes .....	†				
	*	*	...	*	...	...	...	100. criniger .....	*				
	†	†	...	†	...	...	...	72. Trachycomus .....	†	†			
	*	*	...	*	...	...	...	101. ochrocephalus .....	*	*			
†	†	†	...	†	...	...	...	73. Pycnonotus .....	†	†			
	*	*	...	*	...	...	...	102. analis .....	*	*			
	†	†	...	†	...	...	...	103. simplex .....	*	*			
	*	*	...	*	...	...	...	74. Rubigula .....	...	...	†		
	†	†	...	†	...	...	...	104. montis .....	...	...	*		
	*	*	...	*	...	...	...	75. OREOSTICTES .....	...	...	...	...	†
	†	†	...	†	...	...	...	105. leucops, sp. n. ....	...	...	...	...	*
†	†	†	...	†	...	...	...	76. Irena .....	†				
	*	*	...	*	...	...	...	106. criniger .....	*				
†	†	†	...	†	...	...	...	77. HENICURUS .....	...	...	†	†	
	*	*	...	*	...	...	...	107. borneensis, sp. n. ....	...	...	*	*	
	†	†	...	†	...	...	...	78. Hydrocichla .....	†				
	*	*	...	*	...	...	...	108. frontalis .....	*				
15	39	59	40	60	24	10	3	Carried forward ...	72	34	22	21	19

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
15	39	59	40	60	24	10	3	Brought forward ...	72	34	22	21	19	10
†	†	†	...	†	...	...	...	79. Burnesia .....	†					
	†	*	†	*	*	...	...	109. superciliaris ...	*	†				
	†	*	†	*	*	...	...	80. Orthotomus .....	†	†				
	†	†	†	...	...	...	...	110. ruficeps .....	*	*				
		†	†	...	...	...	...	111. cineraceus .....	*	*				
		*	*	...	...	...	...	81. PHYLLEGATES .....	†	†	†			
		†	†	...	...	...	...	112. cinereicollis	*	*	*			
		†	†	...	...	...	...	sp. n.						
		†	†	...	...	...	...	82. Cyanoderma .....	†					
		†	†	...	...	...	...	113. bicolor .....	*					
		†	†	...	...	...	...	83. STAPHIDIA .....				†		
		†	†	...	...	...	...	114. everetti,				*		
		†	†	...	...	...	...	sp. n.						
		†	†	...	...	...	...	84. Herpornis .....	†				†	
		†	†	...	...	...	...	115. brunescens ...	*				*	
		†	†	...	...	...	...	85. CHLOROCHARIS .....					†	†
		†	†	...	...	...	...	116. emiliae, sp.n.					*	*
		*	*	...	...	...	...	86. Macronis .....	†	†			*	*
		*	*	...	...	...	...	117. ptilosus .....	*	*			*	*
		†	†	...	...	...	...	87. Alcippe .....	†	†	†		*	*
		†	†	...	...	...	...	118. cinerea .....	*	*	*		*	*
		†	†	...	...	...	...	88. BRACHYPTERYX .....					†	†
		†	†	...	...	...	...	119. erythrogy-					*	*
		†	†	...	...	...	...	na, sp. n.					*	*
		†	†	...	...	...	...	† 89. ORTHOICHLA .....					†	†
		†	†	...	...	...	...	120. whiteheadi,					*	*
		†	†	...	...	...	...	sp. n.					*	*
		*	*	...	...	...	...	90. Pomatorhinus .....	†		†		*	*
		†	†	...	...	...	...	121. borneensis ...	*		*		*	*
		†	†	...	...	...	...	91. GARRULAX .....					†	†
		†	†	...	...	...	...	122. schistochla-					*	*
		†	†	...	...	...	...	mys, sp. n.					*	*
		†	†	...	...	...	...	92. Rhinocichla .....		†	†	†	†	†
		†	†	...	...	...	...	123. treacheri .....		*	*	*	*	*
		†	†	...	...	...	...	93. Alcocotops, gen. n.					†	†
		†	†	...	...	...	...	124. calvus, sp. n.					*	*
		†	†	...	...	...	...	94. Stachyris .....	†		†	†	†	†
		*	*	...	...	...	...	125. BORNEENSIS ...			*	*	*	*
		*	*	...	...	...	...	126. maculata .....	*				*	*
		†	†	...	...	...	...	127. poliocephala...	*				*	*
		†	†	...	...	...	...	95. Turdinus .....	†			†	*	*
		†	†	...	...	...	...	128. atrigularis ...	*				*	*
		†	†	...	...	...	...	129. canicapil-				*	*	*
		†	†	...	...	...	...	lus, sp. n.					*	*
		*	*	...	...	...	...	130. MAGNOSTRIS ...	*				*	*
		†	†	...	...	...	...	96. Erythroicichla .....	†				*	*
		*	*	...	...	...	...	131. bicolor .....	*				*	*
		†	†	...	...	...	...	97. Dryocataphus .....	†	†			*	*
		†	†	...	...	...	...	132. capistratoides .	*	*			*	*
15	42	69	43	68	25	10	3	Carried forward ...	86	41	27	26	28	12

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
15	42	69	43	68	25	10	3	Brought forward ...	86	41	27	26	28	12
	†	†	...	†	...	...	...	98. <i>Trichostoma</i> .....	†					
	*	*	...	*	...	...	...	133. <i>rostratum</i> .....	*					
	†	†	†	†	...	...	...	99. <i>Malacopteryx</i> .....	†					
		*	...	*	...	...	...	134. <i>cinereum</i> .....	*					
		*	...	*	...	...	...	135. <i>affine</i> .....	*					
		†	...	...	...	...	...	100. <i>Kenopia</i> .....	†					
		*	...	...	...	...	...	136. <i>striata</i> .....	*					
†	†	*	...	...	...	...	...	101. <i>Mixornis</i> .....	†	...	†			
		*	...	...	...	...	...	137. <i>borneensis</i> .....	*					
		†	†	†	†	†	†	138. <i>montana</i> , sp. n. ....	...	...	*			
								102. <i>Androphilus</i> .....	...	...	...	...	†	†
		†	...	†	...	...	...	139. <i>accentor</i> , s.n. ....	...	...	...	...	*	*
		†	...	†	...	...	...	103. <i>CORYTHOCICHLA</i> .....	...	...	...	...	†	
		†	†	†	...	...	...	140. <i>crassa</i> , sp. n. ....	...	...	...	...	*	*
			...	†	...	...	...	104. <i>Turdinulus</i> .....	...	...	...	...	†	
		†	...	†	†	...	...	141. <i>exsul</i> , sp. n. ....	...	...	...	...	*	
		*	...	†	†	...	...	105. <i>Anurospis</i> .....	†					
		*	...	*	*	...	...	142. <i>malaccensis</i> .....	*					
†	†	*	...	†	†	...	†	106. <i>Lanius</i> .....	†	†				
	*	*	...	*	*	...	...	143. <i>lucionensis</i> .....	*	*				
	†	†	†	†	†	†	†	107. <i>Hyloterpe</i> .....	†	...	...	†	†	
								144. <i>hypoxantha</i> , sp. n. ....	...	...	...	*	*	
		*	*	*	...	...	...	145. <i>griseola</i> .....	*					
†	†	†	†	†	...	...	...	108. <i>Pteruthius</i> .....	...	...	...	...	†	†
		*	...	*	...	...	...	146. <i>ERALATUS</i> .....	...	...	...	...	*	*
†	†	†	†	†	†	...	†	109. <i>Dendrophila</i> .....	†	†	†			
								147. <i>corallipes</i> , sp. n. ....	*	*	*			
		†	†	†	†	†	...	110. <i>Æthopyga</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	148. <i>temmincki</i> .....	...	...	*	*	*	
		†	†	†	†	...	...	149. <i>siparaja</i> .....	*	*	*			
		*	*	*	*	...	...	111. <i>Chalcostetha</i> .....	†					
		*	*	*	*	...	...	150. <i>insignis</i> .....	*					
†	†	*	*	*	*	...	†	112. <i>Cinnyris</i> .....	†					
		*	*	*	*	...	...	151. <i>hasselti</i> .....	*					
		*	*	*	*	...	...	152. <i>pectoralis</i> .....	*					
		†	†	†	†	†	†	113. <i>Arachnothera</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	153. <i>juliae</i> , sp. n. ....	...	...	...	*	*	
		*	...	*	...	...	...	154. <i>modesta</i> .....	*	*	*	*		
		*	...	*	...	...	...	155. <i>longirostris</i> .....	*	*	*			
		†	†	†	†	†	...	156. <i>chrysogenis</i> .....	*	*	*			
		*	*	*	*	...	...	114. <i>Anthothreptes</i> .....	†	†				
		*	*	*	*	...	...	157. <i>malaccensis</i> .....	*					
		†	†	†	†	†	†	158. <i>phœnicotis</i> .....	*	*				
†	†	*	*	*	*	...	...	115. <i>Zosterops</i> .....	†	†	...	...	†	
		*	*	*	*	...	...	159. <i>auriventer</i> .....	...	*				
								160. <i>clara</i> , sp. n. ....	...	...	...	...	*	
15	54	87	53	85	29	11	3	Carried forward ...	104	48	33	30	36	14

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
15 †	54 †	87 †	53 †	85 †	29 †	11 †	3 †	Brought forward ...	104	48	33	30	36	14
								116. <i>Dicaeum</i> .....	†	†	...	†	†	
								161. <b>monticola</b> ,	...	...	...	*	*	
								sp. n.						
								162. <i>nigrimentum</i> ..	*	*				
								163. <i>chrysorrhæum</i> ..	*	*				
								164. <i>trignostigma</i> ...	*	*				
								117. <i>Prionochilus</i> .....	†					
								165. <i>xanthopygius</i> ..	*					
								166. <i>thoracicus</i> .....	*					
								118. <i>Hirundo</i> .....	†					
								167. <i>javanica</i> .....	*					
								119. <i>Motacilla</i> .....	†	†	†			
								168. <i>melanope</i> .....	*	*	*			
								169. <i>flava</i> .....	*					
								120. <i>Anthus</i> .....	†					
								170. <i>RICHARDI</i> .....	*					
								171. <i>gustavi</i> .....	*					
								121. <i>Sturnia</i> .....	†					
								172. <i>violacea</i> .....	*					
								122. <i>Calornis</i> .....	†					
								173. <i>chalybea</i> .....	*					
								123. <i>Eulabes</i> .....	†					
								174. <i>javanensis</i> .....	*					
								124. <i>Artamus</i> .....	†					
								175. <i>leucorhynchus</i> ..	*					
								125. <i>Padda</i> .....	†					
								176. <i>oryzivora</i> .....	*					
								126. <i>Munia</i> .....	†					
								177. <i>fuscans</i> .....	*					
								178. <i>brunneiceps</i> ..	*					
								127. <i>CHLORURA</i> .....	...	†	†	†	†	†
								179. <b>borneensis</b> ,	...	*	*	*	*	*
								sp. n.						
								128. <i>Erythrura</i> .....	†	†	†			
								180. <i>prasina</i> .....	*	*	*			
								129. <i>Calyptomena</i> ..	†	†	†	†	†	
								181. <b>whiteheadi</b> ,	...	...	...	*	*	
								sp. n.						
								182. <i>viridis</i> .....	*	*	*	*	*	
								130. <i>PARISOMUS</i> .....	...	...	...	†		
								183. <i>PSITTACINUS</i> ..	...	...	...	*		
								131. <i>Eurylæmus</i> .....	†	†				
								184. <i>javanicus</i> .....	*	*				
								185. <i>ochromelas</i> ..	*	*				
								132. <i>Cymbirhynchus</i> ..	†					
								186. <i>macrorhynchus</i>	*					
								133. <i>Corydon</i> .....	†	†	†			
								187. <i>sumatranus</i> ..	*	*	*			
18	69	102	64	100	37	18	7	Carried forward...	127	58	38	35	39	15

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
18	69	102	64	100	37	18	7	Brought forward ...	127	58	38	35	39	15
†	†	†	†	†	†	†	†	134. <i>Pitta</i> .....	†	†	†	†	†	
								188. <i>arcuata</i> .....	*	*	*	*	*	
								189. <i>baudi</i> .....	*	*	*	*	*	
								190. <i>schwanei</i> .....	*	*	*	*	*	
								191. <i>ussheri</i> .....	*	*	*	*	*	
	*	*	...	*	...	...	...	192. <i>cyanoptera</i> .....	*	*	*	*	*	
	†	†	†	†	...	...	...	193. <i>muelleri</i> .....	*	*	*	*	*	
	†	†	†	†	...	...	...	135. <i>Palæornis</i> .....	†	†	†	†	†	
	†	†	†	†	...	...	...	194. <i>longicauda</i> .....	*	*	*	*	*	
	†	†	†	†	†	†	...	136. <i>Loriculus</i> .....	†	†	†	†	†	
	†	†	†	†	...	...	...	195. <i>galgulus</i> .....	*	*	*	*	*	
	†	†	†	†	†	†	...	137. <i>Harpactes</i> .....	†	†	†	†	†	
								196. <b>whiteheadi</b> , sp. n. ....	...	...	...	...	*	
		*	...	*	...	...	...	197. <i>knumba</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	198. <i>diardi</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	199. <i>duvauceli</i> .....	*	*	*	*	*	
	†	†	†	†	...	...	...	200. <i>oreoscius</i> .....	...	*	*	*	*	
	†	†	†	†	...	...	...	138. <i>Megalerna</i> .....	...	...	...	...	...	
		*	...	*	...	...	...	201. <i>chrysoptis</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	202. <i>versicolor</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	203. <i>mystacophanes</i> .....	*	*	*	*	*	
	†	†	†	†	...	...	...	139. <i>Cyanus</i> .....	...	...	...	†	†	
								204. <b>pulcherri-</b> <b>ma</b> , sp. n. ....	...	...	...	...	*	
								205. <b>monticola</b> , sp. n. ....	...	...	...	*	*	
	†	†	...	†	...	...	...	140. <i>Mesobucco</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	206. <i>duvauceli</i> .....	*	*	*	*	*	
	†	†	...	†	...	...	...	141. <i>Calorhamphus</i> .....	†	†	†	†	†	
								207. <i>fuliginosus</i> .....	*	*	*	*	*	
	†	†	†	†	†	†	...	142. <i>Iyngipicus</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	208. <i>aurantiiventris</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	209. <i>auritus</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	143. <i>Xylolopes</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	210. <i>validus</i> .....	*	*	*	*	*	
	†	†	†	†	...	...	...	144. <i>Hemicercus</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	211. <i>sordidus</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	145. <i>Lepocestes</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	212. <i>porphyromelas</i> .....	*	*	*	*	*	
	†	†	†	†	...	...	...	146. <i>Gecinus</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	213. <i>punicus</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	147. <i>Chrysophlegma</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	214. <i>humii</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	215. <i>malaccense</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	148. <i>Alophonerpes</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	216. <i>pulverulentus</i> .....	*	*	*	*	*	
		*	...	*	...	...	...	149. <i>Thriponax</i> .....	†	†	†	†	†	
		*	...	*	...	...	...	217. <i>javensis</i> .....	*	*	*	*	*	
18	80	121	71	120	39	18	7	Carried forward ...	152	64	45	38	43	15

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celbes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
18	80	121	71	120	39	18	7	Brought forward ...	152	64	45	38	43	15
†	†	†	†	†	†	...	...	150. Tiga .....	†					
*	*	*	*	*	*	...	...	218. javanensis.....	*					
†	†	†	†	†	†	...	...	151. Gaupicoides .....	†	†	†			
*	*	*	*	*	*	...	...	219. rafflesii .....	*	*	*			
†	†	†	†	†	†	...	...	152. Miglyptes .....	†	†	†			
*	*	*	*	*	*	...	...	220. grammithorax .....	*	*	*			
†	†	†	†	†	†	...	...	221. tukki .....	*	*	*			
†	†	†	†	†	†	...	...	153. Micropternus .....	†					
*	*	*	*	*	*	...	...	222. badius .....	*	*	*			
†	†	†	†	†	†	...	...	154. Sasia .....	†	†				
†	*	*	*	*	*	...	...	223. abnormis .....	*	*				
†	...	†	...	...	...	...	...	155. Indicator .....	†					
†	†	†	†	†	†	...	...	224. archipelagicus.....	*	*				
*	*	*	*	*	*	...	...	156. Chrysococyx .....	†					
†	*	*	*	*	*	...	...	225. xanthorhynchus	*					
†	†	†	†	†	†	...	...	157. Surniculus.....	†	†				
*	*	*	*	*	*	...	...	226. lugubris .....	*	*				
†	†	†	†	†	†	...	...	158. Penthoceryx .....	†					
*	*	*	*	*	*	...	...	227. pravatus .....	*					
†	†	†	†	†	†	...	...	159. Cacomantis .....	†					
*	*	*	*	*	*	...	...	228. merulinus.....	*					
†	†	†	†	†	†	...	...	160. Hierococyx .....	†	...	†	...	†	
*	*	*	*	*	*	...	...	229. fugax .....	*	...	*			
†	†	†	†	†	†	...	...	230. NANA .....	*					
*	*	...	...	...	...	...	...	231. BOCCI .....	...	...	...	...	*	
†	†	*	*	*	*	...	...	232. sparverioides.....	*					
*	*	*	*	*	*	...	...	161. Cuculus.....	†	...	...	...	†	†
†	†	*	*	*	*	...	...	233. micropterus .....	*					
*	*	...	...	...	...	...	...	234. POLIOCEPHALUS	...	...	...	...	*	*
†	†	†	†	†	†	...	...	162. Coccytes .....	†					
*	*	*	*	*	*	...	...	235. coromandus .....	*					
†	†	†	†	†	†	...	...	163. Eudynamis .....	†					
*	*	*	*	*	*	...	...	236. malayana .....	*					
†	†	†	†	†	†	...	...	164. Rhopodytes .....	†	†				
*	*	*	*	*	*	...	...	237. erythrognathus	*	*	*			
†	†	†	†	†	†	...	...	165. Rhinortha .....	†	†				
*	*	*	*	*	*	...	...	238. chlorophaea .....	*	*				
†	†	†	†	†	†	...	...	166. Poliocecyx .....	†					
*	*	*	*	*	*	...	...	239. sumatranus .....	*					
†	†	†	†	†	†	...	...	167. Zanclostomus .....	†	†	†	†		
*	*	*	*	*	*	...	...	240. javanicus .....	*	*	*	*		
†	†	†	†	†	†	...	...	168. Centrocoocyx .....	†					
*	*	*	*	*	*	...	...	241. eurycerus.....	*					
*	*	†	...	†	...	...	...	242. javanensis.....	*					
†	†	...	...	†	...	...	...	169. Buceros.....	†					
*	*	†	...	†	...	...	...	243. rhinoceros .....	*					
†	†	†	...	†	...	...	...	170. Rhinoplax.....	†	†	†			
*	*	...	...	*	...	...	...	244. vigil .....	*	*	*			
27	102	143	88	142	45	20	7	Carried forward ...	177	72	50	39	45	16

Himalaya Mountains,	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
27	102	143	88	142	45	20	7	Brought forward ...	177	72	50	39	45	16
		†	†	†	†	...	...	171. Anthracoceros ...	†	†				
		*	*	*	*	...	...	245. convexus ...	*	*				
		*	*	*	*	...	...	246. malayanus ...	*	*				
	†	†	†	†	†	...	...	172. Anorrhinus ...	†	†				
	*	*	*	*	*	...	...	247. comatus ...	*	*				
	*	*	*	*	*	...	...	248. galeritus ...	*	*				
†	†	†	†	†	†	†	†	173. Merops ...	†					
		*	*	*	*	...	...	249. sumatranus ...	*	*				
†	†	†	†	†	†	†	†	174. Nyctiornis ...	†	†				
		*	*	*	*	...	...	250. amicta ...	*	*				
†	†	†	†	†	†	†	†	175. Alcedo ...	†	†	†	†		
		*	*	*	*	...	*	251. bengalensis ...	*	*				
		*	*	*	*	...	*	252. meninting ...	*	*				
		*	*	*	*	...	*	253. euryzona ...	*	*	*	*		
†	†	†	†	†	†	†	†	176. Pelargopsis ...	†					
		*	*	*	*	...	...	254. leucocephala ...	*	*				
†	†	†	†	†	†	†	†	177. Ceyx ...	†	†	†			
		*	*	*	*	...	...	255. dillwynni ...	*	*	*			
†	†	†	†	†	†	†	†	178. Halcyon ...	†					
		*	*	*	*	...	...	256. coromanda ...	*	*				
		*	*	*	*	...	*	257. pileata ...	*	*				
		*	*	*	*	...	*	258. chloris ...	*	*				
		*	*	*	*	...	...	259. concreta ...	*	*				
†	†	†	†	†	†	†	†	179. Carcineutes ...	†	†	†			
		*	*	*	*	...	...	260. melanops ...	*	*	*			
†	†	†	†	†	†	†	†	180. Eurystomus ...	†					
		*	*	*	*	...	...	261. orientalis ...	*	*				
†	†	†	†	†	†	†	†	181. Caprimulgus ...	†	†	†			
		*	*	*	*	...	*	262. macrurus ...	*	*	*			
†	†	†	†	†	†	†	†	182. Cypselus ...	†					
		*	*	*	*	...	...	263. infumatus ...	*	*				
†	†	†	†	†	†	†	†	183. Collocalia ...	†	†	†	†	†	†
		*	*	*	*	...	*	264. fuciphaga ...	*	*				
		*	*	*	*	...	...	265. linchi ...	*	*	*	*	*	*
†	†	†	†	†	†	†	†	184. Dendrochelidon ...	†					
		*	*	*	*	...	...	266. comata ...	*	*				
		*	*	*	*	...	...	267. longipennis ...	*	*				
†	†	†	†	†	†	†	†	185. Chatura ...	†					
		*	*	*	*	...	...	268. coracina ...	*	*				
†	†	†	†	†	†	†	†	186. Hirundinapus ...	†					
		*	*	*	*	...	...	269. giganteus ...	*	*				
†	†	†	†	†	†	†	†	187. Treron ...	†	†				
		*	*	*	*	...	...	270. capellii ...	*	*				
		*	*	*	*	...	...	271. vernans ...	*	*				
		*	*	*	*	...	...	272. fulvicollis ...	*	*				
†	†	†	†	†	†	†	†	188. Ptilopus ...	†	†	†			
		*	*	*	*	...	...	273. jambu ...	*	*	*			
†	†	†	†	†	†	†	†	189. Carpophaga ...	†	†	...	...	†	
		*	*	*	*	...	...	274. aenea ...	*	*				
29	123	169	107	169	58	26	11	Carried forward ...	207	83	56	41	46	17

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celebes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
29	123	169	107	169	58	26	11	Brought forward ...	207	83	56	41	46	17
								Carpophaga						
		*	*	*	...	...	...	275. badia .....	...	...	...	...	*	
	†	†	†	†	†	†	†	276. bicolor .....	†					
	*	*	*	*	*	*	...	190. Chalcophaps .....	*					
	†	†	†	†	†	†	†	277. indica .....	*					
	*	*	*	*	...	...	...	191. Macropygia .....	†	†	†	†	†	†
	†	†	...	†	...	...	...	278. emiliana .....	*	*	*	*	*	*
					†	†	...	279. ruficeps .....	...	...	*	*	*	*
					*	*	...	192. Calenas .....	†					
					*	*	...	280. nicobarica .....	*					
					...	...	...	193. Argusianus .....	†					
					†	†	...	281. grayi .....	*					
					*	*	...	194. Bambusicola .....	...	†	†			
					...	...	...	282. erythro-	...	...	*	*		
					†	†	...	phrys, sp. n.	...	...	...	...		
	†	†	†	†	...	...	...	195. ARBOROPHILA .....	†					
		*	...	...	...	...	...	283. CHARLTONI .....	*					
	†	†	...	†	...	...	...	196. Rollulus .....	†					
	*	*	*	*	...	...	...	284. rouloul .....	*					
	†	†	†	†	†	†	...	197. Excalfactoria .....	†	†				
	*	*	*	*	†	†	...	285. chinensis .....	†	*				
					*	...	...	198. Megapodius .....	†					
					...	...	...	286. cumingi .....	*					
30	127	176	113	175	63	29	11		216	85	59	43	48	18
								199. Esacus .....	†					
		†	...	†	†	†	...	287. magnirostris .....	*					
		*	...	*	†	*	...	200. Squatarola .....	†					
		†	...	†	*	*	...	288. helvetica .....	*					
		*	*	*	*	*	...	201. Charadrius .....	†					
		†	†	†	†	†	...	289. fulvus .....	*					
		*	*	*	*	*	...	202. Ægialitis .....	†					
		†	...	...	...	...	...	290. peronii .....	*					
		*	*	*	*	*	...	291. cantianus .....	*					
		*	*	*	*	*	...	292. dubius .....	*					
		†	...	†	...	...	...	293. geoffroyi .....	*					
		*	*	*	*	*	...	203. Glareola .....	†					
		†	†	†	†	†	...	294. orientalis .....	*					
		*	*	*	*	*	...	204. Strepsilas .....	†					
		†	†	†	†	†	...	295. interpres .....	*					
		*	*	*	...	*	...	205. Tringa .....	†					
		†	†	†	†	†	...	296. ruficollis .....	*					
		*	*	*	*	*	...	297. SUBMINUTA .....	*					
		†	†	†	†	†	†	206. Tringoides .....	†					
		*	*	*	*	*	*	298. hypoleucus .....	*					

Himalaya Mountains.	Tenasserim.	Malayan Peninsula.	Java.	Sumatra.	Philippine Islands.	Celabes.	Timor.		Lowlands of Borneo.	Kina Balu, 0-1000 ft.	Kina Balu, 1000-3000 ft.	Kina Balu, 3000-4000 ft.	Kina Balu, 4000-8000 ft.	Kina Balu, 8000-13,000 ft.
†	†	†	†	†	†	†	†	207. Totanus .....	†					
*	*	*	*	*	*	*	*	299. glareola .....	*					
†	...	†	†	†	†	†	†	300. brevipes .....	*					
†	...	†	†	†	†	†	†	208. Numenius .....	†					
*	...	†	†	†	†	†	†	301. uropygialis ...	*					
	...	...	...	...	...	...	...	209. Scolopax .....	†					
								302. gallinago .....	*					
	†	†	†	†	†	†	†	303. MEGALA .....	*					
	*	*	*	*	*	*	*	210. Hypotenidia .....	†					
	†	†	†	†	†	†	†	304. striata .....	*					
	*	†	†	†	†	†	†	211. Rallina .....	†	†				
		†	†	†	†	†	†	305. fasciata .....	*	*				
		†	†	†	†	†	†	212. Ortygometra .....	†					
	†	†	†	†	†	†	†	306. cinerea .....	*					
	†	*	*	*	*	*	*	213. Erythra .....	†					
	†	†	†	†	†	†	†	307. phœnicura .....	*					
	*	...	†	†	†	†	†	214. Ardea .....	†					
	†	...	*	*	*	*	*	308. sumatrana .....	*					
	†	...	†	†	†	†	†	309. purpurea .....	*					
	†	...	†	†	†	†	†	215. Demiegretta .....	†					
	†	...	*	*	*	*	*	310. sacra .....	*					
	†	...	†	†	†	†	†	216. Herodias .....	†					
	†	...	†	†	†	†	†	311. torra .....	*					
	†	...	†	†	†	†	†	217. Bubuleus .....	†					
	†	...	†	†	†	†	†	312. coromandus ..	*					
	†	...	†	†	†	†	†	218. Ardeola .....	†					
	†	...	†	†	†	†	†	313. speciosa .....	*					
	†	†	†	†	†	†	†	219. Butorides .....	†	†				
	†	†	†	†	†	†	†	314. javanica .....	*	*				
	†	†	†	†	†	†	†	220. Gorsachius .....	†					
	†	†	†	†	†	†	†	315. melanolophus ..	†					
	†	†	†	†	†	†	†	221. Ardetta .....	†					
	†	†	†	†	†	†	†	316. cinnamomea ...	*					
	†	†	†	†	†	†	†	317. sinensis .....	*					
	†	†	†	†	†	†	†	222. Nycticorax .....	†					
	†	†	†	†	†	†	†	318. griseus .....	*					
	†	†	†	†	†	†	†	223. Leptoptilus .....	†					
	†	†	†	†	†	†	†	319. javanicus .....	*					
	†	†	†	†	†	†	†	224. Mareca .....	†					
	†	†	†	†	†	†	†	320. penelope .....	*					
	†	†	†	†	†	†	†	225. Fregata .....	†					
	†	†	†	†	†	†	†	321. minor .....	*					
	†	†	†	†	†	†	†	226. Plotus .....	†					
	†	†	†	†	†	†	†	322. melanogaster ..	*					
	†	†	†	†	†	†	†	227. Sterna .....	†					
	†	†	†	†	†	†	†	323. bergii .....	*					
	†	†	†	†	†	†	†	228. Anous .....	†					
	†	†	†	†	†	†	†	324. leucocapillus...	*					

In instituting comparisons between the avifauna of Northern Borneo and that of the neighbouring countries, I have not taken account of any Waders or Swimming-birds, which are species of wide distribution and do not affect the question in any way. I deal simply with Nos. 1-286 in the foregoing list. It will be seen that Mr. Whitehead's expedition added to the avifauna of Borneo no less than 25 genera, as follows:—1. *Heteroscops*, 2. *Chlamydochera*, 3. *Hemichelidon*, 4. *Muscicapula*, 5. *Tarsiger* (vel *Nitidula*), 6. *Cryptolopha*, 7. *Horornis*, 8. *Geocichla*, 9. *Oreoctistes*, 10. *Henicurus*, 11. *Phyllergates*, 12. *Staphidia*, 13. *Chlorocharis*, 14. *Brachypteryx*, 15. *Orthnocichla*, 16. *Garrulax*, 17. *Allocotops*, 18. *Androphilus*, 19. *Corythocichla*, 20. *Turdinulus*, 21. *Pteruthius*, 22. *Chlorura*, 23. *Psarisomus*, 24. *Cyanops*, 25. *Arborophila*.

Moreover, Mr. Whitehead procured examples of 67 species not before known from Borneo:—1. *Accipiter rufotibialis*, 2. *Spilornis bacha*, 3. *Heteroscops lucia*, 4. *Cissa jefferyi*, 5. *Oriolus vulneratus*, 6. *Hemipus picatus*, 7. *Artamides normani*, 8. *Chlamydochæra jefferyi*, 9. *Pericrocotus cinereigula*, 10. *P. montanus*, 11. *Hemichelidon cinereiceps*, 12. *Muscicapula hyperythra*, 13. *M. westermanni*, 14. *Xanthopygia narcissina*, 15. *Tarsiger hodgsoni*, 16. *Rhipidura albicollis*, 17. *Rhinomyias ruficrissa*, 18. *R. gularis*, 19. *Cryptolopha trivirgata*, 20. *C. montis*, 21. *Stoparola cerviniventris*, 22. *Horornis oreophila*, 23. *Geocichla aurata*, 24. *Merula seebohmi*, 25. *Erithacus cyaneus*, 26. *Chloropsis kinabaluensis*, 27. *Hemixus connectens*, 28. *Oreoctistes leucops*, 29. *Henicurus borneensis*, 30. *Phyllergates cinereicollis*, 31. *Staphidia everetti*, 32. *Chlorocharis emilia*, 33. *Brachypteryx erythrogyna*, 34. *Orthnocichla whiteheadi*, 35. *Garrulax schistochlamys*, 36. *Allocotops calvus*, 37. *Stachyris borneensis*, 38. *Turdinus canicapillus*, 39. *T. magnirostris*, 40. *Mixornis montana*, 41. *Androphilus accentor*, 42. *Corythocichla crassa*, 43. *Turdinulus exsul*, 44. *Hyloterpe hypoxantha*, 45. *Pteruthius æralatus*, 46. *Dendrophila coralipes*, 47. *Arachnothera julia*, 48. *Zosterops auriventer*, 49. *Z. clara*, 50. *Dicæum monticola*, 51. *Anthus richardi*, 52. *Chlorura borneensis*, 53. *Calyptomena whiteheadi*, 54. *Psarisomus*



*psittacinus*, 55. *Harpactes whiteheadi*, 56. *H. orescius*, 57. *Cyanops pulcherrima*, 58. *C. monticola*, 59. *Hierococcyx nana*, 60. *H. bocki*, 61. *Cuculus poliocephalus*, 62. *Anorrhinus comatus*, 63. *Macropygia ruficeps*, 64. *Bambusicola erythrophrys*, 65. *Arborophila charltoni*, 66. *Tringa subminuta*, 67. *Scolopax megala*.

Some of Mr. Whitehead's most interesting discoveries have been already figured in illustration of previous articles. I am now able to add the portraits of two more of his new species by Mr. Keulemans. These are—

1. *ZOSTEROPS CLARA*. (Plate VIII. fig. 2.)

*Zosterops clara*, Sharpe, Ibis, 1888, p. 479, 1889, p. 427.

*Hab.* Kina Balu.

2. *DICÆUM MONTICOLA*. (Plate VIII. fig. 1.)

*Dicæum monticola*, Sharpe, Ibis, 1887, p. 452, 1889, p. 428.

*Hab.* Kina Balu.

Of the 198 genera and 286 species of which I propose to treat in the present compilation, it will be found that 74 genera and 127 species are, so far as we know, inhabitants of the lowlands of Borneo only, and do not ascend the slopes of Kina Balu at all.

This leaves us a total of 124 genera and 159 species which are known to occur on the mountain. By adding *Rallina fasciata* and *Butorides javanica* from the Wading-birds, we have the exact number of species found on Kina Balu by Mr. Whitehead, viz. 161, representing 126 genera. A large number of these are birds inhabiting the lowlands of Borneo, which do not extend their range higher than 1000 feet up the mountain. Thirty-four genera and 49 species do not ascend above the 1000-foot limit; but here also begins the true avifauna of Kina Balu; *Chibia borneensis*, *Buchanga stigmatops*, *Phyllergates cinereicollis*, *Rhinocichla treacheri*, *Chlorura borneensis*, and *Collocalia linchi* all descend within the 1000-foot limit.

In the next zone of Kina Balu, which Mr. Whitehead fixes at from about 1000 feet to 3000 feet, there are 55 genera and 59 species, but many more of the lowland birds reach

their maximum range up the mountain before 3000 feet—*Bubo orientalis*, *Tephrodornis gularis*, *Platylophus coronatus*, *Lalage culminata*, *Alseonax latirostris*, *Poliomyias luteola*, *Culicicapa ceylonensis*, *Siphia elegans*, *Alcippe cinerea*, *Pomatorhinus borneensis*, *Dendrophila corallipes*, *Æthopyga siparaja*, *Arachnothera longirostris*, *Motacilla melanope*, *Erythrura prasina*, *Corydon sumatranus*, *Megalema mystacophanes*, *Iyngipicus aurantiiventris*, *Gecinus puniceus*, *Chrysophlegma humii*, *Gauropicoides rafflesii*, *Miglyptes tukki*, *Hierococcyx fugax*, *Rhinoplax vigil*, *Ceyx dillwynni*, *Carcineutes melanops*, *Caprimulgus macrurus*, *Ptilopus jambu*, *Macropygia emiliana*. A few lowland species extend their range beyond the 3000-foot zone, but they disappear in the next zone (3000–4000 feet); these are *Oriolus xanthonotus*, *Arachnothera modesta*, *Calyptomena viridis*, *Pitta arcuata*, *Zanctostomus javanicus*, *Alcedo euryzona*. Only two other species found in the lowlands seem to range beyond the 4000-foot limit, viz. *Lepocestes porphyromelas* and *Merula obscura*. Within the 3000-foot zone therefore 26 lowland genera and 29 lowland species disappear from the list, leaving 66 genera and 83 species.

In this zone also there occur for the first time several peculiar Kina Balu birds:—

- Accipiter rufotibialis.*
- Dendrocitta cinerascens.*
- † *Cissa minor.*
- † *Pericrocotus cinereigula.*
- † *Hemichelidon cinereiceps.*
- Myiophoneus borneensis.*
- Chloropsis kinabaluensis.*
- † *Criniger ruficrissus.*
- † *Rubigula montis.*
- Henicurus borneensis.*
- Stachyris borneensis.*
- † *Mixornis montana.*
- Æthopyga temmincki.*
- † *Harpactes oreskius.*
- Macropygia ruficeps.*
- Bambusicola erythrophrys.*

Those marked with a dagger (†) are apparently confined to this zone, and therefore 2 genera and 7 species must be deducted from the number remaining above the 3000-foot zone.

There remain therefore 27 genera and 23 species, from which must further be deducted *Buchanga stigmatops*, leaving 26 genera and 22 species.

In the next zone, from 3000 to 4000 feet, several more genera and species reach their limit, and there are quite a number of Kina-Balu species which do not ascend higher. The list is as follows :—

- Accipiter rufotibialis.*
- \**Spilornis bacha.*
- \**Oriolus vulneratus.*
- Oriolus xanthonotus.*
- \**Hemipus picatus.*
- Pericrocotus xanthogaster.*
- \**Rhinomyias ruficrissa.*
- \**Geocichla aurata.*
- Chloropsis kinabaluensis.*
- Henicurus borneensis.*
- Phyllergates cinereicollis.*
- \**Staphidia everetti.*
- \**Turdinus canicapillus.*
- Arachnothera modesta.*
- Calyptomena viridis.*
- \**Psarisomus psittacinus.*
- Pitta arcuata.*
- \**Cyanops monticola.*
- Zanclostomus javanicus.*
- Alcedo euryzona.*
- Bambusicola erythrophrys.*

Besides these, which disappear at a height of 4000 feet, many other species appear for the first time and range into the next zone. Such are :—

- Cissa jefferyi.*
- Artamides normani.*

*Chlamydodera jefferyi.*  
*Rhinomyias gularis.*  
*Abrornis schwaneri.*  
*Stoparola cerviniventris.*  
*Hemixus connectens.*  
*Hyloterpe hypoxantha.*  
*Arachnothera julia.*  
*Dicaeum monticola.*  
*Calyptomena whiteheadi.*

We thus deduct 14 genera and 21 species which do not reach beyond the 4000-foot zone, leaving 47 genera and 51 species.

In the next zone (4000–8000 feet) the following genera reach their maximum altitude and disappear :—

- |                            |                             |
|----------------------------|-----------------------------|
| 1. <i>Cissa.</i>           | 16. <i>Stachyris.</i>       |
| 2. <i>Chibia.</i>          | 17. † <i>Corythocichla.</i> |
| 3. <i>Artamides.</i>       | 18. † <i>Turdinulus.</i>    |
| 4. <i>Chlamydochæra.</i>   | 19. <i>Hyloterpe.</i>       |
| 5. † <i>Tarsiger.</i>      | 20. <i>Æthopyga.</i>        |
| 6. <i>Rhinomyias.</i>      | 21. <i>Arachnothera.</i>    |
| 7. <i>Abrornis.</i>        | 22. <i>Zosterops.</i>       |
| 8. <i>Stoparola.</i>       | 23. <i>Dicaeum.</i>         |
| 9. <i>Hemixus.</i>         | 24. <i>Calyptomena.</i>     |
| 10. † <i>Oreoctistes.</i>  | 25. <i>Pitta.</i>           |
| 11. <i>Herpornis.</i>      | 26. <i>Harpactes.</i>       |
| 12. † <i>Brachypteryx.</i> | 27. <i>Cyanops.</i>         |
| 13. † <i>Orthnocichla.</i> | 28. <i>Lepocestes.</i>      |
| 14. † <i>Garrulax.</i>     | 29. <i>Hierococcyx.</i>     |
| 15. † <i>Allocotops.</i>   | 30. <i>Carpophaga.</i>      |

Those genera marked with a dagger (†) are peculiar to this altitude on the mountain.

The following species disappear below 8000 feet :—

1. *Cissa jefferyi.*
2. *Chibia borneensis.*
3. *Artamides normani.*
4. *Chlamydochæra jefferyi.*

5. *Muscicapula hyperythra*.
- †6. *Tarsiger hodgsoni*.
7. *Rhinomyias gularis*.
8. *Abrornis schwaneri*.
9. *Stoparola cerviniventris*.
10. *Merula obscura*.
11. *Hemixus connectens*.
- †12. *Oreoctistes leucops*.
13. *Herpornis brunnescens*.
- †14. *Brachypteryx erythrogyna*.
- †15. *Orthnocichla whiteheadi*.
- †16. *Garrulax schistochlamys*.
- †17. *Allocotops calvus*.
18. *Stachyris borneensis*.
19. *Stachyris poliocephala*.
- †20. *Corythocichla crassa*.
- †21. *Turdinulus exsul*.
22. *Hyloterpe hypoxantha*.
23. *Æthopyga temmincki*.
24. *Arachnothera julia*.
- †25. *Zosterops olara*.
26. *Dicæum monticola*.
27. *Calyptomena whiteheadi*.
28. *Pitta schwaneri*.
- †29. *Harpactes whiteheadi*.
- †30. *Cyanops pulcherrima*.
31. *Lepocestes porphyromelas*.
- †32. *Hierococcyx bocki*.
- †33. *Carpophaga badia*.

Those species marked with a dagger (†) appear to be peculiar to the zone of 4000–8000 feet.

The species which make their first appearance in this zone are:—*Muscicapula hyperythra*, *M. westermanni*, *Tarsiger hodgsoni*, *Rhipidura albicollis*, *Cryptolopha trivirgata*, *C. montis*, *Horornis oreophila*, *Oreoctistes leucops*, *Chlorocharis emiliae*, *Brachypteryx erythrogyna*, *Orthnocichla whiteheadi*, *Garrulax schistochlamys*, *Allocotops calvus*, *Androphilus accentor*, *Cory-*

*thocichla crassa*, *Turdinulus exsul*, *Pteruthius aeralatus*, *Zosterops clara*, *Pitta schwaneri*, *Harpactes whiteheadi*, *Cyanops pulcherrima*, *Hierococcyx bocki*, *Cuculus poliocephalus*, and *Carpophaga badia*.

The highest zone, above the 8000-foot level, contains very few characteristic genera and species, viz. only *Heteroscops luciae*, *Pericrocotus montanus*, and *Merula seebohmi*.

The table which I have drawn out shows so clearly the relationships of the various genera and species found on Kina Balu that I need take up no more space to compare the avifauna of this interesting mountain with the mountains of surrounding countries. It is evident that the peculiar species of Kina Balu are many, that several inhabitants of that mountain are allied to forms inhabiting the high lands of Sumatra and Java, and therefore those of the Malayan chain, Mooleyit, and the Eastern Himalayas.

In drawing up this summary I have derived the greatest assistance from Count Salvadori's works and memoirs on Borneo and Sumatra, and from Mr. Hume's able *résumé* of the avifauna of Tenasserim (Stray Feathers, vol. vi.). I also desire to record my acknowledgments to a most useful paper by Dr. Vorderman entitled "Les Oiseaux de Sumatra et leur présence dans les îles avoisinantes" (Nat. Tijdschr. Nederl. Ind. xlix. Af. 4, pp. 381-442).

In conclusion I once more offer my congratulations to Mr. John Whitehead on the success of an expedition planned and executed with so much determination in the face of so many obstacles and dangers, while his father, Mr. Jeffery Whitehead, who provided the "sinews of war," must feel proud that his son has carried out one of the most important, as well as one of the most successful scientific expeditions of modern times—one, too, from which the gain resulting to our ornithological knowledge has not yet been thoroughly gauged.

XXVI.—On *Photodilus badius*, with Remarks on its Systematic Position. By FRANK E. BEDDARD, M.A., F.R.S.E., F.Z.S., Prosector to the Zoological Society of London.

THE close association of *Photodilus* and *Strix*, which until recently was very generally held by ornithologists, is probably largely due to Nitzsch's researches into their pterylography\*. So very similarly were these Owls found to be organized in this particular that Nitzsch declined even to separate them generically; they were accordingly referred by him to his genus *Hybris*. Before Nitzsch, however, *Photodilus* had been judged, on the evidence afforded by its external characters, to be closely allied to *Strix*.

EXTERNAL CHARACTERS (*Pterylosis, Oil-gland, &c.*).

The *pterylosis* of *Photodilus* has been described by Nitzsch, who, as already mentioned, was influenced by the arrangement of the feather-tracts to associate *Photodilus* and *Strix* together.

I am not quite clear whether Nitzsch really describes the pterylosis of *Photodilus*, or whether his remarks under *Hybris* are only meant to refer to the Barn Owl; that the latter supposition is true appears to be the opinion of Professor Newton. On the other hand, I do not find any distinct statement that the account of the pterylosis of *Hybris* is meant to refer only to the genus *Strix* as we now understand it; if that were so, then Nitzsch's grounds for uniting *Strix* and *Photodilus* would be rather slender.

The *pterylosis* of *Hybris* is stated by Nitzsch to be remarkable for the fact that the two branches of each pectoral tract join again behind the sternum; this was not at all clearly the case in my specimen of *Photodilus*, but until I have had an opportunity of examining *Strix* I reserve my further remarks upon the value of pterylosis in the classification of the Owls.

The *oil-gland* of *Hybris* is said by Nitzsch to have two minute feathers upon the apex, which cannot be accidental, as they were constantly found. Nitzsch does not say par-

\* Pterylography, Engl. ed. p. 70.

ticularly whether he found these feathers in *Photodilus*; I did not myself succeed in finding them, though I made a careful search. This is a point of difference worth noting between the two genera, and it will be observed that in this respect *Photodilus* differs from *Strix* and agrees with other Owls.

The *rectrices* are 12, the *remiges* 21 in number.

Mr. Sharpe has observed another character which distinguishes *Photodilus* from *Strix*\*, and allies it with the Bubonine Owls (*Syrnium*, &c.); and I can quite confirm his statement, from an examination of my specimen, that the serration of the middle toe, which is to be found in *Strix*, is absent in *Photodilus*. The claw is, however, produced laterally into a knife-edge, as in other Owls.

External characters are therefore rather against the close association of *Photodilus* and *Strix*. Nevertheless, Dr. Coues, in his work on North-American Birds †, still retains the older view; he associates together *Photodilus* and *Strix* (called *Aluco*), mainly on account of external characters (not pterylolysis), but also on account of the ankylosis of the furcula with the sternum ‡. He particularly mentions that in both genera "the inner edge of middle claw is serrate or jagged, simulating the pectination seen in Caprimulgidæ, to which birds these Owls are curiously related through *Steatornis*." In the paper just mentioned above, Mr. Sharpe pointed out that *Heliodilus* and not *Photodilus* is the genus which in this particular is akin to *Strix*. I have examined an example of *Strix* in which the jagged edge of the toe in question was very inconspicuous, and the question arises whether it does not occasionally disappear altogether.

#### OSTEOLOGY.

*Skull*.—The skull (fig. 1, p. 295) is less completely Bubonine than I had at first thought it.

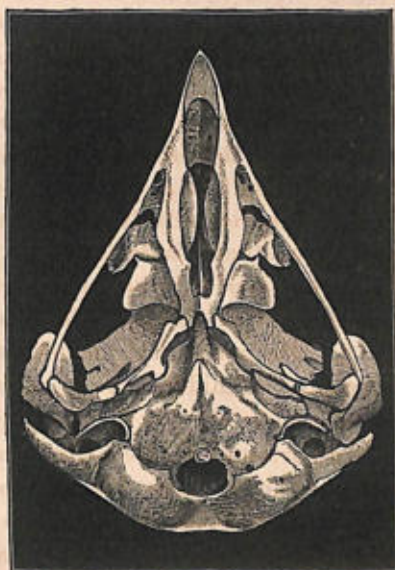
\* A note on *Heliodilus soumagnii*, Grandidier, P. Z. S. 1879, p. 175.

† 'Key to North-American Birds,' 2nd ed. 1884, p. 500.

‡ There is not really this ankylosis; but an appearance of such is caused by the strong ligaments, which tie down the ends of the two (separate) clavicles to the anterior end of the carina sterni.

The *interorbital septum* is not flattened down to a thin plate, which may even be here and there deficient; it is, on the contrary, of some thickness, though this is not so marked as in *Strix*. *Asio* and *Syrnium* are not, however, very far removed from *Photodilus* in this particular, though they are rather on the Bubonine than the Strigine side. The interorbital septum of *Photodilus* is, in fact, intermediate in its characters between that of *Strix* and that of *Syrnium*.

Fig. 1.

*Photodilus badius*: base of skull. Nat. size.

The *lateral ethmoid processes*, although not so swollen as in *Strix*, are not nearly so flattened as they are in *Bubo*, where they are thin plates hardly thicker than a piece of paper.

On the other hand, the general proportions of the skull are decidedly more like those of *Bubo* than of *Strix*.

The measurements are, length 63 millim., breadth 44 millim.

The *palatines*, though not so straight as in *Strix*, are less bowed than in *Bubo*, and there is not that sharply marked

difference between their anterior and posterior regions that there is in the latter genus. In this particular also they approach *Strix*. Furthermore, in *Syrnium* and *Bubo* the postero-internal edge of the palatine is sharply bent down; this is hardly marked in *Strix* or *Photodilus*.

In comparing the skulls of *Strix* and *Bubo* the presence of two minute supraorbital bones in the latter is very noticeable; these are attached rather nearer to the anterior than to the posterior margin of the orbit. In *Strix*, where the configuration of the orbit from above is entirely different, the same bones, if present, are not conspicuous, but must be attached to supraorbital processes placed much further back.

*Syrnium* and *Photodilus* are midway between these two extremes.

As the skull of *Photodilus* studied by Milne-Edwards\* was incomplete anteriorly, I have thought it worth while to introduce some figures (figs. 2, 2a, p. 297) into this paper illustrative of certain facts which cannot be shown properly, for the reasons stated, in Milne-Edwards's figures.

Milne-Edwards mentions particularly the absence in *Photodilus* of those occipital convexities which are so striking a feature in the skull of *Strix*; they are not, however, completely absent from the Bubonidæ, though, if present (as in *Nyctea*), they are very much less developed.

In *Syrnium*, as in *Photodilus*, they are completely absent.

The temporal fossæ, as Milne-Edwards has remarked, are deep, but they are not continuous with depressions appearing on the occipital region of the skull; it is rather important to direct attention to this character, because it seems to be diagnostic.

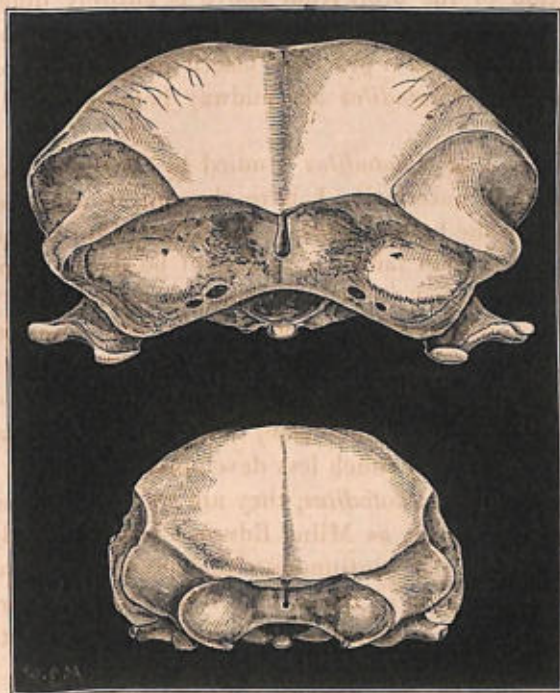
*Strix flammea* agrees with *Photodilus*, but in *Bubo*, *Asio*, *Speotyto*, *Nyctea*, *Ketupa*, and *Syrnium* there is a deepish fossa on each side of the head, which may be seen from behind to be a prolongation backwards of the temporal fossa. In this particular, therefore, the skull of *Photodilus*

\* "Observations sur les affinités zoologiques du genre *Photodilus*," etc., *Nouv. Arch. Mus.* 2<sup>e</sup> sér. t. i. (1878), p. 185.

is like that of *Strix*, and unlike some genera, at any rate, of *Bubonidæ*.

In *Bubo* and *Syrnium* the maxillo-palatines are very large and conspicuous, and are but little concealed by the overlying palatines; in *Strix*, on the other hand, as I have pointed out, these bones are comparatively small and largely hidden by the palatines.

Figs. 2, 2 a.



The upper figure represents the posterior face of the skull of *Nyctea nivea*.  
The lower figure gives a corresponding view of the skull of *Photodilus badius*. Both are of the size of nature.

*Photodilus* is decidedly nearer to *Strix* in these points.

After describing the skull of *Photodilus*, Milne-Edwards says that "it is with the representatives of the group of *Syrnium*, not only in the conformation of the skull, but in

many other points, that *Photodilus* presents the closest analogy." Prof. Newton\*, however, is of opinion that it should not be definitely referred to the Bubonine group, but that it forms a connecting link between the Strigidæ and the Bubonidæ. This statement refers apparently to the osteological peculiarities of the skull and to the external characters of the genera; the latter are more Strigine, the former Bubonine.

I quite agree with Professor Newton, and also with M. Milne-Edwards, that *Syrnium* is the Bubonine type which comes nearest to *Photodilus*.

In my above-given account of the skull which supplements that of Milne-Edwards, attention is directed to many points in which *Photodilus* agrees now with *Syrnium* now with *Strix*.

It agrees with *Strix* :—

- (1) In the absence of the extension over the occipital region of the temporal fossæ.
- (2) In the comparatively narrow maxillo-palatines.
- (3) In the approximately equal breadth throughout of the palatine.
- (4) In the slightly swollen prefrontal processes of the ethmoid.
- (5) In the comparative thickness of the interorbital septum.

It agrees with *Syrnium* :—

- (1) In the general configuration and proportions between length and breadth.
- (2) In the prominent forehead.
- (3) In the absence of occipital convexities.

The *foot* of *Photodilus* (fig. 3, p. 299) offers certain peculiarities which distinguish it from that of all other Strigidæ which I have been able to study. At the same time, as regards the proportions of the first two phalanges of the third digit, it comes nearer to *Strix* than it does to *Bubo*; these two

\* Article "Owl," Encycl. Brit. xviii. p. 89.

joints are not subequal, but the second is decidedly the longest. I take this opportunity of mentioning these points as it appears to me \* that, although no doubt trifling, they are of some classificatory value from their constancy. Furthermore, as in Milne-Edwards's † illustration the toes are left unshaded and are not figured separately, it seems probable that his skeleton was so far defective.

Fig. 3.

Right foot of *Photodilus badius*. Nat. size.

The peculiarity in the bones of the feet of *Photodilus* concerns the three proximal phalanges of the fourth digit; the first two of these are fused, and the next following is of about half the size of the compound bone, thus showing that the size of the separate bones is equal, as in other Striges.

*Ribs.*—M. Milne-Edwards states (*op. cit.* p. 190) that “the

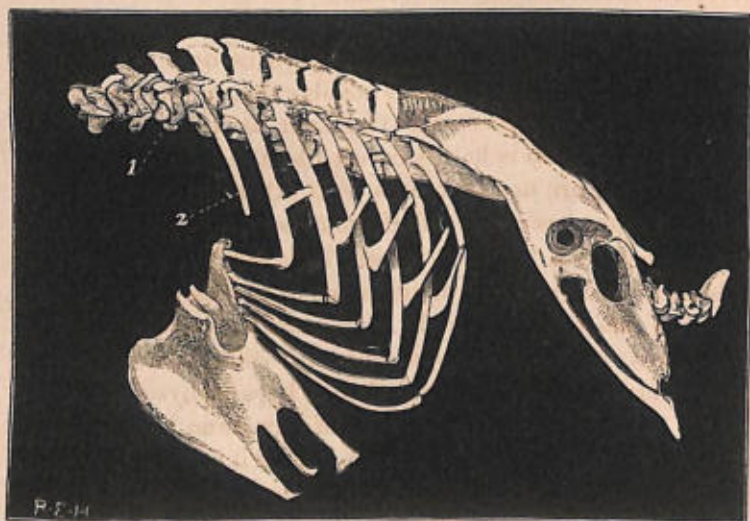
\* *Cf. Ibis*, 1888, p. 339.

† *Nouv. Arch. &c., loc. cit.* pl. 4.

ribs are, as usual, seven pairs, but that five of them articulate directly with the sternum; the first pair alone are floating ribs, while in the little group of the Strigidæ two pairs thus remain in the condition of stylets; the second rib has no uncinatè process, and the seventh, remarkable by its slenderness, is attached to the middle of the last sternal rib but one." These statements are entirely borne out by his figure (on plate 4) of the entire skeleton.

The skeleton which I have studied was evidently more carefully prepared than that which furnished the material for M. Milne-Edwards's admirable paper. In this specimen (see fig. 4) the seven ribs mentioned by Milne-Edwards are, of course, present; but, in addition, there is a small free rib (1) attached to the thirteenth vertebra on each side, about one

Fig. 4.



Ribs, pelvis, and sternum of *Photodilus badius*: 1, first rudimentary (cervical) rib; 2, second do. Nat. size.

eighth of the length of the next rib (2), and only furnished with one attachment to the transverse process. Moreover, the third (the first complete rib) on both sides of the body has perfectly well-developed uncinatè processes, which are

about half the length of those which follow and of a rather different shape. The second rib also appears to me to show a very faint trace of an uncinatè process.

In *Strix flammea*, on the contrary, the first rudimentary rib, that on the thirteenth vertebra, although extremely short, has both a capitular and tubercular head; the uncinatè processes appear to commence with the fourth rib; but I should not like to be positive about the latter point.

In both these types the upper extremity of the last rib is complete, and that of the penultimate rib is partially covered by the extension forwards of the ilium.

In *Bubo maximus* the third rib has uncinatè processes, and there is (on one side) a minute trace of a *ninth* rib; the eighth rib is attached very nearly at the end of the seventh; the last two ribs are very completely covered at their vertebral attachment by the ilium.

In *Ketupa javanensis* both the twelfth and thirteenth vertebræ are furnished with rudimentary ribs, only attached to the transverse processes. It is possible that in this case as in others the main tubercular fragment is hardly ossified: the penultimate rib is hardly covered by the ilium. In other respects there are no differences from other Owls.

Of the *dorsal vertebræ* of *Photodilus* the last three have no hypapophysis. In this respect it agrees with *Strix*; but this fact appears to be of no moment in classification, for *Syrnium aluco*, *Bubo*, and *Athene noctua* have the same characters, while in *Ketupa javanensis* there are only *two* dorsal vertebræ thus unprovided with hypapophyses.

The *Pelvis*.—The conformation of this bone has been described by Milne-Edwards, who has figured it in two views; the following is his account of the bone (*op. cit.* p. 192):—"Le bassin est beaucoup plus raccourci que celui des Effraies, et par ce caractère il se rapproche un peu de celui des Chevèches, des Ciccaba et des Nyctales; les proportions relatives de la portion præcotyloïdienne et de la portion postcotyloïdienne sont à peu près les mêmes que chez ces oiseaux, tandis que chez les Otus les fosses iliaques sont notablement plus longues mais moins élargies. L'écusson pélvien est aplati comme

celui des Nyctales et les angles ischiatiques sont peu proéminents." There is another feature in the pelvis which seems, besides those mentioned by Milne-Edwards, to be of some importance. This is the pointed extremities of the ilia, which overlap the last ribs; these are perfectly well figured by Milne-Edwards.

These conditions are *exactly* repeated in *Strix*; but in *Ketupa* and *Syrnium* the antero-lateral processes of the innominates are much more blunt and altogether shorter in proportion.

#### VISCERAL ANATOMY.

The viscera, and in fact the soft parts generally, of *Photodilus* do not seem to have been ever studied.

The following notes may therefore not be without interest:—

The *liver-lobes* are unequal in size, the right being rather larger than the left. The liver-lobes are shut off by a delicate membrane from the subomental space, which appears to be formed by a fusion between the umbilical ligament and the oblique septa. I just mention this arrangement without for the present going any further into the matter, because the character appears to be one of classificatory importance.

I find, in fact, that in the Barn Owl there is no septum cutting off the liver in the way that has been described; but in *Asio otus* I find such an arrangement repeated.

The *cæca* of *Photodilus* (fig. 5, p. 303) are, as in other Owls, swollen at their extremities; it seemed to me as if this swelling was more marked in *Photodilus* than in some other types of Owls.

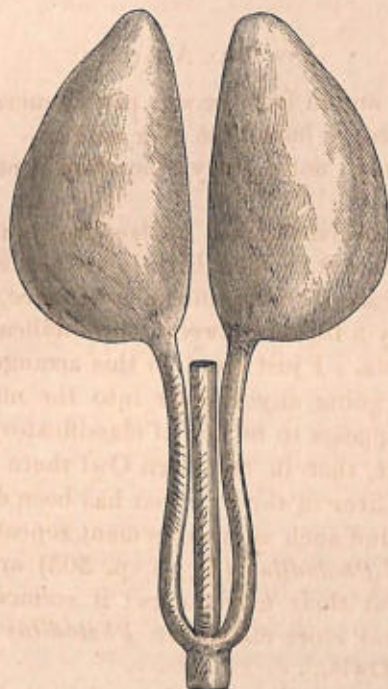
The *gall-bladder* is large, and its duct enters the small intestines just at the top of the loop in front of the opening of the hepatic duct, which is itself considerably above the two pancreatic ducts; these latter are side by side, and placed about halfway up the distal side of the duodenal loop.

The *syrinx* is not very distinctive of the affinities of the bird. The last three tracheal and the first two bronchial rings are ossified; the intrinsic muscles, which are not

strong, are attached to the second bronchial semiring (the last of the ossified rings).

The *tensores patagii* muscles are so far unlike those of *Strix* that there is no fibrous band uniting the extremity of the tendon of the *t. p. brevis* with the tendon of the *t. p. longus*. As I have already pointed out \*, at least two species of *Strix* agree in possessing this fibrous band, which is probably characteristic of the genus.

Fig. 5.



Cæca of *Photodilus badius*. Twice the nat. size.

The foregoing description of the anatomy of *Photodilus badius* tends to support the conclusion that this Owl cannot be referred to the Strigine section, but that it must be included among the Bubonine genera. Among the latter *Syrnium* appears to be the form to which it is most closely

\* 'Ibis,' 1888, p. 341.

allied. At the same time it is important to notice that it does present certain points of resemblance to *Strix*. These are not, however, in my opinion, sufficiently numerous or important to lead to the conclusion that *Photodilus* occupies a really intermediate position between the two families. The structure of *Photodilus* does not necessitate either the creation of a separate family for its reception, or the amalgamation of the two generally recognized families into one.

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XXVII.—*On the Principal Modern Breeds of the Domestic Fowl.* By W. B. TEGETMEIER, F.Z.S., M.B.O.U.

ON the occasion of an exhibition of the various breeds of poultry in the grounds of the Zoological Society of London in September last, the Editor of 'The Ibis' did me the honour to suggest that an illustrated article on the subject of the modern varieties might be interesting to ornithologists, and requested me to undertake its production. I had much pleasure in acceding to his request. For many years I have been interested in the subject, not only from an anatomical, but also from a practical standpoint. My first introduction to Darwin was by Yarrell, thirty-five years ago, on which occasion the author of the 'Origin of Species,' which was not then published, came to my house to inspect a large collection of crania and other preparations illustrating the extent of variation in the domesticated *Gallus ferrugineus*. Engravings of several of these, and some figures of the heads of fowls of distinct breeds, were given in Darwin's 'Variation of Animals and Plants,' and it will be interesting to trace the extension of variation in the several breeds since the publication of that work in 1868 to the present time.

The breed which most closely resembles the wild *Gallus ferrugineus*, from which Darwin thought all the domestic varieties had descended, is (or, perhaps it would be more correct to say, was) the ordinary Game breed, one sub-variety of which, known as the Black-breasted Red Game, from the arrangement of colours in the male, differs from the wild original chiefly in being of larger size and in the more

erect bearing of the tail. During the period that Game cocks were bred for the cock-pit, the conformation of the wild bird was but slightly departed from; but since the establishment of competitive poultry shows, the breeders have aimed at increasing the length of the neck and limbs, the result being the production of such specimens as are shown in figures 1 and 2, representing a Black-breasted

Fig. 1.

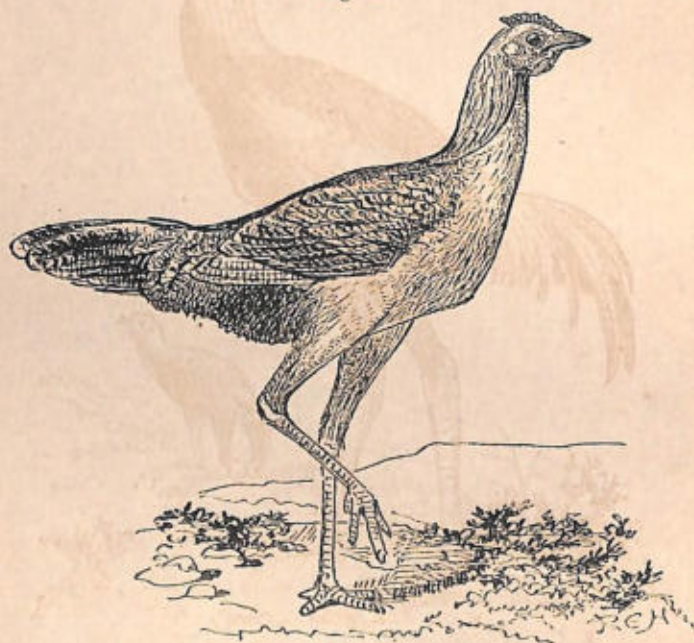


Black-breasted Red Game Cockerel.

Red Game cockerel and pullet that have just assumed their adult plumage, having been drawn, as were all the illustrations to this article, in September from birds of the current year. So successful have been the efforts of the fanciers to produce long-limbed birds, that the hens not unfrequently stand with the keel of the breast-bone raised 12 or 13 inches from the ground. The feathers in this breed are now required

to be firm, narrow, and closely pressed to the body, the long flowing sickle tail-feathers of the male, that were formerly admired, being reduced to scanty proportions. That so complete a change should be effected in a few years is a striking example of the power of the breeder to alter the type of a breed by careful selection of brood-stock,—the object being to produce breeds that should excel others in the conventional fancy points, so as to be able to win prizes at competitive shows, the sale-value of such birds for the purpose of

Fig. 2.



Black-breasted Red Game Pullet.

exhibition rising higher in some instances than £50 each. It is hardly necessary to remark that such birds as these represented would be of no value in the cock-pit, as they would at once be overpowered by birds of greater strength of limb.

The Malay breed, a young male of which in full plumage is shown in figure 3, is one of much greater size than the

Game; the legs, though greatly elongated, are thick and massive, and the body more weighty than it appears, as the plumage is excessively close and firm, and so scanty that in the older birds the naked skin often appears on the breast, neck, and legs, turning bright red by exposure to the light

Fig. 3.



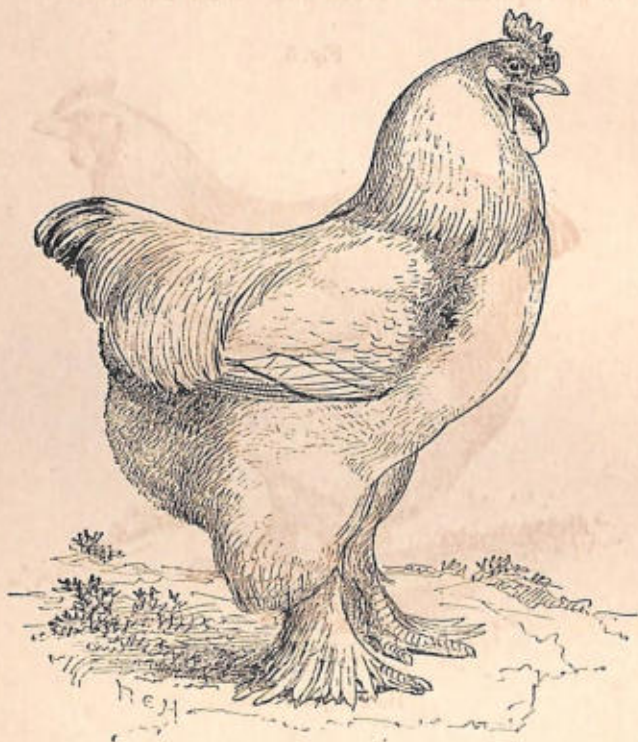
Malay Cockerel.

and air. From the length of the legs and the necessity of resting them, the males not unfrequently assume the attitude shown in the smaller figure, which has a ludicrous resemblance to that of a kangaroo. The comb in the Malay is closely adpressed to the skull, and quite destitute of the ser-

rations which characterize that of the wild *G. ferrugineus* and the Game breed.

The Malay is one of the very few fowls of which the geographical title is correct. Typical specimens are frequently brought from the Malay peninsula. Temminck figured the variety, which he erroneously regarded as a distinct species,

Fig. 4.



Buff Cochon Cockerel.

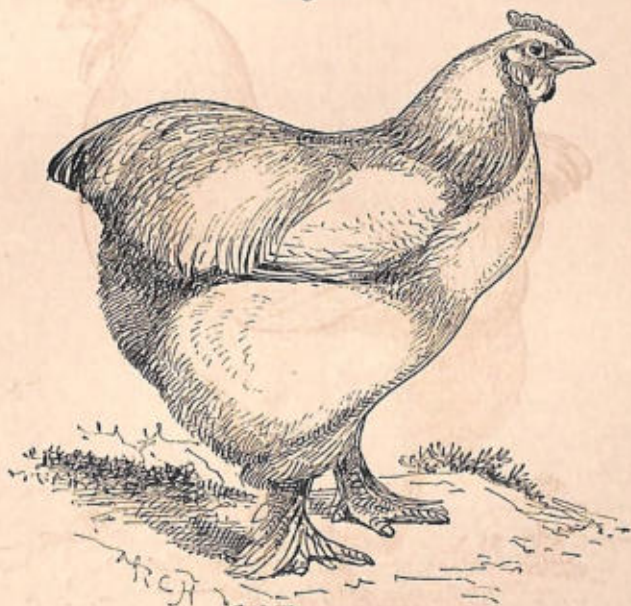
under the name *Gallus giganteus*, and in the early period of the Zoological Society specimens imported by Colonel Sykes were shown as "Kulm Fowls."

The Malay has not greatly altered since Darwin's time, as the object of the breeders of this variety was always to secure

great length of limb and neck and hardness of plumage, conjoined with size and weight.

It has been supposed that the elongation of the modern show Game has been obtained by crossing with the Malay; but there is no evidence to prove this, and, from a fancier's point of view, more would be lost by introducing the coarseness of limb and head than would be gained, as much time would be required to "breed out" these characters.

Fig. 5.



Buff Cochin Hen.

A variety of the Malayan type, with shorter legs and excessively glossy plumage, has been for many years bred largely in the south-western counties, particularly Devon and Cornwall, being known as the Indian Game. It is an exceedingly weighty bird, having very large pectoral muscles, and is admirably adapted for improving our domestic poultry by crossing. It has, unfortunately for its utility, been recently largely exhibited, and will probably be bred for

feathers of a particular marking rather than for its useful properties. This breed, being very local at the time that Darwin wrote, was not described by him.

Following the arrangement adopted by Darwin in his work on 'Variation,' I now arrive at the Cochins, a geographical misnomer, as these birds at the time of their introduction were as unknown in Cochin China as in England, and came from Shanghai, a port many hundreds of miles to the north. Cochins (figs. 4 & 5, pp. 308, 309) are distinguished by their great size and the abundance of fluffy plumage on the body, the wing and tail-feathers being extremely short, so that typical birds are quite incapable of flight. In the original importations the legs (tarsi) were generally feathered. This has been regarded as an important point by fanciers, and much care has been bestowed on the production of feathers on the legs and feet, so that in first-rate show-specimens the foot-feathers are strong quills, often 6 or 8 inches in length.

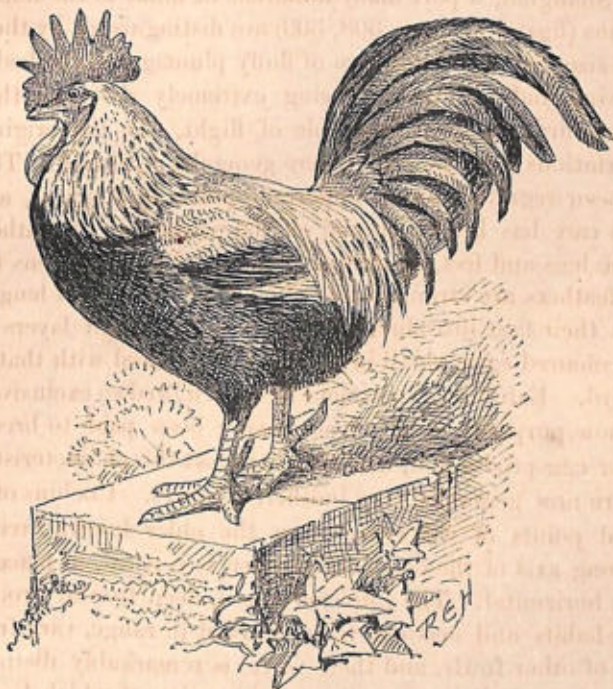
On their first introduction they were abundant layers of buff-coloured eggs, small in size when compared with that of the bird. Exhibition specimens have been bred so exclusively for show purposes, no attention having been paid to breeding for egg-production, that they have lost this characteristic, and are now generally very indifferent layers. Cochins offer several points of difference from the older known breeds. The long axis of the occipital foramen is vertical, in place of being horizontal. The forehead has a deep frontal groove. Their habits and nesting, when allowed to range, vary from those of other fowls, and their voice is remarkably distinct. These characteristics, into the consideration of which I cannot enter fully in this paper, lead me to believe that the Cochin had its origin in a species of *Gallus* which has, like the camel, wholly passed into a state of domestication.

The introduction of the Cochin into England some forty years ago gave the first impulse to the exhibition of fancy poultry and to the manufacture of new breeds by crossing different varieties. Thus, the Brahmas did not, as alleged, come from the river from whence they take their name, where fowls of the character are quite unknown, but were

produced in America by crossing Cochins with a large grey variety of Malays called Chittagong. At first many of the chickens were black, but by careful selection the colour and markings were fixed in a few generations; and as they now produce their own like they are regarded as a pure breed.

More recently a new variety, which now breeds fairly true

Fig. 6.



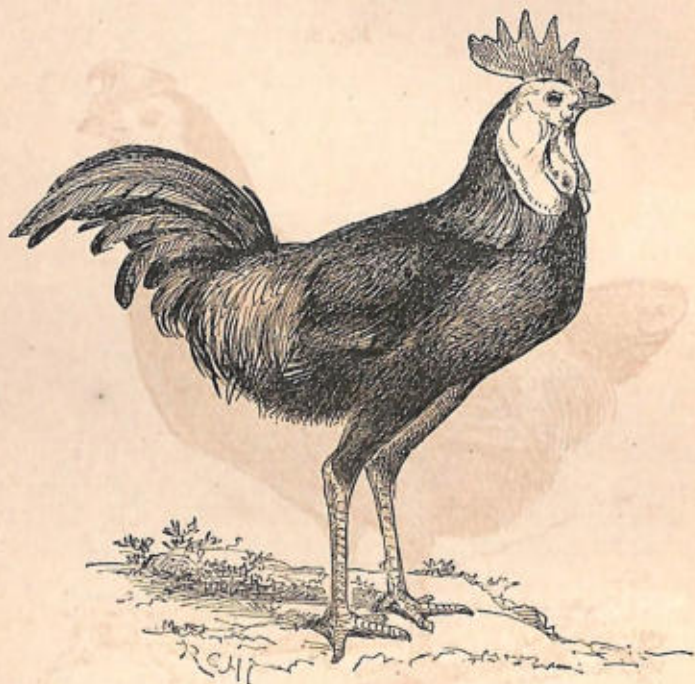
Dorking Cockerel.

to colour, though still producing some black chickens, has been formed in America by crossing the Cochin with the Dominique, a Cuckoo-marked farm-yard fowl common in the United States. This new breed, known as the Plymouth Rock, is now very common in England, and is valuable as a prolific layer, but, like all breeds derived from the Cochin, is deficient in the size of the pectoral muscles and possesses a yellow skin.

The Langshan is a recently introduced Asiatic breed, which at first closely resembled the black Cochin, but by careful selection has been rendered much closer in plumage, more resplendent in colour, and its quality as a table-bird improved.

The Dorking of the present day (fig. 6, p. 311) is a large, heavy, massive bird, which was greatly increased in size some

Fig. 7.

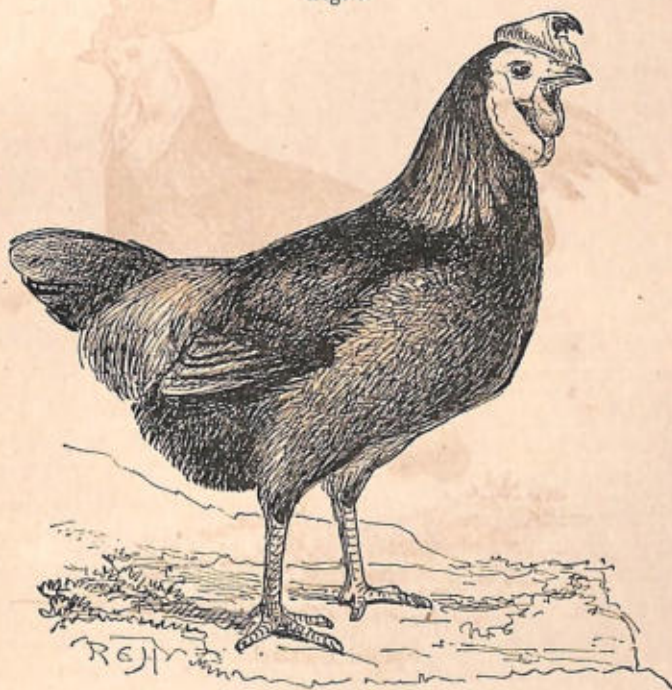


Spanish Cockerel.

quarter of a century since by being crossed with a large Malay or Kulm cock, introduced by Col. Sykes. It still retains the fifth toe, an unnatural excrescence, which renders these heavy birds very liable to diseased feet. As a remarkable illustration of the effect of competition, I may state that one of the successful rearers of these birds some forty years since was in the habit of cutting away the supernu-

merary toe to prevent lameness in his fowls; whereas, later on, the most successful exhibitor of the breed used to look over his chickens as they were hatched and at once destroy any that had not five toes on each foot. This remorseless process of selection eventuated in his strain being invariably five-toed. Dorkings are of various colours, the white not being as large as the darker varieties. The Surrey and Sussex fowls, which constitute the bulk of the best birds sent to the London markets, are largely crossed with the Dorking breed.

Fig. 8.



Spanish Hen.

The Mediterranean breeds, as they are reared in this and other countries where poultry shows are prevalent, have certain well-marked characteristics in common, namely, large, thin, single, compressed combs, deeply serrated; these, in show birds, must be erect in the cocks (fig. 7, p. 312) and

folded on the top of the head in the hens (fig. 8, p. 313). The ear-lobe or lappet in all is white, as in the Indian specimens of *G. ferrugineus*, and in the breed known as Spanish (figs. 7 & 8) this whiteness extends over the whole face. At the earlier poultry shows Spanish were rarely, if ever, seen without a small proportion of red over the eyes, but at the present time such birds would have no chance of winning prizes at a competitive show. The size of the ear-lobe, about half an inch square in the wild original, has been increased to seven inches in depth by four or more in width, and in many old birds its growth would quite obscure the eyeball and interfere with vision unless cut away.

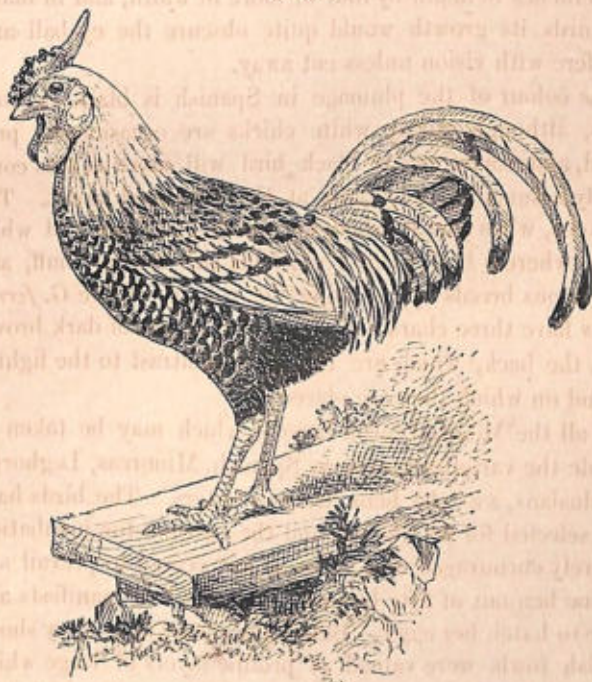
The colour of the plumage in Spanish is black in both sexes, although purely white chicks are occasionally produced, and sometimes a black bird will more or less completely assume white feathers at the autumnal moult. The chickens, when just hatched, are clothed in black and white down, whereas buff Cochin chickens are entirely buff, and the various breeds approaching the colours of the *G. ferrugineus* have three characteristic broad stripes of dark brown down the back, which are in strong contrast to the lighter ground on which they are placed.

In all the Mediterranean breeds, which may be taken to include the varieties known as Spanish, Minorcas, Leghorns, Andalusians, &c., the hens are non-sitters. The birds have been selected for prolificacy, and the instinct for incubation so rarely encouraged that it has at last ceased to prevail, and not one hen out of fifty becomes "broody" or manifests any desire to hatch her eggs. Before the advent of poultry shows Spanish fowls were valued as prolific layers of large white eggs, and those from the most prolific layers were selected for the production of chickens. For the purpose of exhibition, however, the birds have been selected for fancy points, and prolificacy altogether ignored, the result being that the variety is nearly useless for practical purposes, and has gone out of general favour, except as a purely fancy fowl.

Minorcas, a breed that has for many years been largely bred in the south-western counties of England, differ from

Spanish in having red faces, the white ear-lobe and wattles being much less developed. They possess the prolificacy that the Spanish have lost, and are most abundant layers of large white-shelled eggs. They have, unfortunately for their utility, lately come into fashion as exhibition fowls, the object of the breeders being to develop the comb in the cocks to the largest possible size that it is capable of assuming whilst maintaining a plane surface and erect position.

Fig. 9.



Silver-spangled Hamburg Cockerel.

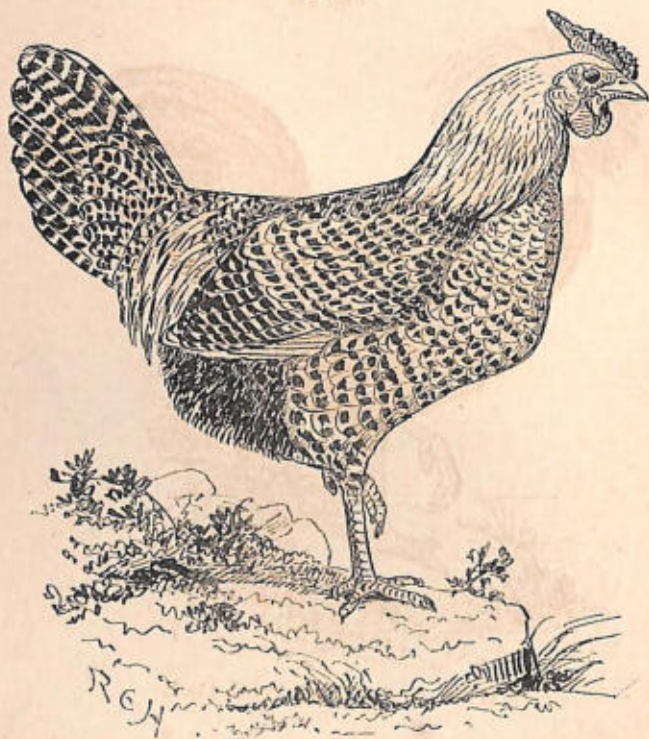
Andalusians are another sub-variety of the Spanish or Mediterranean type. In this breed the colour is slaty blue, but the hens recently exhibited are characterized by a dark margin or edging to breast- and body-feathers.

Leghorns are of the same general type, but with white plumage and yellow legs (tarsi). Since their introduction into

this country from the United States, where the breed was first carefully bred, they have been crossed with ordinary Game, and brown, as distinguished from white, Leghorns are an established breed.

Under the name of Hamburgs, a misnomer which was first employed at one of the early Birmingham shows, several

Fig. 10.

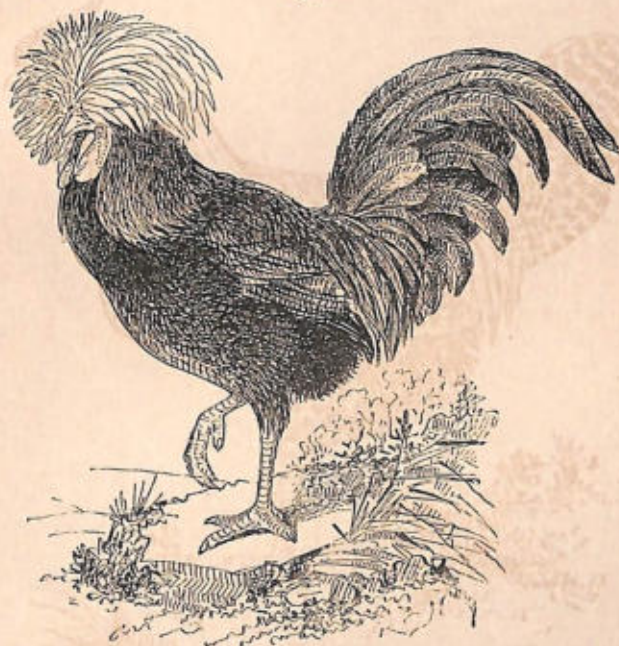


Pencilled Hamburg.

distinct breeds of fowls are confounded together. The so-called Spangled Hamburgs (fig. 9, p. 315) originated apparently in England; small competitive shows, which were confined to the hens, having existed in the north for a long period. In this breed, of which there are two sub-varieties, named, according to the ground-colours, Gold- or Silver-spangled, the

feathers are tipped with a black mark, crescentic in some strains and circular in others. The birds were formerly called Mooneys or Pheasant-fowls. The combs are what are known as double, being flat on the head, peaked behind, and covered with small short sprigs. These breeds are of fair size and are non-sitters. A sub-variety with the plumage entirely black is known as the Black Hamburg.

Fig. 11.

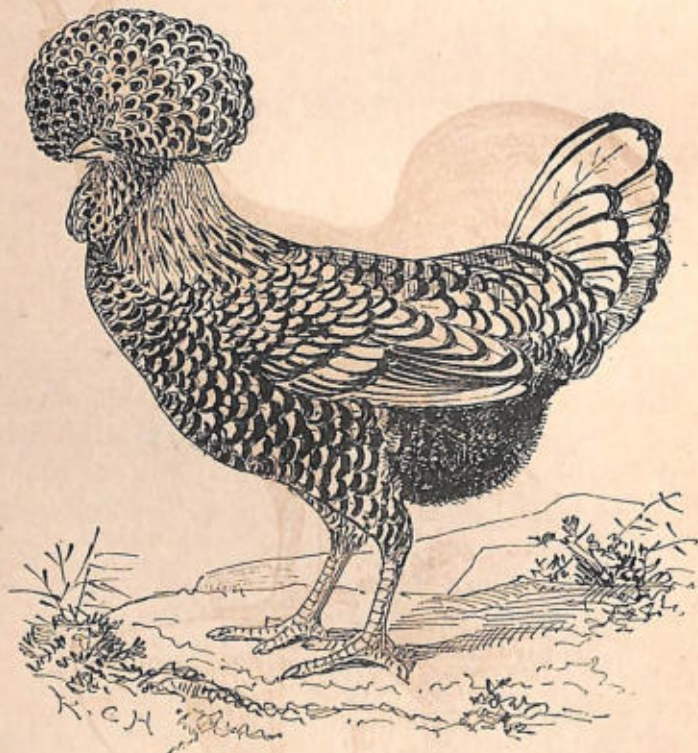


White-crested Black Polish Cock.

Pencilled Hamburgs (fig. 10, p. 316) are unquestionably of continental origin; they are well known in France as Campines, and on their first introduction to this country were termed Dutch every-day layers. They are smaller than the spangled breeds, and are characterized by the feathers of the hens (and those of both sexes before the moult into adult plumage) being marked with several transverse bars of black on a white or bay ground.

The fowls known in this country as Polish and in France as Race de Padoue (fig. 11, p. 317) are characterized by large feathered crests, which appear to necessitate a peculiar development of the frontal bones for their support. This protuberance, which assumes a hemispherical form, is seldom completely ossified; it contains the anterior part of the

Fig. 12.



Spangled Polish Hen.

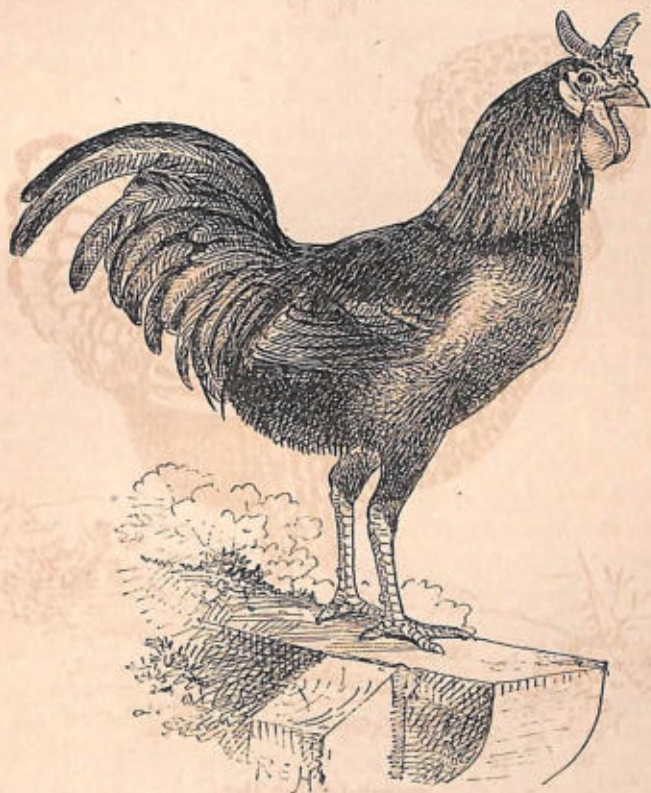
brain, which consequently is in a most abnormal form, approaching that of an hour-glass\*.

The Polish breeds are of considerable antiquity, having been described by Aldrovandus and figured by the old Dutch painters. Beyond increasing the size of the crests and the

\* Cf. Tegetmeier on "Skulls of Polish Fowls," P. Z. S. 1856, p. 366.

regularity of the markings but little alteration has been since effected in these breeds. Figure 11 (p. 317) represents a cock of the white-crested black variety, in which the ordinary wattles are present in full size. In despite of the most persistent efforts of the breeders, the white crests of the birds

Fig. 13.



La Flèche Cockerel.

of this breed always show some black feathers over the beak; they are sometimes few in number, but are always present unless they have been removed by violence.

In the Spangled Polish (fig. 12, p. 318) each feather in the hens is banded by a black line on a white or bay ground,

and the wattles, like the comb, are reduced to a minimum and replaced by feathers. All the Polish breeds are non-sitters. I have given figures of a male and female of two different varieties in order to call attention to the fact that the feathers of the crest differ in the two sexes, in both, however, taking the form of the tail-coverts; so that they are lanceolate in the males and rounded in the females.

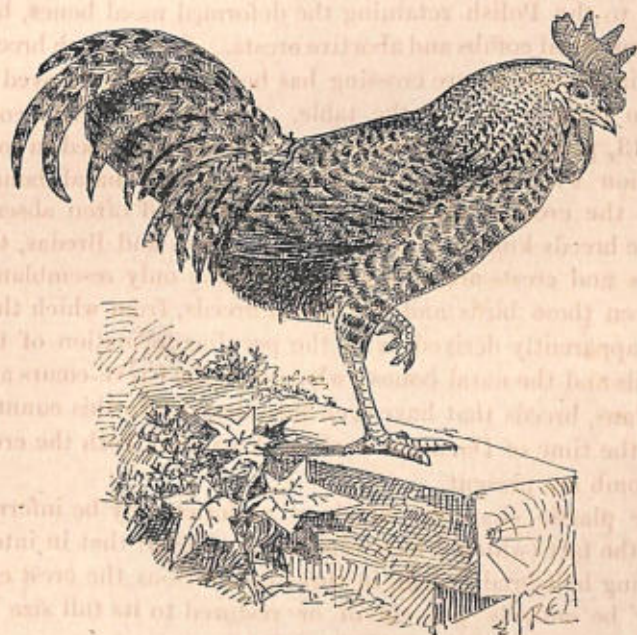
The rudimentary comb in the Polish breeds is crescentic or two-horned, and is generally developed in an inverse ratio to the feathered crest; it is even possible to establish breeds allied to the Polish retaining the deformed nasal bones, but with enlarged combs and abortive crests. Several such breeds exist in France, where crossing has been largely employed to secure good birds for the table. In the La Flèche cock (fig. 13, p. 319) the crescentic comb is fully developed in conjunction with the peculiar deficiency of the nasal bones, while the crest is extremely rudimentary and often absent. In the breeds known in France as Gueldres and Bredas, the combs and crests are both absent, and the only resemblance between these birds and the Polish breeds, from which they were apparently derived, is in the peculiar formation of the nostrils and the nasal bones; whereas in the Crève-cœurs and Houdans, breeds that have been introduced into this country since the time of Darwin's work on Variation, both the crest and comb are present.

The plastic character of these varieties may be inferred from the fact (which I have repeatedly proved) that in interbreeding half-bred Polish, in three generations the crest can either be entirely got rid of or restored to its full size by careful selection of the birds bred from.

Polish or crested fowls have been so long favourites with amateurs that numerous sub-varieties, varying as to colours &c., exist. In addition to the gold- and silver-spangled, there are purely white Polish, others entirely black, and some are Cuckoo-feathered. One of the most interesting, as illustrating a fact in variation well known to all raisers of new breeds, is the buff or Chamois Polish. In this the feathers are reddish buff, each one being tipped or spangled with

white. The breed may be regarded as Gold-spangled Polish, in which the black spangle has been changed into white—a process of easy accomplishment compared with the difficulty of obtaining a breed in which the feathers that are naturally red are changed into white. Thus, to revert to the Game breed, Black-breasted Red Game are coloured precisely like the wild *G. ferrugineus*. Nothing is more easy than to produce, by crossing with a white bird, the variety

Fig. 14.



Scotch Grey Cock.

known as Pile Game, in which all the feathers that are black in the original become white, the red remaining unchanged. In the hands of a skilled breeder black and white are more easily interchangeable than any other colours, a fact which is in obvious relation to the more frequent occurrence of albinos amongst black species than those of lighter colours.

Several breeds of fowls are characterized by what is termed by fanciers "Cuckoo markings." The Plymouth Rock has already been alluded to as a cross-breed. There are also Cuckoo-coloured Dorkings, Polish, Cochins, &c. In the north of England and Scotland a Cuckoo-marked breed known as Scotch Grey (figs. 14 & 15) is frequent. In these birds the feathers are marked with transverse bands, which are not so defined as those in the hens of the pencilled Hamburgs, the bands being dark slaty grey on a lighter ground.

Sebright Bantams (figs. 16 & 17) may be regarded as the

Fig. 15.



Scotch Grey Hen.

most artificial of all breeds, inasmuch as the males not only possess the plumage, but also the markings of the hens; every feather in this beautiful diminutive breed should be "laced" or margined with black, like a sheet of mourning-paper. The neck and saddle-feathers of the male should resemble those of the female, and there should be a total absence of long curved sickle-feathers in the tail.

Fig. 16.



Silver Sebright Bantam Cock.

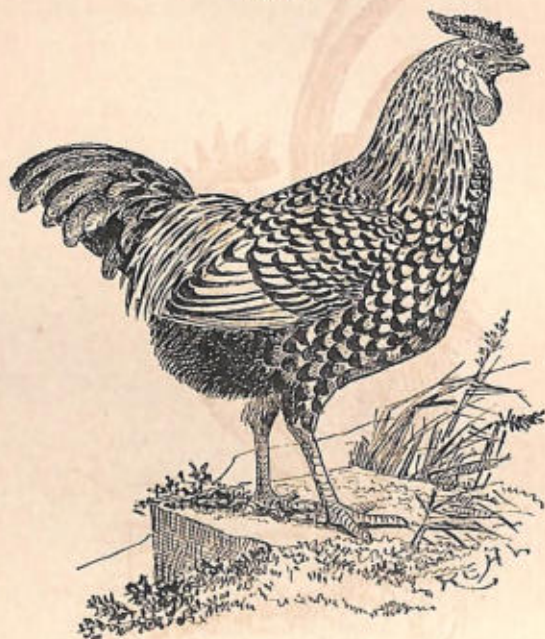
Fig. 17.



Silver Sebright Bantam Hen.

This composite breed was produced by the late Sir John Sebright by first crossing a Polish fowl with laced feathers with a Bantam. When the required size and markings had been obtained by careful selection, he crossed again with "hen-feathered cock," so as to introduce the female plumage into the males of the breed, and then by careful selection he established the breed, of which there are two varieties, one

Fig. 18.



Wyandotte Hen.

with white, or, as it is called, silver, the other with rich bay or golden ground.

In a recently manufactured American breed the laced or dark-bordered feathers of the Sebright Bantam have been obtained by careful crossing and selection, on a large bird, evidently derived from one of the Asiatic breeds, such as the Brahma: this breed is known as the Wyandotte (fig. 18). Well-laced Wyandotte hens are now common, but it will

take some few years' careful selection to obtain the required markings of the cocks in a perfect state.

Several distinct varieties exist in the smaller forms known as Bantams; the Japanese (fig. 19) is one of the most strongly characterized, the tail being of large size, the legs short, and the breast very prominent. The Japanese Bantam

Fig. 19.



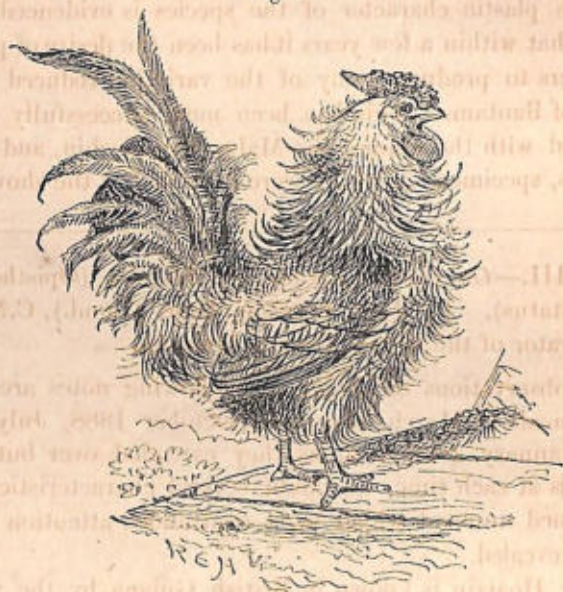
Japanese Bantam.

shows that, in spite of the difficulty, colour can be localized in the fowl—the tails of many of these birds being black, the remainder of the plumage white. In breeding Pigeons nothing is easier than to localize colour, and to breed birds with black tails and white bodies, or yellow wings on a white ground &c., as may be desired; but in fowls such feats in breeding are very difficult and of rare accomplishment—facts,

the solution of which depends on what Darwin termed analogous variation. In many species of Columbine birds the colour is localized; white heads, for example, exist in nature in many species, but in the wild *Galli* and allied species no such arrangements of colours are known, hence the difficulty of producing such patterns in the varieties of the *G. ferrugineus*.

The singular effect produced by the shafts of all the body-feathers being curved from, instead of towards, the body is shown in the Frizzled fowls (fig. 20), which may be produced

Fig. 20.



White Frizzled Bantam Cockerel.

of any size or colour. The breed is not in high favour, being especially delicate, owing to the rain at once penetrating to the skin in place of running off the plumage.

The illustrations show the most important breeds exhibited at the show held in the Gardens of the Zoological Society. Some few characteristic varieties were not entered, such as the long-tailed breeds of Japan, in which the sickle-feathers

of the tail attain a length of six, seven, or even more feet. In these instances the growth must be continuous for many months to attain the unusual length.

In the so-called Silk fowl the feathers have the barbs entirely disconnected, so that the birds have a fluffy or woolly appearance; this in the ordinary white Silk fowl is conjoined with a singular development of black pigment, which is deposited in the skin, the periosteum, and the inter-muscular cellular tissue; but the silky feature may occur in other breeds, and is occasionally found in very different species, as, for example, in the Moorhen (*Gallinula chloropus*).

The plastic character of the species is evidenced by the fact that within a few years it has been the desire of poultry-fanciers to produce many of the varieties reduced to the size of Bantams. This has been most successfully accomplished with the Game, the Malay, the Cochin, and several others, specimens of which were exhibited at the show.

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XXVIII.—*On the Habits of the Hoatzin* (*Opisthocomus cristatus*). By J. J. QUELCH, B.Sc. (Lond.), C.M.Z.S., Curator of the British Guiana Museum.

THE observations on which the following notes are based were made in March, May, and October 1888, July 1889, and January 1890; and as they extended over but short periods at each time, no doubt several characteristics have remained unnoted which more continuous attention would have revealed.

The Hoatzin is known in British Guiana by the various names of "Anna," "Hanna," "Canjé, or Stinking Pheasant," and "Governor Battenberg's Turkeys;" but in the districts where it is found the name of "Hanna" is the one most commonly used. These birds are plentifully distributed along the Berbice river above the town of New Amsterdam, along the Canjé creek, which opens into the Berbice immediately below the same town, and along the Abary creek, one of the higher branches of which leads into the Berbice river, and along which the birds have most likely spread, by this

channel, from the main stream. They are said to extend upward along the Berbice and the Canjé for a considerable distance; but on this point I have no personal knowledge, and reports which I have heard on the subject are conflicting.

Where the birds are most abundantly found, the banks of the watercourses are lined by a thick, often impenetrable, and variable growth, which is washed and partially swamped by the water at high tide, and is fronted with a wide and deep deposit of soft mud at low water. Among the plants, a prickly and thorny, low-spreading, much-branched, leguminous shrub or tree, commonly known as the "Bundoorie pimpler" (*Drepanocarpus lunatus*), which stretches out even over the water, rising and falling with it, generally occurs in more or less dense masses, together with the "Courida" (*Avicennia nitida*), and a tall tree-like aroid, commonly known as "Mucco-mucco" (*Montrichardia arborescens*), which grows most luxuriantly in the muddy and swampy districts; and the young leaves and the fruits of these plants furnish almost the entire food of these birds. I have never seen them on the ground, nor feeding on the low weedy growths on its surface.

Almost invariably, where one or other of the three mentioned plants formed the nearly continuous growth by the water, the birds there shot contained in their crops only the leaves (or fruit) of that one plant; but where the plants were mingled, sometimes one and sometimes another had been eaten.

This dense lining-growth furnishes the home of the birds. In the early morning or the late afternoon they will be seen sitting in numbers on the plants, while towards the middle of the day, as the fierce heat of the sun increases, they betake themselves to shelter, either in the denser recesses of the growths, or among the individual trees of denser foliage, or among the tangled masses of creeping and climbing vines, which frequently spread over considerable areas of their food-plants along the very edge of the water. At this time one may pass, by boat, along the river without the faintest idea of the proximity of the birds, unless a very sharp watch

be kept up among the more leafy growths, or unless the report of a gun causes them to utter their curious cry. Late in the evening, after feeding, they will be seen settling themselves down in suitable places for the night.

The cry of the Hoatzin is easily heard when they are disturbed, and it is one of which it is not easy to give an exact idea. It recalls slightly the shrill screech of the Guinea-bird (*Numida*), but is made up of disjointed utterances, like the notes "heigh" or "sheigh" (ei as in "sleigh"), pronounced with a peculiarly sharp and shrill nasal intonation, so as to be quite hiss-like. While they are treading, the noise made is considerable, the cry being more continuous and shriek-like.

Whether from the fact of their occupying situations where they are but seldom disturbed or but little likely of being pursued, or from a natural weakness of wing, the birds are but seldom seen in flight; and when they take to the wing during disturbance, they do so but for very short distances—a very exceptional flight being once observed of a length of about forty yards with the wind, across a creek, from a high growth on one bank to a lower level on the other. Usually they rise almost with a jump from the branch, seldom in a straight line, but with a marked convex curve to the point where they alight. The flight of the birds, in spite of their great expanse of wings in relation to the weight of the body, is thus extremely awkward, and the body presents a peculiarly humped appearance. During their longer courses the wings are rapidly and violently flapped.

When suddenly disturbed, as by the discharge of a gun amongst a group of them, they fly or spring away for distances of but a few feet, while those in the immediate vicinity show no other signs of alarm but the loud utterance of their shrill cry. While springing from place to place, when they are feeding or alarmed, they keep their wings fully expanded, and inclined almost vertically when they have first alighted, thus balancing themselves, the crest being then erect and the tail raised and expanded. It is at such times especially

that their plumage presents a really beautiful aspect, in spite of their sober colouring.

The apparent awkwardness in placing themselves when they alight is chiefly due, I believe, to the smallness of the branches on which they usually settle, and which they are unable firmly to grasp with their long toes, balancing themselves meanwhile by the expanded wings and tail; but it is also attributable, I think, though to a much less degree, to a certain weakness in their legs—even though these are thick and apparently strong-looking—since when they alight on a thick limb a certain amount of instability is still manifest.

This weakness of limbs seems to be still more evidenced by the method of perching characteristic of the birds. At any time during the heat of the day they will be found resting on the branches, two or more together, the body directly applied to the wood, and supported on the bare, thickened, and hardened patch of skin which covers the flattened and broadened surface of the posterior termination of the *carina sterni*. This surface of the keel affords a firm base of support, and as the axis of the sternal keel is not parallel with, but markedly inclined to, the spine, a slight tilt of the spine from the horizontal brings the axis of the sternum close to the vertical, and allows nearly the full weight of the bird to be thrown on the sternal base, while the body of the bird seems to be quite horizontal, owing to the fact that the enormous looped crop, which is directly and closely applied to the face of the furculum and sternum, causes a bulging of the body in the front to balance the extension of the rump behind. The feet of the bird while grasping the branch here evidently support but a very small part of the weight of the body, and are more concerned with its equipoise and stability.

To judge from the conditions under which the birds at present here exist, it would seem that the sluggish habit has been brought about by a weakening of special muscles through disuse. From the nature of their food no prolonged flight is needed in order to procure it; from the nature of their

habitat they are little liable to be interfered with or pursued, and, if troubled, they can easily take refuge without prolonged flights. Even by man they are seldom meddled with, except for scientific purposes, since a peculiar and unpleasant odour attaches to the flesh, especially after death, and which seems to be due to the penetration of the fluid and gaseous contents of the digestive tract. On this account they are not generally eaten; but a few cases have been reported to me in which they have been utilized for food.

The nesting-time of the birds certainly extends from December to July, and I think it very likely that it is continuous throughout the year. From information given to me in 1887, I was led to conclude that March and April were their nesting-months; but as the result of my own observation, chicks are to be found quite early in January, and freshly-laid eggs in the early part of July, as well as the intervening months.

The nests, which are made solely of a slightly concave mass of dried twigs and sticks taken from the plants on which they are built, and loosely laid on top and across each other, are placed in conspicuous positions high up over the water or soft mud, on the top of or amongst the bushy growth, where they are fully exposed to the direct sunshine. Almost invariably the plants thus built on were the close-growing "Bundooric pimpler," though in a few cases I have seen them on the courida, and on a "pimpler (or prickly) palm" (*Bactris major*).

In October 1888, along the Abary creek, when nearly for a fortnight the birds were under observation at frequent intervals, no nests nor young birds were noticed, but as the Bundooric pimpler was almost entirely absent, and the lining growth along the water-side consisted of mucco-mucco and other plants, on the top of which it was impossible for the birds to perch, and much more so to make nests, it may well be that they were even then nesting, but in such positions as to be screened from observation. Believing at that time that the birds only nested from March to May, I made no special attempts to search for nests; nor have I yet had an

opportunity of seeing whether, along the Berbice river and the Canjé creek, nests are to be found on the Bundoorie pimpler at that time of the year.

From the binding nature of the spiny twigs, the nests last for a considerable time, and these are certainly made use of again, possibly after more or less repair. The same nest has been found in use after an interval of seven months.

Two or three eggs are laid at a time, both numbers being about equally common in my experience; and in one special case six eggs were taken from a nest on which one bird had been sitting, but whether they had been laid by one bird or two birds there was nothing to show. The eggs, which vary considerably in size, being usually as large as a small-sized hen's egg, though often a good deal larger or smaller, are easily seen from beneath the nest, owing to its loose structure, and the whitish eggs, with scattered dark reddish-brown blotches, more closely placed at the obtuse pole, form a marked contrast with the greyish-brown twigs of the nest. Even while the birds are sitting on them the eggs must be kept fairly cool from below; and this evidently gives the explanation why a number of freshly laid eggs that were placed to be hatched out by a common fowl exploded one after another, much to the alarm of the foster parent, who, however, stuck to the nest with the remainder after each occurrence.

Soon after the hatching of the eggs, the nestlings begin to crawl about by means of their wings and legs, the well-developed claws on the pollex and index being constantly in use for holding and hooking on to the surrounding objects. If they are drawn from the nest by means of their legs, they hold on firmly to the twigs both with their bill and wings; and if the nest be upset by means of a rod pushed up from below, they hold on to all objects with which they come in contact by means of bill, feet, and wings, making considerable use of the bill, not only to reach objects above them, but also, with the help of the clawed wings, to raise themselves to a higher level. When the parent bird is driven from the nest, owing to the close approach of a boat, generally through

an opening cut in the floating Bundoorie pimpler, at high water, or to the cutting and pulling of the branches by some one who has waded through the soft mud, often up to the thighs, at low water, then the young birds, unless they be only quite recently hatched, crawl out of the nests on all fours, and rapidly try to hide in the thicker bush behind.

One curious feature noticed with a nestling which had been upset into the river was its power of rapid swimming and diving when pursued. As soon as the hand was placed close to it, it rapidly dived into the dark water, in which it was impossible to see it, and would rise at distances of more than a yard away. Owing to this power the little creature managed to evade all my attempts to seize it, taking refuge eventually far under the bushy growth, where it was impossible to pursue it. The prolonged immersion which a nestling will thus instinctively and voluntarily undergo, or which an adult bird will bear in an attempt to drown it, seems to me to be quite remarkable.

The nestlings, when resting on the bare sticks of the nest, are observed to rest the weight of the body, as in the adult birds, on the bare and thickened integument of the *carina sterni*, the toes being spread out and the wings generally drawn up to the sides.

I am unable to state from observation the method of feeding of the nestlings. In very young specimens when the crops were examined the food was found to consist of a central portion of closely packed pieces of young and thin leaves, apparently both of the courida and the Bundoorie pimpler, surrounded by a finer more pulpy mass, which was thus in contact with the walls of the organ, and which had evidently, from its position, been more acted upon than the central portion. The enclosed pieces of leaves were sometimes nearly three quarters of an inch in length, quite ragged in outline and much folded, so much so as to give the impression of a finely comminuted mass until they were carefully unrolled. In nestlings of much larger size the food-mass of the crop was considerably more comminuted, but it still contained distinctly recognizable portions of leaves, and often

these were from half to three quarters of an inch in length.

From the nature of the food contents, I was led to believe that the time of day at which the young birds were procured made a considerable difference as to the state of the food in the crop. The feeding-time of the adult birds is evidently the early and late parts of the day, at which time their crops are found to contain, and especially at their anterior part, quantities of large pieces of young leaves, and sometimes these pieces consist of a half or nearly an entire leaf, almost unaltered—the pieces packed against and between the wrinkled surface of the immensely developed *rugæ* being, however, seldom of this nature. Early in the morning and late in the afternoon, before feeding-time, the contents of the crop are but little recognizable, the fragments being considerably altered, as well doubtless by the peculiar warmth and moisture as by the special action of its strong *rugæ*. If the nestlings are fed by the parent birds with small portions of the young foliage, which, owing to its softness and delicacy, the weakest condition of their jaws would allow them to tear from the bills of their parents, either in large or small portions, the long resting-time during the night and the middle of the day would be sufficient to cause a change in the leaf-pieces corresponding to that produced in the adult birds.

The nestlings, even when quite small, are frequently found, far away from any nest, climbing, by the help of their clawed wings, after the parent birds during their feeding-time; and it seems a most likely thing, though I have never directly observed it, that they are then fed with the tender leaves which the parents pluck for them. Failing the proof from direct observation, there seems to be no necessity for concluding that the nestlings are fed by a regurgitation of the food-mass from the crop of the adult birds, as Dr. Young has been inclined to think likely ('Notes from the Leyden Museum,' vol. x. p. 171).

It was a very noticeable thing, during the various months when the birds were under my observation, that a very

large proportion of those that were shot were by no means in good plumage, a variable number of the quills of the wings and tail, and sometimes the feathers of the crest, and frequently those of the neck and breast, being only in process of growth. So marked was this feature in October 1888, along the Abary creek, that I was inclined to regard that season as a moulting-period ('Timehri,' vol. ii., new series, 1888, p. 364); since then, however, I have found them in very much the same condition in July 1889 and January 1890.

This is all that I am at present able to furnish about the habits and breeding of these birds; but I trust soon to be able to offer some additional notes on a few points that have remained untouched owing to the want of definite information.

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XXIX.—*On the Range of the Guácharo (Steatornis caripensis) in South America.* By P. L. SCLATER, M.A., Ph.D., F.R.S.

THE range of the very peculiar and isolated bird-type, *Steatornis*, in South America is much wider than is usually represented. Some time ago I made some investigations on this point which I only partly published (see P. Z. S. 1866, p. 130). It may save future writers some trouble if I give a few further remarks on the subject, principally taken from my former notes.

The Guácharo was originally discovered by Humboldt and Bonpland in 1799 in the cavern of Caripé, in the province of Cumaná, Venezuela\*. L'Herminier, in 1834, obtained specimens from the same locality, and published an excellent article† on the bird. Because L'Herminier lived in Guadeloupe, Gray, in his 'Genera of Birds' (i. p. 44), gave that island also as one of the localities of the Guácharo. But this was a great error.

\* See Humboldt, 'Journ. de Physique,' liii. p. 57 (1801).

† N. Ann. d. Mus. iii. p. 321 (1834); id. Compt. Rend. iii. p. 67 (1836); id. Ann. Sc. Nat. sér. 2, vi. p. 60.

Humboldt also met with a nocturnal bird in the caverns of Icononzo or Pandi, near Bogotá, where it is called Cáca; and Roulin, who visited its breeding-places in the same caverns in 1827, showed that this bird was the *Steatornis* (Compt. Rend. iii. p. 94). Roulin also met with *Steatornis* in the "Quebradanegra" or "Quebradahonda" of Guaduas, in an adjoining canton of Bogotá.

The occurrence of *Steatornis* in Trinidad was first made known by Latham, who described it anew as the "Trinidad Goatsucker" (Gen. Hist. B. vii. p. 365), from observations and a specimen furnished to him by Mr. J. V. Thompson. In 1838 M. Hautessier visited the caverns which it inhabits on the sea near the Boca del Drago, at the north-west corner of that island\*, and obtained specimens of the bird and its nest and eggs (see Compt. Rend. vii. p. 474 1838; and Rev. Zool. 1838, p. 164). Another Guácharo cave in Trinidad was visited by Mr. E. C. Taylor in 1863 (Ibis, 1864, p. 88), and Sir Arthur Gordon (Governor of the island) actually brought a specimen of the bird alive to the Zoological Society's Gardens in 1869 (see P. Z. S. 1869, p. 467).

Besides the cavern of Caripé in Venezuela, the Guácharo is also found at Copas, north-west of Merida, in the ravine crossed by the Puente Natural of Copas, as testified by Goering (P. Z. S. 1870, p. 779).

In British Guiana the Guácharo occurs in a cave near the Indian village of Ackar, on the Upper Mazaruni River (Brown, 'Canoe and Camp Life in Brit. Guiana,' p. 386), and in the vertical rocks of Roraima (Salvin, 'Ibis,' 1885, p. 439).

In the U. S. of Colombia, besides the two localities indicated by Roulin, the Guácharo is also found in the chasm called "Hoyo del Aire," fourteen miles N.N.E. of Velez (Holton's 'New Grenada,' New York, 1857, p. 263), and near Sta. Elena, in the State of Antioquia (Sci. et Salv. P. Z. S. 1879, p. 532).

\* See also 'Report U.S. Fish Commission, 1884,' p. 90, for an account of a visit to these caves (cf. Ibis, 1887, p. 477).

In Ecuador Buckley obtained an example of *Steatornis* at Sarayacu, on the Bobonassa, a confluent of the Pastaza.

In Peru *Steatornis* was first noticed by Prof. Steere (P. Z. S. 1878, p. 139). It was subsequently found by Raimondi in the Grotto of Niñabamba, in the department of Caxamarca, and at Tingo Maria, in the department of Huanaco. The well-known collectors Jelski and Stolzmann found it also in other localities in the departments of Junin and the Amazonas (Taczanowski, Orn. Pér. i. p. 200). M. Stolzmann has published an interesting paper on this subject (Bull. Soc. Zool. France, v. p. 198).

It appears therefore that *Steatornis* occurs in various localities in Trinidad, Venezuela, Colombia, Eastern Ecuador, and Peru, where there are caverns suitable to its extraordinary mode of life and habits.

I cannot ascertain that Humboldt ever gave the name *Caprimulgus steatornis* to the Guácharo, as is commonly alleged\*. In the volume of the 'Journal de Physique,' usually quoted to this effect, he merely refers to it as a species of *Caprimulgus*†.

The following list embraces, I believe, the principal references to this bird:—

*Caprimulgus*, sp., Humboldt, Journ. de Physique, liii. p. 57 (1801); Humb. et Bonpland, Voy. aux Rég. Equinoct. Obs. Astron. i. p. 295 (1810).

*Steatornis caripensis*, Humboldt, Bull. Soc. Philom. Paris, sér. 3, xvii. p. 51 (1817).

*Trinidad Goatsucker*, Lath. Gen. Hist. B. vii. p. 365 (1823).

*Nyctibius steatornis*, Stephens, Gen. Zool. xiii. pt. 2, p. 91 (1825).

\* See Gray and Mitchell, 'Genera of Birds,' i. p. 44, and elsewhere.

† "Cette même roche calcaire sert de base à une autre plus neuve, très-blanche, très-dense, très-fossile, pleine de cavernes (Cueva del Guácharo), remplie de millions d'oiseaux (une nouvelle espèce de *Caprimulgus* qui donnent une graisse très-usitée ici;—Cueva de S. Juan, Cueva del Cuchivano), quelquefois poreuse, comme celle de la Franconie, formant des rochers de figure grotesque (Morros de S. Juan, de S. Sébastien)." — HUMBOLDT, Journ. de Physique, de Chimie, d'Hist. Nat. Paris, liii. p. 57 (1801).

*Steatornis caripensis*, Humb. et Bonpl. Recueil d'Observ. Zool. ii. p. 141, pl. xlv. (1833).

*Steatornis caripensis*, L'Herminier, Nouv. Ann. Muséum d'Hist. Nat. Paris, iii. p. 321, pl. xv. (1834).

*Steatornis caripensis*, L'Herminier, Comptes Rendus, iii. p. 67 (1836).

*Steatornis caripensis*, L'Herminier, Ann. d. Sci. Nat. sér. 2, vi. p. 60 (1836).

*Steatornis caripensis*, L'Herminier, Comptes Rendus, vii. p. 474 (1838).

*Steatornis caripensis*, Hautessier, Rev. Zool. i. p. 164 (1838).

*Steatornis caripensis*, Müller, Monatsb. Berl. Acad. 1841, p. 172.

*Steatornis caripensis*, Müller, Archiv für Anat. 1842, p. 1.

*Steatornis caripensis*, Des Murs, Rev. Zool. vi. p. 33 (1843).

*Steatornis caripensis*, Funck, Bull. l'Acad. R. Bruxelles, xi. pt. 2, p. 371 (1844).

*Steatornis caripensis*, Gray, Gen. of Birds, vol. i. p. 44 (1846).

*Steatornis caripensis*, L'Herminier, Rev. et Mag. Zool. sér. 2, i. p. 321 (1849).

*Steatornis caripensis*, Scl. P. Z. S. 1855, p. 135 (Bogotá).

*Steatornis caripensis*, Blanchard, Ann. d. Sci. Nat. sér. 4, xi. p. 105, pl. iv. fig. 30 (1859).

*Steatornis caripensis*, Des Murs, Ool. Orn. p. 260 (1860).

*Steatornis caripensis*, Taylor, Ibis, 1864, p. 88.

*Steatornis caripensis*, Sclater, P. Z. S. 1866, pp. 125, 130, 145.

*Steatornis caripensis*, Léotaud, Ois. Trinidad, p. 65 (1866).

*Steatornis caripensis*, Koenig-Warthaussen, J. f. O. 1868, p. 384.

*Steatornis caripensis*, Scl. P. Z. S. 1868, p. 73 (egg).

*Steatornis caripensis*, Scl. et Salv. P. Z. S. 1868, p. 165 (Caripé).

*Steatornis caripensis*, Goering, Vargasia, i. p. 124 (1869).

*Steatornis caripensis*, Scl. P. Z. S. 1869, p. 467.

*Steatornis caripensis*, Scl. et Salv. P. Z. S. 1870, p. 779 (Merida).

*Steatornis caripensis*, Garrod, P. Z. S. 1873, pp. 463, 526, 630.

*Steatornis caripensis*, Murie, Ibis, 1873, p. 81.

*Steatornis caripensis*, Garrod, P. Z. S. 1875, p. 344.

*Steatornis caripensis*, Brown, Canoe & Camp Life in British Guiana, p. 386 (1876).

*Steatornis caripensis*, Scl. et Salv. P. Z. S. 1878, p. 139 (Caxamarca).

*Steatornis caripensis*, Scl. et Salv. P. Z. S. 1879, p. 532 (Antioquia).

*Steatornis caripensis*, Taczanowski, P. Z. S. 1880, p. 208.

*Steatornis caripensis*, Newton, Enc. Brit. xi. p. 227 (1880).

*Steatornis caripensis*, Stolzmann, Bull. Soc. Zool. France, v. p. 198 (1880).

*Steatornis caripensis*, Taczanowski, P. Z. S. 1882, p. 40.

*Steatornis caripensis peruvianus*, Tacz. P. Z. S. 1885, p. 106.

*Steatornis caripensis*, Salv. Ibis, 1885, p. 439.

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XXX.—*On a new Finch from Midway Island, North Pacific.*

By SCOTT B. WILSON, F.Z.S.

(Plate IX.)

THE specimen from which the present figure is taken was brought by me alive from Honolulu in January 1889.

About March of the preceding year, a small schooner named the 'Mary Böhm' arrived in the Hawaiian Islands from Japan, off the coasts of which country it had been engaged in a fishing venture. Having met with many mishaps, the vessel put into port at Midway Island\*, where there

\* The following extract from the 'North Pacific Directory,' page 867, may be of interest:—

"*Brooks or Midway Islands.*—This atoll is of much more interest than its uninhabited and barren condition would warrant. It was discovered by Captain N. C. Brooks, in the 'Gambia,' July 5th, 1859. He called the two islands *Middlebrook Islands*, and took possession of them for the

is a good harbour. At Midway Island, which is uninhabited, Capt. Böhm and his companions found a species of Finch common among the scrubby bushes which cover its surface. It was so tame that it could be easily taken by the hand, and about sixty specimens were captured.

After remaining here some considerable time, and refitting as far as was possible under the circumstances, Capt. Böhm set sail for the Hawaiian Islands, which it seems he was fortunate ever to have reached, as the schooner was in a very disabled condition when it touched at Nūhau, a small island adjacent to Kauai. Here Mr. George Gay, who manages the prosperous sheep-ranch established on the island by my friend Mr. Sinclair, supplied Captain Böhm with the necessary stores, and he, in return for this courtesy, made Mr. Gay a present of several specimens of the Finch from Midway Island. The schooner, after this short stay at Nūhau, proceeded to Honolulu, where Captain Böhm disposed of the remainder of these interesting birds, of which he had some forty specimens in all. They arrived all housed together in a large cage, having been fed on biscuit and nothing else during the voyage. Unfortunately I happened to be away on Hawaii at the time of the schooner's arrival; but on my return to Honolulu some months later I was fortunate in procuring a single specimen, which happened to be for sale, and which, with considerable trouble and some good luck (the bird escaped twice into the car during the railway-journey across Canada), I succeeded in bringing alive to England. I saw several more specimens of the same Finch in cages in Honolulu. All were similar in plumage to my bird, whence I conclude that the sexes are alike. My bird, by means of its powerful bill, is able to force the wires of its

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United States, leaving a Kamtschatkan as a settler. On his return he kept its position a secret, and his discovery was utilized by the Pacific Mail Company, who intended forming a depot here for their Trans-Pacific steamers in preference to Honolulu, which was thought to be under foreign influence, establishing here a coaling and refreshment station." (The 'Mary Böhm' found a quantity of coal at the time of her visit in 1887.—S. B. W.)



... which ... original ... Bishop ... covered ... their ... of

... chirps ... together ... England ... frequently

... allied to ... differs in ... produced, and ... as in ... large and strong. The ... end of the basal ... forked.

I propose to describe it as follows —

*Troglodytes caryacus*, gen. et sp. n. (Plate IX.)

Head and sides of face olive-green, shading behind into dark chestnut-brown on the back, where each feather has ... belly beneath bright greenish yellow, which ... shading into dark ...

... ..  
... ..  
... ..  
... ..



cage apart, and has reduced one of the wooden uprights which go to form the framework of the cage to half its original thickness by continually chipping at it. I should have procured two more specimens which the Hon. C. R. Bishop of Honolulu had promised me, but for their having severed the wooden bars of their cage and thus effected their escape—let us hope to become naturalized on the island of Oahu.

This bird has a very clear metallic note, which may be expressed thus—*chwit, chwee*. It also twitters and chirps as it hops from side to side of the cage, and is altogether very lively in its movements. Since its sojourn in England it has learnt several notes of the Common Sparrow, but the note first mentioned is that which it most frequently utters, and a very distinct and characteristic one it is.

The Finch appears to belong to a new genus, allied to *Psittirostra* of the Hawaiian group, from which it differs in its thicker bill, the upper mandible being less produced, and showing a slight tendency to cross the lower mandible, as in *Loxia*. The feet are remarkably large and strong. The wings are moderate, reaching to about the end of the basal third of the tail-feathers. The tail is slightly forked.

I propose to describe it as follows:—

TELESPYZA CANTANS, gen. et sp. n. (Plate IX.)

Head and sides of face olive-green, shading behind into dark chestnut-brown on the back, where each feather has the centre black; body beneath bright greenish yellow, which colour covers the throat and breast, shading into dull white on the abdomen and under tail-coverts; flanks, upper tail-coverts, and rump chestnut-brown, of a somewhat lighter shade than the back, the feathers on the flanks distinctly streaked with black; primaries black, edged outwardly with greenish yellow; secondaries likewise black, but with much broader edges of a clearer shade of yellow; tail black, each feather edged outwardly with greenish yellow; bill and feet horn-colour: whole length (about) 6·5 inches, wing 3·4, tail 2·5, tarsus 1·1.

*Hab.* Midway Island, North Pacific.

XXXI.—Notes on some Birds collected by Dr. G. Radde in the Transcaspiian Region. By H. E. DRESSER, F.Z.S.

LAST year I published (*Ibis*, 1889, pp. 85–92) a few notes on a collection of Transcaspiian birds sent to me for examination and identification by Dr. G. Radde, of Tiflis. I have recently received another small collection from the same source, which, although there are no novelties, contains examples of several species not included in the former lot, and it may therefore interest the readers of 'The Ibis' to have the following short notes. Dr. Radde writes that, ere long, he proposes to start on another journey, and as he promises to pay special attention to the ornithology of the country he will traverse, we may look forward to the announcement of some interesting and, probably, new discoveries on his return to Tiflis, which, however, will not be until late in the autumn of the current year.

The collection recently received contains specimens of the following birds, viz. :—

*SAXICOLA FINSCHI*, Heugl.

One old male in full breeding-plumage (Kuba-dagh, Krasnovodsk, 9th February).

*PRATINCOLA CAPRATA* (Linn.).

One adult male (Merv, 14th June).

*CYANECULA SUECICA* (Linn.).

One adult male (Germab, 4th March), not differing from specimens from Scandinavia.

*DAULIAS HAFIZI* (Severtzoff).

One adult male (Derbent, 9th May).

*SYLVIA MYSTACEA*, Ménétr.

One male (Tedschen, 20th March), which has the throat somewhat less richly tinged with vinous pink, but does not otherwise differ from the specimens in the last collection, referred to in my last notes (*Ibis*, 1889, p. 86).

*SYLVIA ORPHEA*, Temm.

One adult female (Tschikischlya, 2nd April), belonging to the eastern or large-billed form (*S. crassirostris*, Rüpp.).

*PHYLLOSCOPUS TRISTIS*, Blyth.

One adult male (Hodscha-kala, 14th March).

*PHYLLOSCOPUS TROCHILUS* (Linn.).

Two males (Krasnovodsk, 19th and 20th April), which do not differ from ordinary European examples.

*HYPOLAIS RAMA* (Sykes).

Two males (Molla-kary, 15th April, and Hodscha-kala, 9th August).

*AEDON FAMILIARIS* (Ménétr.).

One adult female (Hodscha-kala, 10th May).

*LUSCINIOLA MELANOPOGON* (Temm.).

Two females (Artyk, 27th & 29th March), the former of which has the crown very dark in tone of coloration.

*SCOTOCERCA INQUIETA* (Cretzsch.).

One male (Merv, 2nd June).

*LARUS BOKHARENSIS*, Licht.

One male (Imam-baba, 18th June).

*SITTA SYRIACA*, Ehrenb.

One rather pale-coloured female (Keleti-Tschinar, 21st February).

*ANTHUS CAMPESTRIS* (Linn.).

One male (Balchan, 13th April).

*MUSCICAPA PARVA*, Bechst.

One very richly coloured male (Tsarins, 31st March).

*PASSER DOMESTICUS* (Linn.).

One male (Taschta, 22nd June) of the brightly coloured Indian form.

*PASSER HISPANOLENSIS* (Temm.).

One adult male (Merv, 11th June).

*PASSER MONTANUS* (Linn.).

One adult male (Merv, 12th June).

*EMBERIZA MILIARIA*, Linn.

One adult female (Askabad, 18th February).

## MELANOCORYPHA BIMACULATA (Ménétr.).

One male (heights of Tuffigar, 30th June), which is interesting as being in the first immature plumage.

## CYPSELUS APUS (Linn.).

One male (Krasnovodsk, 20th April).

## CAPRIMULGUS ÆGYPTIUS, Licht.

One adult male (Tschat, May).

XXXII.—*Note on Turnix beccarii, Salvadori.*

By W. R. OGILVIE GRANT.

IN my paper on the genus *Turnix*, published in the October number of 'The Ibis' for 1889, I stated (p. 449) that in my opinion *T. beccarii*, Salvad., from S.E. Celebes, was identical with *T. rufescens*, Wallace, from the island of Semaio, and that the latter (see pp. 465 & 468) was doubtfully distinct from *T. maculosa* from Australia, being intermediate between this species and *T. saturata* from New Britain; but that, as Wallace had based his species on a single specimen, apparently a nearly adult male, it was impossible at present to estimate its value. Through the kindness of Count Salvadori, I have just received, for examination, from Sign. Gestro the types of *T. beccarii*, Salvadori, which are preserved in the Genoa Museum, and, having now these specimens before me, am in a better position to settle the question. The two types, the smaller of which only is sexed ( $\sigma$ ) by the collector, though the larger is no doubt a female, are neither of them fully adult specimens, and come under the headings  $m^2$  and  $m^3$  in my key to the species of *Turnix* (see p. 452): "No defined rufous collar, but most of the feathers of the upper surface (especially those of the nuchal region) with a patch at the extremity rufous or rufous intermixed with black; scapulars edged with golden buff." They are exactly identical in plumage with specimens of the Australian *T. maculosa* of a similar age, and differ only from them in being a smaller insular race.

	Wing.	Tail.
<i>T. maculosa</i> , ♀ . . .	3·0	·8
<i>T. beccarii</i> (♀) . . .	2·7	·8
<i>T. maculosa</i> , ♂ . . .	2·7	·75
<i>T. beccarii</i> , ♂ . . .	2·5	·7

I have little doubt that *T. rufescens* will also prove identical with *T. maculosa*, but this question cannot be settled till more specimens are obtained from the Island of Semao. In the meanwhile *T. rufescens* must stand, and *T. beccarii* must be referred to *T. maculosa*.

XXXIII.—*On some new and rare Francolins.*

By W. R. OGILVIE GRANT (Nat. Hist. Museum).

(Plates X., XI.)

HAVING lately been at work on the Francolins with the view of a complete revision of this rather difficult genus of the Gallinæ, I beg leave to offer to the readers of 'The Ibis' some remarks on some new or little-known species of this group.

1. *FRANCOLINUS GRANTI* (and the allied forms).

This group of Francolins contains the species *F. pileatus*, Smith, from South Africa; *F. kirki*, Hartlaub, from Zanzibar and East Africa; *F. granti*, Hartlaub, from East and Central Africa as far north as Shoa; and *F. spilogaster*, Salvadori, from Harar. It is characterized by having the upper surface reddish brown, and most of the feathers of the neck, back, scapulars, and wing-coverts *ornamented with a white shaft-stripe*. The species are all very nearly allied to one another, and *go through exactly the same phases of plumage*. As an example, it will be sufficient to state the changes which take place in *F. granti*. Young birds of both sexes have the back, scapulars, outer secondaries, and some of the wing-coverts transversely barred with black and rufous, or buff on either side of the white shaft-streaks; and the lower back, rump, upper tail-coverts, and middle tail-feathers barred

and vermiculated with black and buff. The adult females apparently never lose these markings, though the white shaft-stripes become narrower; but in the males these bars gradually disappear with age, and in the oldest examples, with long spurs, the upper surface is entirely devoid of cross-bars, and the white shaft-streaks are greatly reduced in width.

FRANCOLINUS GRANTI, Hartlaub.

(1865) *Francolinus granti*, Hartlaub, P. Z. S. 1865, p. 665, pl. 39. fig. 1.

(1867) *Francolinus rovuma*, G. R. Gray, List Birds Brit. Mus. pt. v. p. 52 [part.].

(1873) *Francolinus schoanus*, Heuglin, Nordost-Afr. iii. p. 891.

The name *F. rovuma* was founded by G. R. Gray in 1867 on two specimens, one of which was labelled "East Africa," while the other was from the Rovuma River. These birds, unfortunately, do not even belong to the same species, the former being an adult male of *F. granti*, while the specimen from Rovuma River is a female of *F. kirki*. *F. schoanus*, Heuglin, is founded on a specimen of *F. granti*, and has, of course, no connexion with *F. pileatus*, to which the author compares it. The synonymy should stand as above.

In this species the chestnut shaft-markings are confined, in both sexes and at all ages, to the upper chest, and are never developed on the breast and belly. The measurement of the wing varies considerably in individuals of the same sex, and this is apparently due almost entirely to age. In the male the wing varies from 5·2–6·0 inches; in the female from 5·2–5·7.

I have to thank Dr. Schauinsland for kindly forwarding the type of this species, an adult female, for my inspection.

FRANCOLINUS KIRKI, Hartlaub.

(1867) *Francolinus kirki*, Hartlaub, P. Z. S. 1867, p. 827.

(1867) *Francolinus rovuma*, G. R. Gray, List Birds Brit. Mus. pt. v. p. 52 [part.].

As above mentioned, Gray's *F. rovuma* was founded on birds belonging to two species. The female from Rovuma belongs

to the present species. I have compared it with Dr. Hartlaub's type, an adult male, kindly sent me by Dr. Schauinsland, of the Bremen Museum, and except for the differences in the plumage between the sexes, it is almost an exact counterpart of the type. At all ages both sexes have a dark chestnut oblong spot at the end of the shaft on the feathers of the breast and belly.

In the male the wing varies from 5·7–5·9 inches; in the female from 5·4–5·6.

FRANCOLINUS SPILOGASTER, Salvadori.

(1888) *Francolinus spilogaster*, Salvadori, Ann. Mus. Civ. Genova, vi. p. 541.

Count Salvadori has been kind enough to lend me the type specimen of this species, a very fine adult male. Its only claim to rank as distinct from *F. kirki* appears to me to rest in its greater size, which is considerable. In plumage there is no difference, and I certainly incline to the belief that this specimen is a fine old male of *F. kirki*; but it is necessary to see more specimens from Harar before this question can be settled.

In the type the wing measures 6·5 inches.

## 2. FRANCOLINUS GARIEPENSIS (and its allies).

The group of *Francolins* of which *F. gariepensis* is typical is easily distinguished from *F. levaillanti* and other allied forms by the disposition of the two black and white stripes which ornament the sides of the head. Both start from the base of the upper mandible and reunite on the sides of the neck; the lower circumscribes the white throat, and separates it from the chestnut or buff-coloured cheek and ear-coverts; the upper passes above the eye and ear-coverts, and, as already mentioned, joins the lower on the side of the neck. In *F. levaillanti* the *upper lines* are confluent on the nape and run down the middle of the neck.

*Francolinus gariepensis* was first discovered by Smith, and the types, which he described and figured in his 'Illustrations to the Zoology of S. Africa' (plates 83 & 84), are preserved

in our National Collection. They were obtained near the sources of the Caledon and Vaal Rivers.

In 1889 Mr. Büttikofer ('Notes Leyden Mus.' xi. p. 76, pl. iv.) described and figured a second western species of this group from Gambos, which he named *F. jugularis*. We have, in our collection, four specimens of this bird, two of which were obtained by Mr. Monteiro in Benguela, which is just north of Gambos, while the two others were obtained further south in Great Namaqualand by Mr. Andersson. These birds all bear out the characters given in Mr. Büttikofer's description and figure of his *F. jugularis*, and, though nearly allied to *F. gariensis*, even a young male specimen (in which the white and black feathers are not developed on the chest), can be distinguished by the *middle* of the lower breast and abdomen being paler buff and immaculate. The upper breast, too, in our specimens of *F. jugularis* is not nearly so heavily marked as in *F. gariensis*, and many of the marks are black instead of rufous. The young male of the western form has the back as strongly transversely barred as *F. gariensis*, but, as described by Mr. Büttikofer, in the adult of the former the bars are irregularly broken up and become little more than mere vermiculations.

FRANCOLINUS SHELLYI, sp. n.

I have now the pleasure of describing a third species of this group, of which there are three male specimens in Capt. Shelley's collection. These birds were obtained respectively at Natal by Mr. Gorge; on the Umvuli River, North Matabeleland, by Mr. J. S. Jameson; and in Swaziland by Mr. T. E. Buckley.

This species may be distinguished at a glance from *F. gariensis* and *F. jugularis* by having the middle of the lower breast and abdomen *white*, irregularly and transversely marked with rather wide black bars. This forms a marked contrast with the upper breast, the feathers of which are rufous-chestnut, with part of the whole of their inner web buff, transversely marked and barred with black. As regards the



J. G. Keulemans del. et lith.

Mitern Bros. imp.

FRANCOLINUS GRISEO-STRIATUS





J. G. Reulemans del. et lith.

Mintern Bros. imp.

FRANCOLINUS GRISEO-STRIATUS

rest of the plumage, *F. shelleyi* resembles *F. gariensis* in having the pale-buff cross-bars on the feathers of the upper surface clear and distinct in the adult, and in having the feathers of the sides and flanks with wide longitudinal bands of chestnut on the inner or both sides of the shaft. It differs from that species, and resembles *F. jugularis* in having a patch of white black-edged feathers on the upper chest. In skins the legs are yellow; the bill dark brown, yellowish towards the base of the lower mandible. Wing 6·8 inches, tail 2·4, tarsus 1·5.

*Habitat.* Natal; Swaziland; Matabeleland.

### 3. *FRANCOLINUS* *GRISEO-STRIATUS*, sp. n. (Plate X.)

Top of head greyish brown; lores, cheeks, ear-coverts, and superciliary stripes reddish white; a nearly white spot behind the eye. Chin and throat white. Feathers on back of neck, back, scapulars, and outer secondaries are dark chestnut down the middle, and margined on either side by a black and pearl-grey band; the chestnut middles of the scapulars and secondaries are irregularly marked with black. Wing-coverts, lower back, rump, and upper tail-coverts greyish brown, finely vermiculated with black. Primaries and secondaries rufous chestnut, paler on the outer webs, and vermiculated and irregularly banded on both webs with black. Tail rufous chestnut, the middle feathers paler on the outer webs, and all are transversely vermiculated with black, though this gradually becomes less marked on the outer tail-feathers. Front neck and upper chest rufous-chestnut, edged with white. Breast, belly, thighs, and under tail-coverts buff; the feathers on the sides of the breast, flanks, and under tail-coverts with wide dull rufous shaft-stripes, slightly vermiculated with black. Under surface of wings silver-grey, vermiculated with pale buff.

In the skin the colours of the soft parts are as follows:—Upper mandible dark brown, yellowish at tip; lower yellow, with dark tip. Legs and feet bright yellow; spurs dark brown. Wing 6·3 inches, tail 3·2, tarsus 1·7.

*Habitat.* Congo River.

This species is founded on a single specimen, apparently a fully adult male.

4. *FRANCOLINUS CASTANEICOLLIS*. (Plate XI.)

(1888) *Francolinus castaneicollis*, Salvadori, Ann. Mus. Civ. Genova, vi. p. 542.

Through the kindness of Count Salvadori I have received the loan of the type of this beautiful species, which, so far as I know, is still unique, and it is with his kind permission that the accompanying figure is given.

This specimen was obtained in Shoa, where it was reported as not uncommon, but Count Salvadori informs me that, in spite of his instructions to his collector to procure additional specimens, none have as yet arrived.

The type, which is preserved in the Zoological Museum at Turin, is apparently a fully adult female, and seems to represent a distinct group of Francolins, its style of plumage being quite unlike that of any other known species. I shall anxiously await the arrival of more specimens, and can only hope that Count Salvadori will ere long receive examples of the adult male.

XXXIV.—*Extracts from the Letters of Mr. J. GRAHAM KERR, Naturalist to the Pilcomayo Expedition\**.

Estancia Mate Grande,  
Argentine Republic,  
November 1889.

I HAD a very pleasant, though somewhat tedious passage, arriving in Buenos Aires in the beginning of July. I remained in the city of Buenos Aires till the middle of August, at which time I got an invitation to go out and stay at an estancia about eighty leagues to the westward of the city;

\* [Kindly communicated by Mr. A. Harvie-Brown from letters addressed to Prof. T. Bayley Balfour, F.R.S. As regards the "Pilcomayo Expedition," see *Ibis*, 1889, p. 402. A subsequent letter to Prof. Balfour, dated Buenos Ayres, Dec. 25, 1889, states that, after many delays, the Expedition was just leaving for Corrientes, where it was proposed to halt for a few days before proceeding up the Pilcomayo.—ED.]



J. G. Keulemans del. et lith.

Mintern Bros. imp.

FRANCOLINUS CASTANEICOLLIS

and here I have been since. I shall now give you an account of my impressions and doings since I arrived, making it as condensed as possible. Firstly, as regards doings. The 'Maskelyne' anchored off Buenos Aires on the morning of Saturday, June 29th, having previously gone aground once or twice on the soft mud. The anchorage for large ocean steamers lies almost in the centre of the river—fifteen miles from Buenos Aires shore; and even here there is only about 25 feet of water in the channel, while on all sides are shoals and mudbanks innumerable. However, we dropped anchor all right between nine and ten o'clock. It was a beautiful morning, the atmosphere unusually clear. To the S.W. might be seen the domes of Buenos Aires and the forests of masts of its shipping; a low line along the northern horizon indicated the coast of Uruguay. About eleven o'clock, quarantine formalities having been got through, we stepped into the tender, and after a tedious journey of one and three-quarter hours, we arrived within a quarter of a mile of the passenger-mole. We now got into a large open boat, and from that again into a small one, and by dint of much shoving and gesticulating, this latter was brought within jumpable distance of the mole, and so at last we arrived on *terra firma*. The water of the river is very muddy, quite fresh, of course; and floating about its surface were millions of Camelates (*Pontederia azurea*), not yet in flower, however. My luggage came on shore about 6 P.M., and I had to leave it in the custom-house until next morning. I had great difficulty in finding room at any of the hotels, the town being very full just then. At last, however, I managed, by chumming along with a fellow-passenger, to find accommodation at the Hotel de Londres. On Sunday morning I repaired to the mole to get my luggage through, and experienced less trouble than I expected. The arsenical soap was what excited most misgiving in the mind of the customs' officer. He felt it and smelt it, and finally asked what it was worth. I put a very modest value indeed upon it, and so he let it pass. He absolutely refused, however, to allow my camera and box of cartridges through. They must go to the custom-house,

and so thither they went, and there the cartridges are still. I remained for a week at the Hotel de Londres, and then went to live at Palerma, a suburb of the city, where there is a fine park and zoological gardens. Buenos Aires is a very European-looking city. The streets all run at right angles to one another and are equidistant. The city is thus divided into blocks of 150 yards square, each containing a hundred numbers. The numbers upon the houses in one set of streets indicates their distance from the river, those upon the other series their distance from a central street, the Rivadavia. In this way it is impossible for a person to get lost, for all he has to do is to go to the nearest corner, when the number of the house on each side gives him the ordinates of his position, one giving the number of squares distant from the river, the other the number of squares distant from Rivadavia, the central street of the city. The houses and public buildings are built of brick covered with stucco, which gives them a very unsubstantial appearance compared with the great buildings at home. The architecture, on the whole, is extremely disappointing. The houses in the city are several-storeyed, in the form of hollow squares, the patio or courtyard in the centre being open to the sky. The houses in the suburbs are one-storeyed, and either in the form of a quadrangle or simply a straight row of rooms, opening *en suite* and also by French windows on to the patio. Passing along most of the important streets of the city are tramways, which are very well patronized, the inhabitants never walking if they can help it. This is due partly to the execrable pavement. Rough cuboidal masses of stone are used for paving the streets, but the contractors have invariably scamped the work, laying down the paving blocks without any foundation, so that in a short time the condition of the streets is worse than if there were no pavement at all. Add to this the utter failure of the drainage system, which causes the streets after a heavy thunder-shower to be converted into rushing torrents. In the centre of the city is a large square, the Plaza Victoria, and in this are situated the chief public buildings—the Government House, Cathedral, Congress Hall, &c.

The time passed very slowly while I was living in Buenos Ayres itself, so I was very glad to receive early in August an invitation to go out to stay at the Estancia Mate Grande, near the town of Nueve de Julio, right out in the pampas to the west of the city. Accordingly, about 6 A.M. on August 13th, I left the hotel for the Once railway station, whence I was to take train for Nueve de Julio. My luggage had been sent on before, but when I arrived at Once I found that it had not turned up. I determined, however, to go on without it, having left instructions for it to be sent on after me. After a cup of "café con leche" at the station, I took my seat in the train, and punctually at 7.15 we started on our westward journey. The train was on the "American" system, consisting of long cars, with a passage running along from one end of the train to the other. It was a cold day, and I found the carriages very cold and draughty. In summer, on the other hand, I believe passengers get nearly choked with dust. The track was, of course, very much rougher than those at home, but still there was wonderfully little oscillation. For the first half of our journey we passed over the typical Buenos Aires pampas-country, almost as flat as a cricket-field, covered with close green turf (the indigenous grasses having here succumbed to the introduced grasses), and dotted here and there by a solitary omba-tree, the one tree indigenous to the pampas (*Phytolacca dioica*). Towards the end of our journey the character of the country changed; it became wilder; the surface became undulatory, the omba-trees disappeared, and we were amongst the great native grasses of the Pampas. However, of these later on. This form of country continued till we reached Nueve de Julio, between one and two in the afternoon. The town, as is the case with most of the camp-towns, was at some distance from the railway station; there was, as usual, a number of carriages waiting for passengers, and stepping into one of these I was taken to the hotel, or rather inn, of the village, arriving just in time for breakfast. It will seem rather curious the idea of breakfast at 2 P.M., but the meals here are quite different from what they are at home. When one gets up in the morning one has a cup of

café (con leche, if possible) and a little bread (and butter also, if possible); this has to suffice until breakfast, which is taken about midday, or at least some time between eleven and two; finally we have dinner about seven o'clock. There are thus just two regular meals in the day, breakfast and dinner. To resume: I arrived at the inn or fonda, and at once sat down to breakfast. The establishment belonged to an Italian, and the cookery was therefore in the peculiar style affected by that nation; it was characterized by a striking superfluity of garlic and of oil, and was, to a British taste, excessively nasty. The staple soup at this place was *sopa de pan*—consisting of warm water, in which floated the scraps of bread left over from yesterday's meals. Then came a sort of salt fish, as tough as a piece of wood and floating in an ocean of red oil. Finally I tried a dish called "*biftek*" in the *carte*, but which turned out to be pieces of stewed leather, apparently. By this time all my symptoms of hunger had disappeared, and I sallied out to view the town. *Nueve de Julio* is a small place of a couple of thousand or so inhabitants. Like all Spanish American towns, it consists of a central plaza, laid out with grass and shrubs, and a series of streets running at right angles to one another. It is a very clean little place. The people appear to be pretty decent, and what strikes one is the great politeness and obligingness of the lower classes. Everybody goes about armed with a revolver, and, if a native, with a big knife, too. I suspect that this habit may have had something to do with the general politeness, a want of it being punished with a dose of lead or steel. I did not come across any English-speaking people in the place, but I managed to get on all right by means of very ungrammatical Spanish, resorting to French in case of difficulty. I always found people who could speak French wherever I went. I remained in *Nueve* two nights, in the vain hope that my luggage might turn up; there were no signs of it, however, so I determined to start on the morning of the 15th for the *Estancia Mate Grande*. On that morning, then, the *volante* arrived at the door, to take me out to *Mate Grande*, a dis-

tance of eight leagues. This volante was a peculiar sort of carriage, between a buggy and a stanhope, it was drawn by five horses and driven by a young native. Waving an adieu to the landlord, we started off at a trot until we got clear of the town, when the pace got into a smart gallop, and at this we sped rapidly on our way. The road was a mere track across the open pampa; the ground was firm, without being dry enough to be dusty, and there was a pleasing softness about our motion, due to the absence of stones upon the road; at the same time there was plenty of shaking about; one wheel would occasionally sink down a biscachaburrow, sending one flying up into the air and making one convulsively clutch the handrail. Our way varied in character, now galloping wildly over a stretch of close green turf, then moving more slowly through some swampy ground, and anon threading our way cautiously through a lonely laguna, with water over the axle-trees. This drive was my first real view of the country out here; here I had my first glimpses of the Argentine fauna; now I saw with my own eyes many sights I had often read about. Altogether it was an intensely enjoyable and interesting drive. It being now towards the close of winter, the tall grasses of the pampas were brown and withered; here and there might be seen a stretch of beautiful close-cropped turf, generally on the slope overlooking a lagoon, and in it a cluster of large burrows resembling those of the rabbit, but twice as big; these I recognized as biscacha villages, their four-footed owners not being visible; but perched at the mouth of some of the burrows was a pair of delightful little Prairie Owls, sitting bolt upright close together, motionless as statues, save for the slow rotation of their heads, keeping an eye on us as we sped past. By the edge of a lagoon might be seen a flock of dark-coloured Ibises, probing the mud with their slender curved bills, and carrying one back in imagination to the long past days of those Egyptian monuments on which the sacred bird figures so prominently. Upon the other side of the lagoon a group of tall Flamingoes of a beautiful rosy pink colour appeared to dream away their existence, motion-

less on one leg, and with their long necks coiled up on their shoulders. Finally, picking his way daintily amongst the tufts of long grass, might be seen a great Stork on the outlook for snakes or any such animals as might be tempted out of their winter sleep by the bright sunshine. When we left Neuve the air was crisp and cold, the turf was whitened by a crust of hoar-frost, and it was one of the nearest approaches to one of Dr. Macfarlane's favourite "bracing" mornings that I have experienced since my arrival. Now, however, as the sun rose in the sky, the air became more genial, and I was enabled to extract myself from the thick rug in which I was enveloped. As we went along we would have a cloud of Lapwings flying around us, uttering harsh screams of "teru-teru." They were not unlike our British Lapwing, but were larger, and were armed with a strong and sharp-looking spur, of a pink colour, on each wing. Flying about and feeding on the turf were many Starling-like Icteridæ, the one with a yellow breast, the other with a breast and gorget of the most vivid scarlet. Altogether I was immensely struck with the wonderful richness of bird-life as compared with what I had been accustomed to at home.

However, to resume. About 12.30 P.M. this delightful journey was brought to an end by our arrival at Mate Grande. After devoting my attention to that prosaic but necessary and enjoyable institution, a hearty breakfast, I set out on a tour of inspection. Of this and of succeeding days' walks, I shall now give you briefly the results, premising that my luggage arrived all right about *a week* later than I did. The estancia-house is a one-storeyed cottage-like erection, standing on the summit of a rounded elevation and surrounded by a thick plantation to break the force of the cold winds of winter. The houses about here are mostly "ranchos," *i. e.* they are built of a framework of poplar-trunks, with walls made of mud and straw, mud floor, and roof thatched with large rushes. This estancia-house, however, boasts of a wood floor and a galvanized iron roof. It has three rooms—a large dining-room, and a small bed-room

at each end. The kitchen, office, and accommodation for servants are in detached ranches. Surrounding the house, as I said, is a thick plantation or monte, composed of poplars, peaches, willows, elders, and two leguminous trees, one a kind of acacia with yellow flower-heads, the other a laburnum-like tree, with drooping racemes of large white flowers. When I arrived here the aromas, as the acacias are called, were in beautiful flower; soon after they were joined by the peaches, and now the white flowers of the "acacia," as it is called here, take their places. Passing outside the monte one is upon the open camp, rolling undulating land, covered with coarse grass, varied by an occasional monte, marking the position of an estancia-house. Owing to the long succession of wet seasons, the low-lying parts of the camp are occupied by shallow lagoons of, on an average, a couple of feet or so in depth. Covering the waters of these lagoons is often a continuous mantle of cushiony *Azolla* of a rich carmine-brown colour, mixed with small pieces of *Lemna* with elliptical thick "leaves." In the deeper parts of the lagoons grow thick beds of a tall rush, frequently reaching a height of 9 or 10 feet. These rush-beds form the haunts and resting-places of many kinds of water-loving birds. The commonest of all amongst them is the little Rush Spinetail (*Phlæocryptes melanops*), which may be seen hopping nimbly from rush to rush a few inches above the surface of the water, reaching down every now and then to pick up an insect from amongst the carpet of lemna and azolla. Its peculiar note at once draws one's attention. Several sharp taps, such as are made by tapping a slate with a slate pencil, are followed by a long-drawn sound resembling that sometimes made when one twists a tight-fitting cork in the neck of a bottle. The nest of this Spinetail is also a very interesting structure, built of grass-leaves interwoven with extraordinary firmness, and covered in with a domed roof; near the top of one side is the little round entrance, covered by a projecting cave, and leading into a beautifully warm little circular chamber, well lined with wool and feathers. The nest is tied firmly between a group of rush-

stems at a distance of about three feet above the surface of the water. There is another beautiful little nest to be found amongst the rushes; this is in the form of a little cup made of small bits of grass &c. cemented together, fixed to a single rush-stem about four feet above the water. This nest is tenanted by a most beautiful little bird (*Cyanotis azaræ*) of about the size of a wren, its plumage gleaming with the deepest shades of yellow and black and green. Amongst the rushes, too, are innumerable nests of Coots, Ducks, Grebes, and an occasional Stork. There is an extraordinary number of Ducks here, both of individuals and of species, and many of them are extremely beautiful birds. When I first arrived every laguna and cañada literally swarmed with them. [A "laguna" is permanent, and a "cañada" is temporary.] Perhaps the most numerous was a beautiful little Teal, with sober vestments of clear grey (*Querquedula versicolor*), and with a bill of blue-grey, with a yellow patch on each side. Shovellers, Pintails, and Chiloe Widgeons were also abundant on every laguna. Not uncommon was the Rosy-bill Duck (*Melopiana peposaca*), a large Duck nearly black in colour above, but having a large tumid bill of deep pinky red. Sailing majestically about some of the deeper lagunas may be seen a pair of Black-necked Swans (*Cygnus nigricollis*), while on others their place was taken by the smaller Coscoroba Swan, or Gansa, as the people call it (*Coscoroba candida*). It is rather smaller than the Black-necked Swan, and resembles our European Swan in being nearly pure white. Grebes are very abundant here. I have obtained on this estancia alone four out of the five species known to occur in the Republic. The finest of these is the Bright-checked Grebe (*Podiceps calipareus*), obtained by Darwin at Bahia Blanca. Above it is of a dark-grey colour, but beneath it is of the snowiest white, smooth as the finest satin, while each ear-covert is composed of hair-like feathers of a shining metallic golden bronzy tint. The commonest of the Grebes is, however, Rolland's Grebe (*P. rollandi*), which swarms on every laguna. It is a much smaller bird than the last-mentioned, has conspicuous white cheeks and a satiny breast-

plumage of dark chestnut-colour. Talking about the Grebes reminds me of a most interesting Duck that I have been observing here a good deal, the Blue-billed Duck (*Erismatura ferruginea*). This is a Duck in name, but it has undergone variations in external structure and in habits to an extraordinary extent along the line of the Grebes. What drew my attention to it was the first individual I saw; it was swimming, or rather floating on the surface of a lagoon. I approached to get within shot; got within forty yards of the bird and fired. However, the Duck was too sharp for me. The pellets struck the water harmlessly all over the place where the Duck had been. He had dived on seeing the flash, and did it so well that I had considerable difficulty at first in getting a specimen. The Blue-bill is thus quite equal to a Grebe in his powers of diving. In structure, too, his wings are extremely small and almost useless for flight; his legs are placed right at the posterior end of the body; the plumage of his breast even is as satiny as that of a Grebe. The tail of the Blue-bill is another of its peculiarities. Tail-coverts are entirely absent; the rectrices are about a dozen in number, very flat and stiff. When the tail is spread these form a somewhat shovel-shaped and perfectly flat expansion, projecting quite suddenly from the blunt Grebe-like posterior end of the body. Frequently when swimming, especially when swimming rapidly, this flat tail is carried spread horizontally beneath the surface of the water. At other times, however, and especially when several Ducks are calmly sailing to and fro in the sunshine, the tail is carried folded together and cocked vertically right up in the air. This increases the bizarre appearance of these Ducks, especially when they indulge their Grebe-like habit of compressing their air-chambers, so as to gradually sink downwards in the water. In this way they will often submerge themselves until nothing is visible above the surface but a head and neck at one end, and, some distance from it, the tail. This habit is so characteristic that I thought of speaking of this Duck as the "cock-tail" Duck, but I concluded that this would be rather too alcoholic a name. The Blue-bill Duck suits it pretty

well, as the male has a bill of beautiful bright blue colour. It is most amusing to watch the just-mentioned drake courting the female. He commences operations after the ordinary anatine fashion, *i. e.* he slowly and with the utmost gravity bobs his head up and down, trying to get a responsive bow from the female. If this fails, he then resorts to a method of courtship quite peculiar to himself. He stretches out his neck on the surface of the water right in front of him, and then ruffles up the feathers of his neck and inflates his crop until his neck seems to disappear altogether; then folding his remarkable tail, fully spread, right forwards over his back, like a fan, he advances towards the female, giving his neck convulsive jerks the while, and presenting one of the most extraordinary spectacles it is possible to conceive, reminding one, if of anything, of an *Ornithorhynchus*.

Amongst the grasses of the dry ground we have another facies of bird-life. Carrion-feeding birds abound, due to the immense number of carcasses littering the country in all directions. *Milvago chimango* (a small carrion Hawk) and the large almost Vulture-like Carancho (*Polyborus tharus*) are the two common species. The latter does a good deal of damage to stock, frequently picking the eyes and tongue out of living sheep. Of Owls, the little Prairie Owl abounds, a pair being seen on almost every biscachera. A Pipit (*Anthus correndera*) and a Wren (*Cistothorus platensis*) are common in the open camp. Especially near lagunas may be seen several Icteridæ: the Yellow-breast (*Pseudoleistes virescens*), resembling a Blackbird with a yellow breast; the Red-breast (*Leistes superciliaris*), like a Starling, with gorget and breast of bright scarlet; and *Agelæus thilius*, a smaller bird of a deep black, with a bright yellow patch on each shoulder; then, lastly, among the common Icteridæ, is the Cow-bird (*Molothrus bonariensis*), a little black bird, somewhat larger than a Sparrow. The Cow-birds are well known from their habit of frequenting the company of cattle. One constantly sees them here perched and busily feeding on the sheep's back, picking off, no doubt with relish, the various parasites amongst the wool. Of Finches there are few here: a Spar-

row, not unlike, but much prettier than our European Sparrow (*Zonotrichia pileata*), the small yellow-breasted Misto Finch (*Sycalis luteola*), and the Red-billed Finch (*Embernagra platensis*) are all common. The prettiest of the Finches are, however, the Cardinal, said to be the finest Finch in the world (*Paroaria cucullata*), of clear slaty-blue colour, white beneath, and with a magnificent head-piece, gorget, and tall pyramidal crest of the brightest scarlet imaginable, and the Black-headed Siskin (*Chrysomitris icterica*), of bright yellow tints with coaly-black head. The place of the Finches is, however, in great part taken up by the Tyrannidæ, which are very numerous, both in individuals and species. Perched on a withered hemlock by the water's edge may be seen the Silver-bill Tyrant (*Lichenops perspicillatus*), with plumage pure black, except the wings, which are equally pure white. By-the-by, the frequency of black as a colour amongst the birds here strikes one after the British avifauna, with its three or four black birds. The Scissor-tail Tyrant is pretty common here (*Milvulus tyrannus*), resembling in general appearance a large Swallow, and characterized by the immensely long outer rectrices of the tail, which is expanded and closed during flight, so that the long feathers open and shut like a pair of scissors. More worthy of being classed as a Tyrant is the "Bien te veo" (*Pitangus bolivianus*). It is a bird somewhat larger than a Thrush, of a brown colour above, black head, with white eyebrows and yellow crest and belly. It has an immense dagger-like beak, and looks really worthy of its name. It constantly screams "Bien te veo" (I see you well) in a loud and harsh voice, which is perhaps the most prominent sound one hears in the monte. The list of commoner birds here is closed by a few Dendrocolaptidæ, the most prominent among which is the Oven-bird (*Furnarius rufus*). This bird is not unlike a Thrush in appearance, and its curious oven-like nests are to be seen everywhere in the monte. The nests are spheroidal structures, built of mud, about a foot in diameter, and attached to a tree or post. At one side is the opening leading into the interior by a cunningly curved passage. What strikes a European about

the bird-fauna here is the predominance of Icteridæ, Tyrannidæ, and Dendrocolaptidæ, three of the most distinctive of South-American bird types. Owing to the predominance of these forms, one does not hear the fine singing one has at home; its place is taken by a variety of harsh screams and chirps.

I am afraid I must have wearied out all your patience with this long-winded screed anent birds, so I will try to tell you of the other departments more concisely. Of mammals, the three prominent orders are Edentata, Rodentia, and Carnivora. Insectivores are, of course, entirely absent. Of Edentates, two types of armadillo are common, the peludo (*Dasyurus villosus*) and the mulito (*Praopus hybridus*). Of these two species the peludo is the larger, and is covered with long coarse hair, while the mulito has a smooth coat, without hair, except on the belly. Both are eaten by the natives, and the mulito is esteemed a great delicacy. In habits both are the same, burrowing in the ground in search of food. Of Rodents, I have come across three species: the biscacha (*Lagostomus trichodactylus*), the "nutria" (*Myopotamus coypus*), and the conejo (*Cavia leucopyga*). Of these the biscacha is by far the most conspicuous and most numerous; its burrows are similar to those of the rabbit, but several times as large. They are collected in colonies called "biscacheras," and around these is generally an expanse of beautifully closely cropped turf. Growing on the biscachera itself is frequently an extremely harsh and sharp grass, growing in spiky tufts, called by the natives "paja brava." This grass grows occasionally separate from biscacheras, but much more frequently it denotes the position of a biscachera. The biscacha is a big rodent, about three times the size of a rabbit. It has a stiff rigid tail of about six inches in length. When the animal is running this is carried projecting right backwards, and the hind quarters being on a much larger scale and higher in the air than the fore quarters, the whole animal has a curious resemblance to a wheelbarrow trundling along of its own accord. The biscachas are very bold and inquisitive. If one quietly approaches them when they

are cropping the turf in front of their burrows towards dusk, they retire close to the mouth of their burrows, and there sit up on their haunches, after the manner of kangaroos, watching the intruder and giving vent to various uncouth sounds of indignation. These sounds are of a most uncanny nature. A night or two after my arrival I happened to be walking over the turf when it was nearly quite dark, when suddenly I put my foot into a hole, and at once a chorus of the most weird and unearthly groans and hisses arose from the ground all around me. I had never heard of the vocal powers of the biscachas, and I felt quite startled. I believe it is the males chiefly who give vent to these sounds.

The coypu or nutria ("otter"!!), as it is ridiculously termed in Spanish, is fairly abundant by the edges of the larger lagunas. In habits and appearance it is simply an enormous water-rat.

The conejo is a little cavy, about eight inches in length, of a greenish-brown colour, and is very abundant amongst the pajas by the side of the water.

Carnivora are well represented here, being in number of species the predominant order of mammals. At the head of those I have met with stands the puma (*Felis concolor*), which is, however, not at all common. A young male, measuring 6 feet 6 inches in total length, was killed on the neighbouring estancia of San Carlos during my stay, but I have not been fortunate enough to come across any myself. The commonest of the cats is the "gato montes," something like a miniature leopard, but only about the size of the wild cat at home (*Felis geoffroyi*). This tiger-cat is quite common, and I have shot several. There is also another smaller cat occurring in the neighbourhood, but it is less common (*F. passerum*). The most abundant of the carnivora, however, is a species of skunk (*Mephitis patagonica*), about 23 inches in length, with beautiful silky dark-brown coat, with a white longitudinal line along each side of the body and a bushy white tail. He is a beautiful little animal, and about sundown he may be seen taking his leisurely evening stroll, with his white tail hoisted up in the air as a signal to

all to keep their distance. Armed with a similar, though less highly developed organ of defence as the skunk, is the "huron," a kind of large polecat, which is also fairly common here (*Galictis vittata*). Next to the skunk, the handsomest of the carnivores here is a fox (*Canis azaræ*), resembling in size and appearance the European one, but with beautiful silvery-grey fur. So much for the carnivores. The only other mammals are a species of deer, which I have not met with alive (*Cervus campestris*), and two species of opossum, which I have not seen alive either. So the mammal fauna, like the avifauna, is, on the whole, rich—14 species, of which 8 are abundant. I may mention that of birds I have obtained examples of 79 species, all on this estancia alone, so that you can have some idea of the wonderful richness of the fauna, considering we are in a strictly temperate climate and latitude 35° S. It quite takes my breath away when I think of the Pilcomayo and lat. 20° S. I am afraid that I have thoroughly tired you out with my long-windedness, but I must plead as my excuse that I wish to give you as complete an idea as possible of the general appearance of nature here.

Had I written a month ago I might have declared the flora of this place almost *nil*; writing now, I must say that it is very luxuriant, richer, however, in individuals than in species. In species it appears to be, in fact, poor; and this is not to be wondered at, for there is an utter want of that variety in physical conditions which is the first factor in making a flora rich in variety of species. Here we have nothing but rolling undulating camp, no wooded lands (the plantations being quite modern), no mountain, not even any absolutely permanent water. The consequence is that we have the flora of the plain and nothing more. As I have not any botanical work of reference out in the camp here, I am afraid that my account of the flora will have to be very meagre indeed.

Buenos Aires City,  
Sunday, Nov. 16, 1889.

I took my departure from Mate Grande rather suddenly two days ago, so have had to postpone continuing your letter till now. When I arrived at Mate Grande (Aug. 15th) it was practically mid-winter, everything was parched and withered, and the only plants in flower in the camp were a beautiful little yellow oxalis, which carpeted the turf almost like the buttercups at home, and that ubiquitous intruder, *Stellaria media*. The latter grows rather more luxuriantly than at home, but otherwise appears to be quite unchanged. This state of vegetation continued until nearly the middle of October, about which time we had two or three heavy thunderstorms. This, coupled with a little warm weather, gave an extraordinary impulse to growths, and vegetation sprung up and grew as if by magic. The first of the noticeable flowers to bloom in the spring were two verbenas, one pelargonium scarlet and another lilac-coloured. The turf, dotted with these and the little yellow oxalis, quite vied in appearance with the meadows at home in spring. Besides this yellow oxalis, there soon appeared two other species of the same genus, one with a beautiful pink flower, the other pure white. The biscacheras appeared to be characterized by their growth of poisonous and otherwise disagreeable plants. Some would be covered by a dense growth of tall hemlock, others by a forest of mottle-leaved thistles; on others, again, *Urtica urens* flourished, while on very many was to be seen a beautiful apparently Loasaceous plant, with drooping white-petalled flowers, and armed with an abundance of stinging hairs, even on the petals. Although flowering plants were very numerous as to individuals, in species they were very few. There appeared to be a very great absence of rare plants. Of everything that was to be seen at all, there was to be seen an abundance. Of ordinary ferns I did not find any, but a species of *Marsilia*, and one *Azolla*, were frequent.

XXXV.—On a small Collection of Birds from Mount Penrisen, Sarawak. By R. BOWDLER SHARPE, F.L.S. &c.

SINCE his return to Borneo, I regret to say that our friend Alfred H. Everett's health has been so bad that he has not been able to explore much personally. He has, however, sent a hunter to Mount Penrisen (4400 feet), at the source of the Sarawak River, in order, as he states, "to obtain a sample of the highland fauna of Western Borneo for comparison with that of Kina Balu." The collector being alone, and the wet season being at its height, he obtained a very meagre series of skins.

That Mr. Everett, in his suffering condition, should still interest himself in the scientific exploration of Borneo is only what we might expect from the indomitable pluck which has carried him through personal hardships and difficulties for so many years, and his efforts will be much appreciated by his numerous friends in this country.

The collection is, as Mr. Everett says, a "meagre" one, but it contains two birds of great interest, one being of a genus, *Eupetes*, new to Borneo, and the other of a new species of *Siphia*. The remaining species are the same as from Kina Balu.

Fam. MUSCICAPIDÆ.

Genus SIPHIA.

I. SIPHIA EVERETTI, sp. n.

♂. Similis *S. cyaneæ*, sed minor et caudâ nigrâ minimè albo notatâ distinguenda. Long. tot. 6·0, culm. 0·65, alæ 3·25, caudæ 2·2, tarsi 0·75 poll. Angl.

♀. Similis *S. cyaneæ* ♀, sed capite rufescente, loris et facie laterali, gulâ et præpectore rufescentibus distinguenda. Long. tot. 6·0, culm. 0·7, alæ 3·15, caudæ 2·25, tarsi 0·75.

This species is a small representative of *Siphia cyanea*, of Hume, from Tenasserim, which appears to be a true *Siphia*, belonging to the same group as *S. pallidipes*. The Bornean form, however, is a much smaller bird, and is easily distinguished by the absence of white on the tail. The female

resembles the hen of *S. cyanea* very closely, and has a white patch on the fore neck, but the head, sides of face, throat, and breast are more rufous than in *S. cyanea*. Like the latter, it has some white on the inner webs of the tail-feathers.

Fam. TIMELIIDÆ.

2. CRINIGER GUTTURALIS (Bp.) ; Sharpe, Cat. B. Brit. Mus. vi. p. 80.

It is rather curious that Mr. Everett's hunter should have procured this species instead of the Kina Balu *C. ruficrissus*. It is a bird of the low country, and was doubtless discovered at no great height on Penrisen.

3. HEMIXES CONNECTENS, Sharpe, Ibis, 1887, p. 446.

Compared with a specimen in Mr. Whitehead's collection and found to be identical.

4. EUPETES MACROCERCUS (T.) ; Sharpe, Cat. B. Brit. Mus. vii. p. 338.

This bird was met with on the top of the mountain. It is quite new to Borneo.

5. STACHYRIS BORNEENSIS, Sharpe, Ibis, 1887, p. 449.

6. TURDINUS CANICAPILLUS, Sharpe, Ibis, 1887, p. 450.

7. TURDINULUS EXSUL, Sharpe, Ibis, 1888, p. 479.

8. STAPHIDIA EVERETTI, Sharpe, Ibis, 1887, p. 447.

Mr. Whitehead has kindly lent me specimens of the four species mentioned above, and I find that in every instance the Penrisen specimens are identical with others from Kina Balu.

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XXXVI.—*On the Identity of Chrysotis cœligena with Psittacus dufresnianus.* By T. SALVADORI, C.M.Z.S.

THE Amazon generally called *Chrysotis dufresniana* is the bird figured by Mr. Selater (P. Z. S. 1880, pl. ix. fig. 2) with the pileum, or the front part of it, red. This bird was described by Kuhl (Consp. Psitt. p. 78) as the adult of *Psit-*

*tacus dufresnianus*, while as the young of the same species Kuhl described the bird figured by Levaillant, Hist. Nat. des Perr. ii. p. 53, pl. 91 (*fronte aurantia ad oculos flava, genis, gula colligae lateribus cœrulescentibus*). Dr. Finsch, in his celebrated Monograph, has agreed with Dr. Kuhl's identifications.

In 1880, while Mr. Selater was about to publish the description of a supposed new Amazon, he received a specimen of the same bird from Mr. Lawrence, who had bestowed on it the name *Chrysotis cœligena*. Mr. Selater adopted the name proposed by Mr. Lawrence and published a figure of a specimen then living in the Gardens of the Zoological Society (P. Z. S. 1880, pl. ix. fig. 1). Mr. Selater, speaking of this bird, says:—"It was purchased of one of the London dealers in February 1879, and was originally considered an immature example of *Chrysotis dufresniana*, to which species it is most nearly allied. But it has remained without material change since its arrival, and a closer examination leads me to believe that it is not an immature bird."

There can be no doubt that Mr. Selater was quite right in considering the bird as distinct, and also as regards the probability of the bird described by Dr. Finsch (Papag. ii. p. 552) as the young of *C. dufresniana* being the supposed new species. Mr. Selater had not the opportunity of going through the subject, otherwise he would easily have perceived that the bird described by Kuhl and by Wagler (Mon. Psitt. p. 594) as the young of *Psittacus dufresnianus*, as well as the one figured on Levaillant's plate, were also of the same species.

It is of the greatest importance to notice that the bird figured by Levaillant was stated to be from Cayenne, and that the typical bird described by Lawrence was from Guiana (Ibis, 1880, p. 237), so that both birds were from the same zoological region.

Unfortunately the name *Chrysotis cœligena* cannot stand, as I shall presently show.

It seems that all the preceding authors but Wagler have overlooked the fact that previously to Kuhl the name

*Psittacus dufresnianus* had already been used by Shaw (Gen. Zool. viii. 2, p. 513, 1811), whose description was made after Levaillant's plate 91; and as this represents the Cayenne bird, with no red on the head and on the tail, it is quite clear that *C. cæligena* is equal to *C. dufresniana* (Shaw) and that a new name must be given to the Brazilian *C. dufresniana* (Kuhl), for which I would propose that of *Chrysotis rhodocorytha*.

The synonymy, diagnostic description, and the habitat of the two species will be as follows:—

1. *CHRYSOTIS DUFRESNEANA* (Shaw).

*Le Perroquet Dufresne*, Levaill. Hist. Nat. des Perr. ii. p. 53, pl. 91 (1805) (ex Cayenna).

*Psittacus dufresnianus*, Shaw, Gen. Zool. viii. 2, p. 513 (1811) (ex Levaillant); Steph. Gen. Zool. xiv. p. 106 (1826); Desm. Dict. Sc. Nat. xxxix. p. 103 (part.) (1826); Cuv. Règn. An. i. p. 465 (part.) (1829).

*Psittacus dufresnianus*, junior, Kuhl, Consp. Psitt. p. 78 (1820).

? *Psittacus coronatus*, Licht. (*nec* Linn.) in Mus. Berol. *vide* Kuhl, l. c.

*Psittacus dufresnii*, Kuhl, op. cit. p. 104 (1820).

*Psittacus dufresneanus*, junior, Wagl. Mon. Psitt. p. 594 (1832); Hahn, Orn. Atl. Papag. p. 91 (young), t. 71 (1837); Cab. in Schomb. Guiana, iii. p. 724 (1848).

*Chrysotis dufresnii*, Sw. Class. B. ii. p. 301 (1837); Licht. Nomencl. Av. p. 70 (part.) (1854).

*Chrysotis dufresneanus*, (part.), G. R. Gr. Gen. B. ii. p. 422, no. 13 (1846).

*Chrysotis dufresniana* (part.), Bp. Rev. et Mag. de Zool. 1854, p. 151, no. 100; ? G. R. Gr. List Psitt. Brit. Mus. p. 80 (part.?) (1859); Pelz. Orn. Bras. p. 266 (note, part.) (1871).

*Chrysotis dufresnianus*, Bp. Naumannia, 1856, Consp. Psitt. no. 94 (part.); ? G. R. Gr. Hand-list, ii. p. 164, no. 8323 (part.?) (1870).

*Amazona dufresniana*, Schleg. Mus. P.-B. Psittaci, p. 52 (part.) (1864); id. op. cit. Revue, p. 27 (part.) (1874).

*Chrysotis dufresnei*, juv., Finsch, Die Papag. ii. p. 552 (1868); Gieb. Thes. Orn. i. p. 682 (part.?) (1872).

*Chrysotis cæligena*, Lawr. MS.; Sclat. P. Z. S. 1879, p. 815, 1880, p. 68, pl. ix. fig. 1; Lawr. Ibis, 1880, p. 237; Salv. & Sclat. ibid. p. 238; Rehnw. & Schal. Journ. f. Orn. 1880, p. 209; Sclat. Ibis, 1881, p. 414; id. List Vert. An. (8th ed.), p. 348 (1883); Salv. Ibis, 1886, pp. 68, 509.

*Androglossa cæruligena*, Rehnw. Journ. f. Orn. 1881, p. 374 (Consp. Psitt. p. 214); id. Vogelbild. Nachtr. in the text of no. 125 (1883).

*Diagn.* Clare viridis, fronte flavo-aurantiaca, facie tota utrinque cyaneo tineta, speculo alari aurantiaco, caudæ apice flavicante, crassitie paullo minore quam in *C. rhodocorytha*.

*Hab.* in Guiana.

*Obs.* Similis *C. rhodocorythæ*, sed fronte non rubra, speculo alari aurantiaco et cauda nullo modo rubra distinguenda.

## 2. CHRYSOTIS RHODOCORYTHA.

*Psittacus dufresnianus*, ad., Kuhl, Consp. Psitt. p. 78 (1820); Desm. Dict. Sc. Nat. xxxix. p. 102 (ad.) (1826); Cuv. Règn. An. i. p. 465 (part.) (1829).

*Psittacus dufresneanus*, Wied (*nec* Shaw), Reise, i. p. 51 (1820), ii. pp. 335, 341 (1821); id. Beitr. iv. p. 225 (Südl. Brasilien) (1832); Burm. Syst. Ueb. ii. p. 183 (Mittl. u. nördl. Bras.) (1856).

*Amazona dufresniana*, Less. (*nec* Shaw), Tr. d'Orn. p. 190 (1831); Schleg. Mus. P.-B. Psittaci, p. 52 (part.) (1864); id. op. cit. Revue, p. 27 (1874).

*Psittacus dufresneanus*, ad., Wagl. Mon. Psitt. p. 594 (1832).

*Chrysotis dufresneanus* (part.), G. R. Gr. Gen. B. ii. p. 422, no. 13 (1846).

*Chrysotis dufresnii* (part.), Licht. Nomencl. Av. p. 70 (1854).

*Chrysotis dufresniana* (part.), Bp. Rev. et Mag. de Zool. 1854, p. 151, no. 100; ? G. R. Gr. List Psitt. Brit. Mus.

p. 80 (part. ?\*) (1859); Pelz. Orn. Bras. p. 266 (note, part.), pp. 448, liii. (1871); Sclat. & Salv. Nomencl. Av. Neotr. p. 113, no. 18 (Brasilia) (1873); Sclat. P. Z. S. 1880, p. 68, pl. ix. fig. 2; id. List Vert. An. (8th ed.), p. 348 (1883).

*Chrysotis dufresnianus*, Souancé (*nec* Shaw), Rev. et Mag. de Zool. 1856, p. 154; Bp. Naumannia, 1856, Consp. Psitt. no. 94 (part.); ? G. R. Gr. Hand-list, ii. p. 164, no. 8323 (part.) (1870).

*Chrysotis dufresneana*, Bolle (*nec* Shaw), Journ. f. Orn. 1856, p. 170; Sclat. Cat. Am. B. p. 354, no. 2113 (1862).

*Chrysotis dufresnei* (part.), Finsch, Die Papag. ii. p. 551 (1868); Gieb. Thes. Orn. i. p. 682 (part. ?) (1872).

*Androglossa dufresnii*, Rehnw. (*nec* Shaw), Journ. f. Orn. 1881, p. 374 (Consp. Psitt. p. 214) (syn. emend.); id. Vogelbild. Nachtr. 125 (1883).

*Diagn.* Viridis, pileo antico rubro, loris flavis, genis cyaneo tinctis; speculo alari rubro; caudæ apice flavicante et fascia rubra subapicali oblecta notata, crassitie paullo majore quam in *C. dufresneana* (Shaw).

*Hab.* in Brasilia.

### XXXVII.—Notices of recent Ornithological Publications.

[Continued from p. 261.]

#### 60. *Backhouse on European Birds.*

[A Handbook of European Birds, for the use of Field-Naturalists and Collectors. By James Backhouse, Jun., F.Z.S. 8vo. London: Gurney and Jackson, 1890.]

Mr. Backhouse has produced a useful book and one that will, no doubt, be often referred to by working ornithologists. It is a pity, however, that he did not look after the artist who drew the frontispiece more sharply. The "anal region" in the typical bird is certainly not properly placed between the legs, nor the "rump" halfway up the back. We must also object to the author's usage of the term

\* Gray mentions a specimen from Bogota, but I do not know to which form it belongs.

"Habitat," which, since the time of Linnæus, has been used to express what Mr. Backhouse calls "Distribution," and not the *kind* of country to which a bird mostly resorts. Again, if the Scutelliplantar Passeres are recognized as a separate group they should be placed at the end of the typical Oscines, and not in the middle of them. Mr. Backhouse does not exactly define the limits of "Europe" as regarded from his point of view, but appears to comprehend in it the Caucasus. He has very wisely not troubled his readers with synonyms, which in a volume of this character are well omitted. But his nomenclature and general arrangement are such as must commend themselves to his brother members of the B.O.U.

61. *Barrows on the English Sparrow in North America.*

[U.S. Department of Agriculture. Division of Economic Ornithology and Mammalogy. Bulletin 1. The English Sparrow (*Passer domesticus*) in North America, especially in its relations to Agriculture. Prepared under the direction of Dr. C. Hart Merriam, Ornithologist, by Walter B. Barrows, Assistant Ornithologist. 8vo. Washington: 1889.]

This is a memoir of 606 pages on the great Sparrow-question, and may well be believed, as Dr. Merriam claims for it, to be the "most systematic, comprehensive, and important treatise ever published upon the economic relations of any bird." The Sparrow was only first introduced into America in 1850; but it has so thriven as to have now spread all over the eastern States, as is shown by the map attached to the memoir, and in some favoured places to abound in enormous quantities. The result arrived at, after full discussion, is that the Sparrow is "a curse of such virulence that it ought to be systematically attacked and destroyed," and it is shown how this may be effected by poisoning, trapping, and netting.

62. *Berlepsch on Birds from Upper Amazonia.*

[Systematisches Verzeichniss der von Herrn Gustav Garlepp in Brasilien und Nord-Peru, im Gebiete des oberen Amazonas, gesammelten Vogelbälge. Von Hans von Berlepsch. J. f. O. 1889, p. 289.]

Graf v. Berlepsch continues his account of Herr Garlepp's bird-collections in Upper Amazonia (*cf. supra*, p. 111), and

now writes of the specimens obtained at various localities on the Ucayali and Huallaga. After recording some interesting notes by Garlepp upon the Toucans and Parrots of these districts, the author proceeds to a systematic account of the species represented in the collection. These are altogether 142 in number, concerning which many excellent critical remarks are given. *Cassicus pachyrhynchus* is characterized as a new species allied to *C. hæmorrhous*. *Ornithion pusillum olivaceum* and *Momotus brasiliensis ignobilis* are two new subspecies. Coloured figures are given (plate iii.) of two rare Parrots, *Ara couloni* and *Conurus roseifrons*. Of the latter, ten specimens were obtained by Herr Garlepp near Tarapoto, and subsequently 31 more at Shanusi near Yuriaguas.

### 63. Fürbringer on *Stringops* and *Iynx*.

[Einige Bemerkungen über die Stellung von *Stringops* und den eventuellen Herd der Entstehung der Papageien, sowie über den systematischen Platz von *Iynx*. Von Max Fürbringer. J. f. O. 1889, p. 236.]

Herr Marshall, in his 'Zoologische Vorträge,' has maintained that *Stringops* should be considered rather as a modern degraded form than as the oldest and least developed member of the Psittacine group. Dr. Fürbringer now gives good reasons why the latter view, which he has adopted in his "Untersuchungen," should be upheld. He likewise writes on the question of the local origin of the Psittaci, which some have maintained must have been in the Oriental, and others in the Australian Region, and shows that we have not yet materials for properly discussing this difficult subject. As regards *Iynx*, which he has treated as the lowest and least-specialized type of the Picidæ, Dr. Fürbringer also explains his views on this point, and shows that they are not materially different from those of Herr Marshall; only the latter writer is inclined to regard *Iynx* as a more specialized development of the Picidæ, while Dr. Fürbringer thinks that it should rather be looked upon as a more primitive form of that group.

64. *Hume and Oates's 'Nests and Eggs of Indian Birds.'*

[The Nests and Eggs of Indian Birds. By Allan O. Hume, C.B. Second edition, edited by Eugene William Oates. Vol. I. With four portraits. Pp. 397. 8vo. London: 1889. R. H. Porter.]

As a companion work to his 'Birds of British India,' the first volume of which was noticed in our last number (above, p. 362), Mr. Oates has undertaken the preparation of a new edition of Mr. Hume's 'Nests and Eggs of Indian Birds,' of which the parallel volume, containing the accounts of the nests and eggs of the species described in the first volume of the former work, is now before us. Every one interested in Indian Ornithology is well acquainted with Mr. Hume's 'Nests and Eggs,' and although it would have been much better, in our opinion, to have incorporated all the information on this subject into the pages of the 'Birds of India,' and thus to have only one work to refer to instead of two, this course being impracticable on account of the exigencies of space, we must all feel greatly indebted to Mr. Hume for republishing his most useful work, and to Mr. Oates for editing it. For many years after the publication of his original work, Mr. Hume went on accumulating materials for a second edition of his 'Nests and Eggs.' These materials have now been placed unreservedly in Mr. Oates's hands and have been employed in the present work, which in arrangement and nomenclature follows exactly the system employed in the 'Birds of India.' The volume is appropriately illustrated by portraits of four leading Indian Ornithologists, Hodgson, Jerdon, Tickell, and Hume.

65. *Leverkühn on Variations in the Coloration of Birds.*

[Ueber Farbenvarietäten bei Vögeln. Von Paul Leverkühn.—III. J. f. O. 1889, p. 245.]

Herr Leverkühn continues his papers on variations in the plumage of birds (*cf. supra*, p. 116), and now gives us an account of those observed in the Museums of Metz, Strasburg, and Colmar. We regret to hear that the birds in the first of these Collections are not well cared for, comprising as they do many specimens referred to in Malherbe's great

Monograph of the Picidæ. The German ornithologists should see to this, as it would be a great reproach to them not to keep things in such good order as their French predecessors. The Strasburg Collection on the other hand is, we are glad to say, spoken of as being in excellent condition. Herr Leverkühn gives us some interesting remarks on the question of the two forms of *Turdus torquatus* (cf. Seebohm, Ibis, 1888, p. 309).

66. Merriam's Report for 1888.

[Annual Report of the Department of Agriculture for the year 1888. Report of the Ornithologist and Mammalogist, C. Hart Merriam, M.D., for the year 1888. Svo. Washington: 1889.]

Dr. Merriam's Report to the Commission of Agriculture of the U.S.A. upon the operations of the Division of Economic Ornithology and Mammalogy for the year contains several items of interest. It appears that "four flourishing colonies of introduced Pheasants now exist in the Pacific coast-region." One of these colonies is in Vancouver Island, another on an island in Puget Sound, and the two remaining colonies in Oregon. The birds in Oregon do not belong to the ordinary *Phasianus colchicus*, or what we are accustomed to call by this name in England—which is really a cross-race between *P. colchicus* and *P. torquatus*,—but to three Eastern Asiatic species, the Gold Pheasant (*Thaumalea picta*), the Japanese, *Phasianus versicolor*, and the true Ring-necked *P. torquatus*. They were imported in 1882 and subsequent years, and seem to have thriven well. A new crime of the American Crow (*Corvus americanus*) has been brought to light—"the distribution of noxious seeds." A single pound of the dried excrement of some of these birds was ascertained to contain 1041 seeds of Poison Ivy (*Rhus toxicodendron*) and 341 seeds of Poison Sumach (*Rhus venenata*). On testing these seeds it was found that their vitality was unimpaired; they germinated even more quickly than fresh seeds. Although of benefit to mankind in some ways, the final verdict is that "the harm which Crows do appears to far outweigh the good." The Rose-breasted Grosbeak (*Hedymeles ludovicianus*), on

the other hand, is shown to be "a valuable friend to the farmer," and to deserve "the most careful protection and encouragement."

67. *Meyer's Illustrations of Birds' Skeletons.*

[Abbildungen von Vogel-Skeletten. Herausgegeben von Dr. A. B. Meyer. Lief. x., xi. (1886), xii., xiii. (1888-89). 4to. Dresden: 1886-89.]

Four numbers of Dr. A. B. Meyer's illustrations of Birds' skeletons have been issued since we last noticed this work (*Ibis*, 1886, p. 371). The 13th number concludes the first volume, which contains altogether 130 plates. A systematic Index is now provided, which is a very convenient addition.

68. *Modigliani on the Birds of Nias.*

[Un Viaggio a Nias di Elio Modigliani.—Illustrato da 195 incisioni, 26 tavole tirate a parte, e 4 carte geografiche. Royal 8vo. Milano: 1890.]

"Tano Niha" or Nias is an island on the southern coast of Sumatra, to explore which Sign. Modigliani made a special expedition in 1886. The present volume gives us a general account of his adventures and of the results arrived at. Count Salvadori published a memoir on the birds obtained by Sign. Modigliani in 1887 (*Ann. Mus. Civ. Gen. ser. 2, vol. iv. p. 16*) and described the new species. The following birds are now figured:—*Syrnium niasense*, *Miglyptes infuscatus*, *Calornis albirostris*, *Gracula robusta*, *Cittocincla melanura*, *Terpsiphone insularis*, *Macropygia modiglianii*, and *Carpophaga consobrina*.

69. *More's List of Irish Birds.*

[A List of Irish Birds, showing the species contained in the Science and Art Museum, Dublin. By Alexander G. More, F.L.S., &c. Second edition. 8vo. Dublin: 1890.]

This is a second and revised edition of Mr. More's 'List of Irish Birds,' of which the first edition was published in 1885 (see *Ibis*, 1885, p. 44). The List is intended in the first place as a catalogue of the specimens of Irish Birds exhibited in the Dublin Museum of Science and Art. But

the names of such Irish species as are not represented in the Museum are added in a different type, so that the result is a complete list of Irish birds. Short notes on the distribution of each species are added.

70. *Nehrling's North-American Birds.*

[North-American Birds. By H. Nehrling, M.A.O.U. To be completed in Twelve Parts, with thirty-six coloured Plates, by Professor Robert Ridgway, of the United States National Museum and Smithsonian Institution, Professor A. Goering, Leipzig, and Gustav Muetzel, Berlin. Parts 1, 2. 4to. London: 1890.]

These are the first two numbers of what promises to be an important work to American Ornithologists, although, if it is intended to embrace all North-American Birds, we do not quite see how it is to be completed in "twelve parts." There is at present no popularly written book on the birds of the U.S. brought up to modern date in existence, and Mr. Nehrling's work would seem, certainly as regards its text, to be likely to supply this *desideratum*. But notwithstanding the undoubted talents of the artists combined to draw the illustrations, we cannot say that the plates are quite satisfactory. The very fully coloured backgrounds mar the effect, and in spite of the enormous advances made of late years in colour-printing, it has not yet, in our opinion, arrived at perfect success as regards birds, although it has some undoubted advantages.

71. *Ridgway on Birds from St. Lucia, the Abrolhos Islands, and the Straits of Magellan.*

[Scientific Results of Explorations by the U.S. Fish-Commission Steamer 'Albatross.'—II. Birds collected on the Island of Santa Lucia, West Indies, Abrolhos Islands, Brazil, and at the Straits of Magellan, in 1887-88. By Robert Ridgway. Proc. U.S. Nat. Mus. xii. p. 129.]

Mr. Ridgway writes of the birds obtained by the Naturalists of the U.S. Fish-Commission's Steamer 'Albatross' at these three localities. At the first two places little was obtained but what is already well known. At various ports in the Straits of Magellan examples of 66 species of birds were procured. Amongst these is a *Geositta*, from Elizabeth

Island, referred with doubt to *G. antarctica*, for which the alternative new name *G. longipennis* is proposed, and a *Upucerthia*, allied to *U. dumetoria*, described as *U. propinqua*, from Gregory Bay. The small Cormorant usually called *Phalacrocorax brasiliensis* (Gm.) is termed *P. vigua* (Vieill.), as Gmelin's name is considered not to refer to this species.

### 72. *Salvadori on Additions to Papuan Ornithology.*

[Aggiunte alla Ornitologia della Papuasias e delle Molucche. Per Tommaso Salvadori. Parte seconda. *Passeres*. 4to. Torino: 1890.]

We have now before us the second part of Count Salvadori's account of the additions to the Papuan Ornis since the completion of his great work on this subject. The first part (noticed above, p. 258) referred to the Accipitres, Psittaci, and Picariæ. The present part relates to the Passeres, of which 89 additional species are now recognized as belonging to the Papuan Subregion. Of these 89 species, 84 are recent discoveries, 1 was omitted by inadvertence, 1 is an old species recently met with in the Timor-Laut group, and 3 (*Edolisoma nehrkorni*, from Waigiou, *Dicruropsis guillemardi*, from Pisa, one of the Obi group, and *Pachycephala meyeri*, from the Arfak mountains, New Guinea) are now described for the first time. Numerous additional references and many notes are also given upon the species enumerated in the former work, so as to bring the whole information on the subject up to date.

### 73. *Slater on the Tracheophone Passeres.*

[Catalogue of the Passeriformes, or Perching Birds, in the Collection of the British Museum.—Tracheophonæ, or the Families Dendrocolaptidæ, Formicariidæ, Conopophagidæ, and Pteroptochidæ. By Philip Lutley Slater. London: 1890.]

The fifteenth volume of the Catalogue of Birds in the British Museum is devoted to the Tracheophonine Passeres—a group distinguished from the normal Passeres by the peculiar modification of their trachea, as first discovered by Johann Müller. The Tracheophonine structure prevails, so far as is yet known, only in four families of Passeres, all of

which are absolutely restricted to the Neotropical Region. These are the Dendrocolaptidæ, Formicariidæ, Conopophagidæ, and Pteroptochidæ. In the present volume are catalogued about 4482 specimens of *Tracheophonæ*, as belonging to the Collection of the British Museum. These have been referred to 92 genera and 531 species, leaving only 28 species known to the author, but not yet represented in the Collection. The "types" in this portion of the series are especially numerous and amount to no less than 172.

With the present volume is concluded the account of the great Passerine series, which was commenced in June 1877, by the issue of Mr. Sharpe's catalogue of the Colæomorphæ (vol. iii.), and has taken up thirteen volumes.

#### 74. *Seebohm on the Classification of Birds.*

[Classification of Birds: an attempt to diagnose the Subclasses, Orders, Suborders, and some of the Families of existing Birds. By Henry Seebohm. London: 1890. R. H. Porter. 54 pp.]

For several years past Mr. Seebohm, as is well known to all readers of 'The Ibis,' has devoted much time and attention to the study of the principal characters upon which the classification of Birds has been based by recent systematists. As the results of his investigations, Mr. Seebohm has contributed to this Journal several papers upon the diagnostic characters of the orders of Birds and upon their component families (*cf.* Ibis, 1888, p. 415; 1889, p. 92; 1890, pp. 29, 200). Having now finished his general survey, he has put his observations together, and shows in the present work how birds may be separated by absolute differential characters into 36 "suborders." He also gives two alternative schemes for the combination of these "suborders" into "orders" and "subclasses." Putting aside these proposed combinations, to both of which, we think, serious objections may be made, we should say that Mr. Seebohm is, as we believe, the first systematist who has succeeded in dividing Birds into a tolerably natural series of families separable by absolutely diagnostic characters. These characters are now presented to us in the case of each suborder in an original and highly

ingenious way. The characters having been shortly stated, a tabular list of the 36 "suborders" is appended, and it is shown in which of them each of the several selected characters occurs and in which of them it is absent. Thus it is seen at a glance that the "suborder" under consideration is the only one of the set of thirty-six that combines the whole of the selected characters, though many other "suborders" may possess one or more of them.

The principal characters taken by Mr. Seebohm as the base of his System are:—(1) The condition of the young at birth (to which very special importance was attached by Sundevall); (2) the pterylosis; (3) the number of cervical vertebræ; (4) the mode of arrangement of the deep plantar tendons; (5) the manner of bifurcation of the nasal bones; (6) the presence or absence of cæca; (7) the condition of the oil-gland (naked or tufted); (8) the condition of the palatal bones, especially as regards the presence or absence of basipterygoid processes; (9) the arrangement of the femoral muscles as worked out by Garrod; (10) the position of the digits; (11) the form of the dorsal vertebræ; (12) the presence or absence of supraorbital fossæ.

Perhaps the most startling innovation introduced by Mr. Seebohm is the proposal to join the *Mimogypes*, or *American Vultures*\*, into one "Subclass" with his "*Picariæ*" under the name "*Coraciiformes*," which has already been put forward in this Journal (*cf. Ibis*, 1890, p. 200). Mr. Seebohm is of opinion that the remarkable deviation from the normal structure shown by these two groups in the arrangement of their deep plantar tendons could hardly have been acquired independently. It is certain that the time has now come when the *Mimogypes*, shown to differ from the true *Accipitres* in so many trenchant characters, must claim to stand as an Order apart, and that one of the forms of Mr. Seebohm

\* In the present work this group is denominated *Cathartes* (*s. Cathartæ*). In the tables of his new system placed before the Zoological Society at the Meeting on March 4th last it was designated by the appropriate term "*Mimogypes*." See also above, p. 203.

Picariæ\* (i. e. *Bucorvus*) presents no small amount of resemblance to it. But we are not yet quite prepared to unite the *Mimogypes* and *Syndactylæ* in the same "Suborder."

Whatever may be our appreciation of Mr. Seebohm's new System, we must allow that the author has done an excellent piece of work in thus summarizing the results to be arrived at from the study of the labours of Nitzsch, Sundevall, Huxley, Garrod, and Forbes, and in placing them before us in such an intelligible form.

#### 75. *Shufeldt on the Osteology of the Water-Birds.*

[Contributions to the Comparative Osteology of Arctic and Subarctic Water-Birds. Part V. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Anat. & Physiol. xxiv. p. 89.]

Dr. Shufeldt continues his studies of the Arctic and Subarctic water-birds (*cf. supra*, p. 260), and in the present contribution to this subject descants on the skeleton of the Puffins (*Fraterculinæ*). In his conclusions he states that there can be no question as to the right of admission of the Puffins into the *Alcidæ*, and that perhaps the creation of the genus *Lunda* will prove to be a warranted step. The memoir, as usual, is well and fully illustrated.

#### 76. *Shufeldt on Progress in Avian Anatomy.*

[Progress in Avian Anatomy for the years 1888-89. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Comp. Med. & Veterin. Arch., January 1890.]

Dr. Shufeldt has every claim to our attention when he speaks of Avian Anatomy, and his address on the subject read at the seventh Congress of the American Ornithologists' Union, held at New York last year, will be read with interest. We are pleased to see Dr. Shufeldt's announcement that Messrs. Macmillan have accepted for publication his complete treatise on the muscles of the Raven. A good modern textbook on birds' muscles is much required, and will be very useful to ornithologists.

\* *Picariæ* cannot properly be used for a group which does not contain the Woodpeckers, so that we prefer the alternative name "*Syndactylæ*" for this group.

77. *Stejneger and Lucas on Pallas's Cormorant.*

[Contributions to the Natural History of the Commander Islands.—X. Contribution to the History of Pallas's Cormorant. By Leonhard Stejneger and Frederick A. Lucas. Proc. U.S. Nat. Mus. xii. p. 83.]

It seems certain that Pallas's Cormorant (*Phalacrocorax perspicillatus*) is now an extinct species, like the Great Auk and the *Fregilupus* of Bourbon. Dr. Stejneger has already stated thus much (Pr. U. S. N. M. 1883, p. 65), and now confirms what he has said. The fortunate Museums that contain specimens of this noble bird are the British Museum, the Leyden Museum, and the Museum of the Imperial Academy of Sciences at St. Petersburg. When in Bering Island in 1882, Mr. Stejneger dug out of the cliffs at the N.W. end of the island some bones of this extinct Cormorant, which are now described by Mr. Lucas.

78. *Tschusi zu Schmidhofen's Ornithologisches Jahrbuch.*

[Ornithologisches Jahrbuch.—Organ für das palæarktische Faunengebiet. Herausgegeben von Victor Ritter von Tschusi zu Schmidhofen. Band i. Heft 1. 8vo. Hallein: 1890.]

The well-known authority on European birds, Victor, Ritter von Tschusi zu Schmidhofen, has started a new Journal of Ornithology, of which the first number is now before us. It is to relate specially to European birds, but also, it appears, to embrace those of the whole Palæarctic Region. The present number contains papers on some scarce birds of Istria, by Dr. S. v. Washington, on those of Prussian Silesia, by C. Hoericke, on those of Moravia, by V. Čápek, an account of the breeding of *Muscicapa parva* in New Pomerania, by Major A. v. Homeyer, and other smaller articles. We wish the new enterprise success, but rather doubt whether there is room for it.

79. *Woodford on the Head-hunters of the Solomon Islands.*

[A Naturalist among the Head-hunters: being an Account of Three Visits to the Solomon Islands in the years 1886, 1887, and 1888. By Charles Morris Woodford. London: 1890.]

The well-known explorer of the Solomon Islands has put

his adventures and experiences "among the head-hunters" into a nice little volume, which we can cordially recommend to those who are interested in the study of Nature. Mr. Woodford is an ardent collector of birds, and frequent allusion to them will be found throughout his pages. His collections have been worked out by Mr. Sharpe and Mr. Grant (see P. Z. S. 1887, p. 328, and 1888, pp. 182, 185).

Perhaps the best bird that he discovered was *Macrocorax woodfordi* (P. Z. S. 1887, p. 332, pl. xxvii.). But we must not suppose that the Avifauna of this most interesting group of islands is by any means yet thoroughly known. Mr. Woodford is certain "that when Bougainville, Choiseul, Ysabel, and Malaita have been properly worked, many hitherto unknown species will be added to our lists. The mountains of Bougainville, over 10,000 feet high, never yet ascended by white man or native, present a field from which we may expect all sorts of prizes, not only in birds, but in other orders."

In one of his chapters Mr. Woodford gives us a good general account of the birds of the Solomon Islands as at present known to us, from which we extract the following passage:—

"As might be expected the Avifauna of the Solomons contains many species identical with or closely allied to those occurring on New Guinea and the neighbouring islands. Some families, however, are altogether wanting, or are represented by species that from long isolation have become distinct.

"The Paradise-Birds, those gorgeous inhabitants of New Guinea and the islands immediately adjacent, have no representative in the Solomons, nor do they even reach New Britain and Duke of York. Casuaries, although found in New Britain and Duke of York Island, do not extend to the Solomons, and I consider their absence another proof that land-connection has never existed between the Solomons and New Britain."

XXXVIII.—*Letters, Extracts, Notices, &c.*

WE have received the following letters, addressed "to the Editor" :—

Buenos Ayres,  
Jan. 28, 1890.

SIR,—I wish to inform you that in the figure of *Chatocercus burmeisteri*, published in 'Argentine Ornithology' (vol. ii. pl. xi.), there is a slight error. The two small stripes of crimson-red, shaded with violet-blue, on the throat, are represented as separated by an interval in the middle; whereas they are united there by two rows of smaller feathers of the same colour, and in this manner form a bilobed half-collar.

At the point immediately under the beak there are some small white feathers, like a beard. These are not shown in the figure.

Yours &c.,  
H. BURMEISTER.

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Topclyffe Grange, Farnborough,  
R.S.O., Kent.  
Feb. 28, 1890.

SIR,—Some time ago, when examining specimens of Rollers for the purpose of writing a monograph of that family, I found, on comparing examples of the White-necked Roller (*Coracias nœvia*) from various parts of Africa, that there are certainly two clearly separable forms: one which has the crown rufescent or vinaceous pink, inhabiting Abyssinia, the Upper White Nile, Somaliland, Senegambia, and the Niger district; and the other, which has the crown pale olivaceous green, inhabiting the Congo, Angola, Benguela, Damaraland, Mozambique, the Transvaal, and South Africa generally.

I have not yet fully made out the geographical ranges of these forms, but, so far as I can at present judge, the rufous-crowned form is only found north of the equator, and the olive-crowned form south of the equator.

Heuglin has remarked (Orn. N.O.-Afr. i. p. 173) that there appear to be two forms, but he did not refer to the difference in the coloration of the crown, and tried to separate the southern and western birds from the north-eastern form. Captain Shelley (Ibis, 1885, p. 399) has pointed out the distinctive character in the coloration of the crown, and has separated the two forms correctly, but has only made a subspecies of the southern form, referring the northern species to *Coracias nœvia*, and giving to the southern species the name *Coracias nœvia levaillantii*.

I have been lately working out the synonymy of the Rollers, and, as it appears to me that the olive-crowned bird should be treated as a good species, the question arises as to what specific name it should bear. The specific names already bestowed on these two Rollers, which have hitherto been generally united, are as follows:—

*nœvia*, Daudin, *Traité d'Orn.* p. 258 (1800).

*pilosa*, Latham, *Ind. Orn. Suppl.* p. 27 (1801).

*crinita*, Shaw, *Gen. Zool.* vii. part 2, p. 401 (1809).

*nuchalis*, Swainson, *B. of W. Afr.* ii. p. 110 (1837).

*levaillantii*, Rüppell, *Syst. Uebers. Vög. N.O.-Afr.* p. 23 (1845).

Of these, the first, *nœvia* of Daudin, undoubtedly refers to the northern or rufous-crowned species, as the author states that the crown is red, and gives the habitat as "Senegambia." Latham's *pilosa* appears to be also referable to the northern species, but his description is very meagre, and he merely gives "Africa" as the habitat. Shaw's name is based, as was Latham's *pilosa*, on the Hairy Roller of Latham (*Gen. Syn. Suppl.* ii. p. 27) and no description is given. Swainson's *nuchalis* is also most certainly the northern species, as he states that the crown is "vinaceous red;" and Rüppell's *levaillantii* must also refer to the northern species, for though he gives no description, he states that it is "common in the lowlands of Abyssinia." I may here remark that Rüppell refers to this bird as "*Coracias levaillanti*, Temminck," but I cannot find that this name was ever published by Temminck.

From this it will be seen that all the specific names hitherto applied to the two species refer properly to the northern form, and I can see no alternative but to give a fresh name to the southern or olive-crowned species. I propose therefore to call it *Coracias mosambicus*, retaining the name of *Coracias navius* for the rufous-crowned (or northern) species.

Yours &c.,

H. E. DRESSER.

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Edinburgh, May 3, 1890.

SIR,—In a small collection of skins lately received from Madeira, I find a specimen which Mr. Salvin has identified as *Estrelata mollis* (*Procellaria mollis*, Gould, B. Austr. vii. pl. 50). This bird was taken on the Ilho de Baixo, off Porto Santo. This is a fact which you may consider sufficiently interesting to place on record, more especially as I understand that there are two specimens of the same bird in the Cambridge Museum, obtained (as I am informed by Prof. Newton) some 35 years ago by Mr. Robert Frere from near Madeira. Although rather a rare species, it seems by no means improbable that it may be yet found breeding upon some of the other rocks of the Madeiran group.

Yours, &c.,

JOHN J. DALGLEISH.

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*Butorides virescens* in Cornwall.—At the Meeting of the Linnean Society on the 17th April last, Sir Charles Sawley exhibited a specimen of the North-American Little Heron *Butorides virescens*, which had been shot by his keeper, W. Abbott, on the 27th of October, 1889, on his estate, Penrice St. Austell, Cornwall. The specimen was brought to Sir Charles in the flesh, and forwarded to Mr. Foote, birdstuffer Bath, for preservation.

*Butorides virescens* has a wide distribution over North and Central America and the Antilles, and likewise visits the Bermudas\*. There is therefore no antecedent improbability of

\* See Reid, Bull. U.S. Nat. Mus. No. 25, p. 244.

occasional stragglers being met with in Western Europe, though this is the first recorded example killed in Great Britain.

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*Phylloscopus superciliosus* in the Scilly Islands.—Mr. J. H. Jenkinson (Crowborough, Tunbridge Wells) sends to 'The Field' (April 12th, 1890, vol. lxxv. p. 518) the following letter:—

"In 'The Field' a short time ago it was announced in a letter from Brighton that Messrs. Pratt had identified a bird temporarily in their possession as '*Phylloscopus superciliosus*,' the Yellow-browed Warbler, which had been shot several years ago in the Scilly Islands. More definite information respecting its capture was asked for, but was not given, and it would probably therefore be supposed by readers of 'The Field' that some mistake had been made, and that the bird in question did not belong to this rare species. It is therefore satisfactory to be able to state that Messrs. Pratt were quite right in believing the bird to be the 'Yellow-browed Warbler,' and that it has been duly identified at the Natural History Department of the British Museum. The bird was shot in October, 1867, by Mr. A. Pechell, in the Scilly Islands. I found on writing to him, that I had been with him there at the time, and on looking back to my notes of that year, I found that I had written a careful description of the bird, and of its general appearance, &c., before it was shot. The note especially was observed to be unlike that of either the Golderest or the Firecrest, and there were other differences, which made it very doubtful whether the bird belonged to either of those species. However, having been sent over to Mr. Rodd, it was settled by him and Mr. Vingoe that it was an immature Firecrest, and as such it has remained in Mr. Pechell's possession ever since. A few days before this bird was obtained, Mr. Pechell had shot one exactly similar to it, but it was so injured by the shot that no attempt was made to preserve it. I found, a day or two ago, that I had kept a wing of this bird, which is of itself quite sufficient to identify the bird as being of the same species as the other. These two birds make the third and fourth specimens which have

occurred in Great Britain. The first was obtained by Mr. John Hancock in September, 1838, near Newcastle, and appeared in the old editions of Yarrell as the 'Dalmatian *Regulus*,' the second example was obtained at Cheltenham in the same month and year as Mr. Pechell's two birds."

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*Turtur orientalis in Great Britain.*—At the Zoological Society's Meeting on May 6th last, Mr. Seebohm exhibited a specimen of the Asiatic Turtle Dove (*Turtur orientalis*), which had been shot near Scarborough on the 23rd of October 1889. This species (*cf.* Dresser, B. Eur. vii. pl. 463, p. 45) is new to the British list, but is said to have occurred twice in Scandinavia.

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*Valuable Addition to the National Bird-Collection.*—Mr. F. DuCane Godman, F.R.S., has made another valuable donation to the great Bird-collection in the British Museum in the shape of a nearly complete series of birds from Florida, U.S.A. This consists of about 2500 skins collected by the well-known American naturalist, Mr. W. E. D. Scott, in various parts of that State.

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*The Catalogue of Birds in the British Museum.*—Amongst the preceding notices of recent Ornithological Publications in this Number will be found one of the fifteenth volume of the British Museum Catalogue of Birds, containing the account of the Tracheophonine Passeres, which has just been issued. Before the present number of 'The Ibis' is published, the thirteenth volume, by Mr. Sharpe, containing his account of the last remaining families of the Oscinine Passeres, will probably have also been issued. These two volumes render the catalogue of the great order Passeres complete. The 13 volumes devoted to this subject, of which the first was issued in 1877, recognize 6480 species of Passerine Birds, represented in the Museum, at the times of publication of the several volumes respectively, by 61,034 specimens. But enormous additions, it must be recollected, have been made of late years to the groups catalogued in the earlier of these volumes.

The next four volumes of the Catalogue will be devoted to the Picariæ, and are said to be all in a more or less forward state. That on the Woodpeckers, by Mr. Hargitt, will, we believe, be issued very shortly. Our Honorary Member, Count T. Salvadori, has undertaken the volume on the Parrots (which, we suppose, will be the twentieth), and he will be resident in London during the autumn for the purpose of preparing it.

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*New Bird-books in preparation.*—Mr. Dresser is preparing a supplementary volume to his 'Birds of Europe,' and has, we believe, nearly 100 species to add to his former work. Mr. Sharpe has made arrangements with Messrs. Sotheran and Co. to publish a Monograph of the Paradise-birds, for which, we understand, the plates contained in the 'Birds of New Guinea' will be utilized, as far as they are available. Mr. Seebohm is now engaged in passing through the press a work on the Birds of Japan, and has, besides, a Monograph of the Thrushes, with coloured figures of all the species, in preparation.

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*Pelagodroma marina in the Canaries.*—Mr. Bartlett, during his recent visit to the Canaries, picked up a specimen of *Pelagodroma marina* dead on the sea-shore near Las Palmas, on the 26th February. Its occurrence in the Canaries has already been noted by several observers (*cf.* S. G. Reid, *Ibis*, 1888, p. 81; Tristram, *Ibis*, 1889, p. 14; Meade-Waldo, *Ibis*, 1889, p. 517); and it probably breeds on some of the adjoining islets, but few specimens of this Petrel have yet been obtained in this locality. Concerning its synonymy, *cf.* Salvin, in Rowley's *Orn. Misc.* i. p. 228.

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*Anniversary Meeting of the British Ornithologists' Union.* 1890.—The Annual General Meeting of the British Ornithologists' Union was held at the rooms of the Zoological Society, 3 Hanover Square, on Wednesday, the 21st May, at 6 P.M., Mr. P. L. SCLATER, M.A., Ph.D., F.R.S., in the Chair.

The Minutes of the last Meeting having been read and confirmed, the Committee presented their Report, in which it was stated that, in accordance with the resolution passed at the General Meeting of the Union in 1889, the vacant Secretaryship had been filled up by the appointment of Mr. F. Du Cane Godman, F.R.S., to that office.

The accounts presented showed the position of the Union at the close of the year 1889. The cost of the volume for that year had been somewhat in excess of the previous one. This had been mainly caused by its greater size and by the larger number of plates. Moreover, it contained an Index of Contents, occupying 8 pages, which was a new feature in the annual volume.

Since the last Annual Meeting, as the Committee regretted to have to remind the Members, a great loss had been suffered by the death of Mr. John Henry Gurney, one of the original Members of the Union. Mr. Gurney was a most active and zealous ornithologist, and had been a constant contributor to and liberal supporter of 'The Ibis' since its foundation. The Union had also to regret the death of Mr. John Marshall, of Taunton, who was elected a Member in 1885.

Lord Clifton had resigned his Membership, and another Member had been removed under the rules, for non-payment of his subscription. Notwithstanding these losses, the number of Members continued to increase, and there were at present on the list the names of 194 Ordinary, 1 Extraordinary, 8 Honorary, and 19 Foreign Members, making a total of 222.

The following Ordinary Members were then balloted for and declared duly elected:—

Frank Barclay, Knott's Green, Leyton.

Harry Brinsley Brooke, 33 Egerton Gardens, Kensington.

Charles Cave, Ditcham Park, Petersfield.

James A. G. Drummond-Hay, Coldstream Guards, Guards' Club, Pall Mall.

Lionel Fisher, Kandy, Ceylon.

William R. Ogilvie Grant, 6 Stanhope Place, Hyde Park, W.

Joshua Reynolds Gascoign Gwatkin, Manor House, Potterne, Devizes.

Henry Charles Vicars Hunter, 7 Bury Street, St. James's, S.W.

Thomas James Monk, St. Anne's, Lewes, Sussex.

Albert Irving Muntz, Umberslade, Birmingham, and Trinity College, Cambridge.

C. M. Hayes Newington (Major, King's Regt.), Lee, Kent; and Army and Navy Club.

John Tristram Tristram-Valentine, 1 Sheffield Gardens, Kensington.

Stephen Venour, Fern Bank, Altrincham, Cheshire.

The following Honorary Members were also elected :—

Hans, Graf von Berlepsch, Münden, Hanover.

Count Tommaso Salvadori, Zoological Museum, Turin.

The following Foreign Members were also elected :—

M. Emile Oustalet, Muséum d'Histoire Naturelle, Jardin des Plantes, Paris.

Dr. Emin Pacha, Bagamoyo, East Africa.

Joel Asaph Allen, American Museum Natural History, Central Park, New York.

The former President and Secretary were then re-elected, and Mr. R. Bowdler Sharpe was elected into the Committee in the place of Mr. E. Bidwell, who retired by rotation. The Officers for the year 1890-1891 will therefore be as follows :—

**President.**

THE RIGHT HON. LORD LILFORD.

**Secretary.**

F. D. GODMAN, ESQ., F.R.S.

**Editor.**

P. L. SCLATER, ESQ.

## Committee.

O. SALVIN, Esq.

HOWARD SAUNDERS, Esq.

R. BOWDLER SHARPE, Esq.

After a vote of thanks to the Chairman the Meeting adjourned. The Annual Dinner, subsequently held at the Café Royal, was attended by thirty-two Members and guests.

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*Obituary.* Mr. J. H. GURNEY.—By the death of Mr. JOHN HENRY GURNEY, on the 20th of April last, not only does the British Ornithologists' Union lose another of its founders, but 'The Ibis' one of its most constant and munificent supporters. Our deceased Member, the only son of Joseph John Gurney, of Earlham in the county of Norfolk (celebrated for the various philanthropic undertakings to which he devoted the leisure of his life), was born on the 4th of July, 1819, and at the age of about ten years was sent to a private tutor, who lived in Epping Forest. Thence he went to the Friends' School at Tottenham, and on leaving it, being then about seventeen years old, entered the banking business at Norwich, in which his family had long been so successfully engaged. His love of natural history showed itself very early, and the writer of these lines was told by him of his getting into a serious scrape at school by dissecting a bird on a mahogany desk, which immediately afterwards revealed the secret of the use to which it had been put as an operating table, by the stains on its polished surface from the camphorated spirit (supplied to the boys as a cure for colds, and the only antiseptic liquid available) that he had employed to avert the possibility of unpleasant odours from his "subject."

During his school-days in Essex he made the acquaintance of Mr. Henry Doubleday, of Epping, so long known for his ornithological and entomological collections, and from him obtained, in 1836, an introduction to the equally well known Mr. T. C. Heysham, of Carlisle, with whom he kept up for many years a correspondence, chiefly on zoological matters—

sending him from time to time birds, mostly obtained in Norfolk; for at this time Gurney had not begun a collection of his own. That his generosity was then as great as it continued in after years is shown by his letters to Heysham, which have fortunately been preserved, and have been kindly placed at the service of the writer of this notice by their present custodian, Mr. H. A. Macpherson, giving almost the only information to be obtained as to this period of GURNEY'S life. They will compare well with those written by any other youthful zoologist. Zeal is of course to be expected in a greater or less degree, and here it is found to be in the former; but it seems to be in all cases tempered by a sober judgment; and, if a partiality be observable towards whatever relates to the zoology, and especially the ornithology, of Norfolk, it must be remembered that this was the subject on which the writer undertook to inform his correspondent, while as the correspondence advances, what may be called its breadth of view decidedly increases. Moreover, it seems to be strictly according to the fitness of things that a young naturalist should begin by paying attention to the objects which, being the nearest to him, come the more closely under his observation, for thus he is able to proceed from the known to the unknown—the surest mode of acquiring knowledge. There have been possibly few men who could, at the age of nineteen, write as GURNEY did to Heysham on the 8th of February, 1838:—

“Though I can seldom or never resist the temptation of procuring a tolerable bird in the flesh, when opportunity occurs, I care very little for them after I have once *learnt them by heart*, as I contrive to preserve them almost as well in my memory as I could hope to do in my cabinet. I therefore generally palm their remains off on some of my friends; because, though I know that in themselves they often are worthless, yet I always fancy that there is some interest in comparing specimens of the same bird from different localities.”

This last must have been an original observation, as it was made before the question of the local variation of species had

been publicly mooted! He went on to say "it seems to me impossible that any stuffed specimen can bear much resemblance to the living bird,"—a remark which, even allowing for a general improvement of the taxidermist's art, is, on the whole, as true now as it was then.

GURNEY'S earliest published communication seems to have been a note in the 'Annals and Magazine of Natural History' for March, 1842 (vol. ix. p. 19), and was followed by another in the same journal for June (*tom. cit.* p. 353), the subject of both being ornithological occurrences in his own county. In the next year 'The Zoologist' was established, and to this he became a frequent contributor, publishing in the volume for 1846, with the aid of Mr. W. R. Fisher, "An Account of Birds found in Norfolk,"—a very careful piece of work, and for a good while the most ambitious that he attempted, though he was constantly communicating short notes to that periodical, and did so for the rest of his life. When the scheme for founding 'The Ibis' was proposed, he entered warmly into it. He not only attended the meeting held at Cambridge in the autumn of 1858, when the preliminaries were definitely arranged, and by his advice helped to mould into a practicable form various proposals then made, but he liberally promised to defray the cost of a plate for each number of the new Journal, in addition to the two plates for which allowance was made in the original estimate. This charge he continued to bear for the whole of the first series of 'The Ibis,' only stipulating that the subject of each plate that he presented should be a "Bird of Prey,"—for he had already made great progress in forming the now vast and celebrated collection of "*Raptors*" in the Norwich Museum, to which institution he had been a donor in 1828, when he was but nine years of age. But he was by no means exclusively devoted to this group of birds. He bought a large portion of the ornithological collection formed by Mr. Wallace in the Malay Archipelago, and presented it to the Museum at King's Lynn (for which borough he sat as representative in the House of Commons from 1854 to 1865), while about the same time circumstances led him to take

especial interest in the ornithology of South Africa, as is shown by his numerous papers in our pages on collections made, almost entirely at his instigation, by Mr. Ayres in Natal and the Transvaal country, and by his editing in 1872 'The Birds of Damara Land' from the papers of his friend Charles John Andersson. GURNEY's own communications to 'The Ibis' reach, if we have counted them rightly, the number of *one hundred and forty*, the latest being in our last number (*supra*, p. 262); and though some of them are admittedly of slight importance, it is observable of all that they deal with facts and not with fancies. As he never wrote for writing's sake, and related what he had to state in the simple and precise terms which prove the true man of science, his contributions may have sometimes seemed dull compared with the brilliant essays and daring speculations that this Journal occasionally contains from other pens; but no attentive reader can fail to discern the solid foundation on which GURNEY's work rests, and the probability, if not the certainty, of its being consulted and found useful when theoretical treatises have passed out of mind.

The secret of this foundation is the accuracy of the information he possessed; and it is undeniable that in his knowledge of the *Accipitres* and *Striges* he stood alone. A great part of his information regarding the first of these groups he fortunately contributed to 'The Ibis' between 1875 and 1882, in a series of "Notes" on the first volume of the 'Catalogue of Birds in the British Museum,' and on its conclusion he brought out 'A List of the Diurnal Birds of Prey, with references and annotations' (*cf.* *Ibis*, 1884, p. 456), which is indispensable to all students of these birds. This was his last important work, for though he contemplated a companion work on the Nocturnal Birds of Prey, it is believed that not a word of it was written. Indeed, for the last few years the state of his health forbade his often visiting the Museum at Norwich, where alone he could carry on the examination of specimens necessary for the execution of such a work. Some twenty years ago he was affected by a disease believed to be incurable, though its fatal effects might

be long delayed by strict attention to diet ; and following closely the medical advice given him his efforts were so far successful that he may be said to have enjoyed the quiet life he led in the old family-house at Northrepps, near Cromer. Though his bodily strength gradually failed, he was only seriously ill for a few days before he calmly expired.

In the foregoing remarks the ornithological aspect of GURNEY'S life has, as is here fitting, been chiefly dwelt upon. It must be added that at one time Fishes were as favourite an object of study with him as Birds, and in a general way he had a great taste for every branch of Zoology. As an antiquary also he was possessed of no inconsiderable knowledge. But more than this : it would be wrong to omit reference to his bountiful generosity, which not only showed an extraordinary kindness of heart, but was bestowed with a degree of discretion and retiring modesty that doubled its utility to the recipients. The loss, through the failure of the mercantile house in which he was concerned, of the vast income that he once enjoyed, certainly made no difference in the liberality of his disposition, though it lessened the amount he had for distribution, and caused it to be administered with even less ostentation. But among all the qualities that he possessed, perhaps a placid temper was the most characteristic. To it may possibly have been due some of his misfortunes, but it certainly enabled him to preserve the *mens æqua in adversis*.

# THE IBIS.

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SIXTH SERIES.

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XXXIX.—*Notes on Irish Ornithology.* By HENRY SEEBOHM.

## I. COUNTY WATERFORD.

THE study of ornithology in England becomes more difficult every year. The wilder districts are in the hands of the gamekeeper, who ruthlessly destroys half the interesting birds, and does his best to prevent the ornithological student from trespassing in search of those he has left. The fertile districts are in the hands of the farmer, who drains the marshes, cuts down the trees, and thus makes the country uninhabitable by the most interesting kinds of birds.

Fortunately this is not the case in Ireland. The opportunities for studying ornithology in Ireland are very great, partly because the number of ornithologists is very small, partly because there is abundance of mountain, rock, and bog that the farmer cannot grapple with, and partly because, with the enforced absenteeism of the landlord, the gamekeeper's occupation is gone. There are consequently many species of birds which have become very rare in England, but which are still fairly common in Ireland.

It would be very difficult to find a locality in England where so many interesting birds could be seen in a few days

as at Cappagh, in county Waterford, where I spent a week at the end of April last, enjoying the hospitality of R. I. Ussher, Esq., the well-known ornithologist of the south-east of Ireland.

Among the commoner birds here may be mentioned the Goatsucker (*Caprimulgus europæus*), the Grasshopper Warbler (*Locustella naevia*), the Ring Ouzel (*Turdus torquatus*), and the Twite (*Linota flavirostris*).

There are very few demesnes in the county of Waterford where the Woodcock (*Scolopax rusticula*) does not regularly breed, and where it may not be constantly seen and heard shortly before dusk flying from its nest to its feeding-grounds. It seems to be the general opinion in the south of Ireland that these breeding birds are migratory, and disappear at least a month before the winter flocks of Woodcock arrive. Unfortunately we have no information respecting the date of their arrival in Brittany, where, according to Degland and Gerbe, they are very common in autumn. On Heligoland the autumn migration does not begin until the end of September, is at its height in the middle of October, and ceases before the end of November.

Siskins (*Chrysomitris spinus*) breed regularly in the south of Ireland, and Mr. Ussher has frequently seen them on his estate, but he has but once succeeded in finding the nest. He has a beautiful nest in his collection, taken in the extreme south of county Wicklow by Mr. Allan Ellison, who has written a most interesting account of the breeding-habits of this species as observed by him in the south of Ireland (Ellison, *Zoologist*, 1887, p. 338), and who sent the nest and eggs, together with both the parent birds, to the British Museum, where they form one of the most interesting cases in the unrivalled collections of these objects which attract so much attention from the visitors to South Kensington.

There are no less than a dozen pairs of Peregrines (*Falco peregrinus*) breeding within an easy day's drive of Cappagh. Fortunately for ornithology (and the Peregrines) these breeding-places are inaccessible to the casual egg-collector. Most of them are on the coast, and the bird can only be

watched on and off her nest from the sea. The cliffs are generally perpendicular, and in many cases overhang, and in all cases can only be reached by a rope. It is not easy to find out which of its several breeding-places the bird has chosen, it is still less easy to find the exact place whence a rope may be let down within access of the cleft or ledge, and it is least easy of all to climb down the rope, or be let down by others. The natives cannot give any assistance; they have an inherited dread of the cliffs, and nothing will induce them to risk their lives over them, either with or without ropes. Mr. Ussher knows every breeding-place of the Peregrines (under no circumstances do they make a nest), and no cliff is too high or too steep for him. He generally gets the first clutch from each eyrie, but he always leaves the second clutch to be hatched out.

If the eyrie of the Peregrine is inaccessible, the nest of the Chough (*Pyrrhocorax graculus*) is still more so. It is generally placed on a ledge or in a chink near the roof of a cave, and is a large, deep, and well-made structure. There are at least a dozen Choughs' nests within drive of Cappagh, but only one of them is accessible without ropes. Although the second clutch is never taken, the number of Choughs is less than it was thirty or forty years ago. It has been suggested that the Jackdaws are the cause of this decrease, whilst the blame has also been laid on the Hooded Crows; but the facts seem to be that the Choughs which built in accessible places have been exterminated by egg-collectors, and that the Choughs of the present generation which breed in almost inaccessible places, suffer greatly in wet seasons by having their nests soaked by water dropping from the roof of the cave in which they are now built.

We saw several pairs of Ravens (*Corvus corax*), but did not succeed in discovering their nests.

The most interesting nests and eggs which we found were those of the Crossbill.

There are few objects more interesting to an ornithologist than the sight of a nest of a rare bird, especially if it be one which is seen by him for the first time; and it was therefore

with very great interest that I learned from Mr. Ussher that four pairs of Crossbills (*Loxia curvirostra*) were breeding in the Scotch-fir plantations in his demesne. They first made their appearance in the winter of 1887-88 (Ussher, Zoologist, 1888, p. 189), and built a nest in a Scotch fir on the estate in 1889. The nest, with four eggs and both parent birds, was sent to the British Museum (Ussher, Zoologist, 1889, p. 180), and many interesting observations upon the habits of the species were recorded. This year they were still more common, and four nests were found; but when I arrived, on the 18th of April, one of them had been robbed by a Magpie. A second nest was inaccessible, but the parent birds were to be seen feeding on the fir-cones. The third nest (with a red male) contained four eggs, and we climbed up to it several times. The birds were extraordinarily tame, and came within two or three feet of us when we were at the nest. The fourth nest (with a yellow male) contained two young birds, able to leave the nest and to climb about on the adjacent branches on the 26th. We caught one of the nestlings, and examined it carefully, but could not detect any sign that the mandibles would be crossed when it arrived at maturity. All four nests were in Scotch firs, one close to a pigstye, and not many yards from a house. Were it not for the Magpies and Hooded Crows it seems probable that the Crossbills might become abundant in this district.

It is very interesting to find so many birds which we are accustomed in England to regard as very rare breeding in such numbers in the south of Ireland; but there is another point of view from which the ornithology of Ireland is equally interesting. Many of our common English birds are conspicuous in Ireland by their absence. Although the country was full of birds, we never once caught sight of a Marsh Tit or a Nuthatch. The Irish distribution of the Parinæ is very remarkable. The Golderest (*Regulus cristatus*), the Long-tailed Tit (*Acredula rosea*), the Blue Tit (*Parus cæruleus*), the Great Tit (*Parus major*), the Cole Tit (*Parus ater*), the Creeper (*Certhia familiaris*), and the Wren (*Troglodytes parvulus*) are as common in Ireland as they are in England.

The Firecrest (*Regulus ignicapillus*), the Bearded Tit (*Panurus biarmicus*), and the Crested Tit (*Parus cristatus*), are so very local in England and Scotland that their absence from Ireland is not very surprising; but that the Marsh Tit (*Parus palustris*) should be very rare in the north and east of Ireland, and not be known at all in the south and west, and that the Nuthatch (*Sitta cæsia*) should be absolutely unknown in Ireland, is most extraordinary. Both the last-mentioned species belong to circumpolar genera, one might even say circumpolar subgenera, both are found with very slight modifications all across the Palæarctic Region to Japan, and both are represented by closely allied species in the Nearctic Region. That such widely spread species should be absent, or nearly so, from Ireland is a most significant fact. Ireland is most admirably adapted for woodland birds of this kind, and their absence can only be accounted for by the hypothesis that some great catastrophe, such as a glacial epoch, drove them from the island, and that they have not yet found their way back again. The Marsh Tit and the Nuthatch are both as common in Northern Europe up to the Arctic Circle as they are in England, but curiously enough they are almost as rare in Scotland as they are in Ireland. These and many other species to be hereafter mentioned have evidently migrated to the east of England from the continent, whence they have slowly extended their range northwards to Scotland, whence, at a still later date, they have migrated southwards across the North Channel into Ireland. If these hypotheses be true, the following facts ought to be observable:—Firstly, we should expect to find that species which are common in England, but are absent or rare in Ireland, are also absent or rare in Scotland. Secondly, we should expect to find that species which have advanced a stage further in the extension of their range and have reached Scotland in some numbers, but are still rare or local in Ireland, are most abundant in the north-west of that country, in those districts which lie nearest to Scotland. Most of our information respecting the distribution of birds in Ireland supports both these assumptions in a remarkable manner. The Nuthatch is so rare in

Scotland that its occurrence in that country is recorded as a remarkable event, whilst the Marsh Tit is only known in Ireland in that half of the country which lies nearest to Scotland.

The Stock Dove (*Columba ænas*) is another case in point. It is absolutely unknown in the south and west of Ireland, but occurs sparingly in the counties nearest to Scotland.

The Tawny Owl (*Syrnium aluco*) is common in England, but is said only recently to have become so in Scotland, so recently, indeed, that it has not yet reached Ireland. On the other hand, the Barn Owl (*Strix flammea*) and the Long-eared Owl (*Asio otus*) are equally common in the three kingdoms.

The relative distribution of the Carrion Crow (*Corvus corone*) and the Hooded Crow (*Corvus cornix*) is slightly exceptional. The latter species is scarcely known as a breeding-species in continental Europe west of the valley of the Elbe. Hence we may reasonably assume that the British Islands received their Hooded Crows from Scandinavia, whence they have established themselves as common residents in Scotland and Ireland, but not to any extent in England. The Carrion Crow, on the other hand, arrived from the south, and has spread over England and Scotland, but is almost unknown in Ireland.

The Green Woodpecker (*Gecinus viridis*) has a very restricted range. It is not known to have occurred outside Europe, and though it is so common in England it can only be regarded as a rare accidental visitor to Ireland and Scotland. The Little Spotted Woodpecker (*Dendrocopus minor*) and the Great Spotted Woodpecker (*Dendrocopus major*), on the other hand, have very wide ranges, extending across Europe to Japan. They are both common, if local, in England, but very rare in Scotland and Ireland.

The Hawfinch (*Coccothraustes vulgaris*) and the Cirl Bunting (*Emberiza cirlus*) are also common, if local, in England, but almost unknown in Scotland and Ireland.

Hitherto we have spoken only of resident birds, but somewhat similar conclusions may be arrived at by the considera-

tion of migratory birds, though more allowance ought to be made for them. It is scarcely to be expected that they should cross two arms of the sea twice a year, unless the reasons which induce them to enlarge the area of their distribution be very imperative.

When we consider that such birds as the Icterine Warbler (*Hypolais icterina*), the Great Sedge Warbler (*Acrocephalus turdoides*), the Black Redstart (*Ruticilla titys*), the White-spotted Bluethroat (*Cyanecula wolffi*), the Crested Lark (*Alauda cristata*), and some others breed in great numbers in Holland, but object to cross the Channel to visit England, we can scarcely wonder that a second channel should prove a bar to the further migration of allied species. The Nightingale (*Daulias luscinia*) is as unknown in Ireland as it is in Scotland. The Whinchat (*Pratincola rubetra*), the Redstart (*Ruticilla phænicura*), the Garden Warbler (*Sylvia hortensis*), the Wood Warbler (*Phylloscopus sibilatrix*), the Yellow Wagtail (*Motacilla raii*), and the Tree Pipit (*Anthus trivialis*) are common summer visitors to England, and more or less common, though local, in Scotland, but very rare in Ireland. The Reed Warbler (*Acrocephalus streperus*) and the Lesser Whitethroat (*Sylvia curruca*) are very doubtfully recorded from Ireland, though they are common, if local, in England and in many parts of Scotland.

The Wryneck (*Iynx torquilla*) is common in many parts of England, but rare in Scotland, and very rare in Ireland.

The Irish Limicolæ and Gaviæ scarcely differ from those of England and Scotland, but it is worthy of note that the Stone Curlew (*Ædicnemus scolopax*) and the Kentish Plover (*Ægialitis cantiana*) have not been known to breed in either Scotland or Ireland, though both are regular summer visitors to the south of England; and that the Dottrel (*Eudromias morinellus*) and the Red-necked Phalarope (*Phalaropus hyperboreus*), though they both visit Scotland in summer, have not been known to breed in Ireland.

There seems to be an important difference of distribution between the migratory and the resident birds of the British Islands. If a resident English bird does not range as far

north as Scotland, it does not reach the bridge which connects Ireland with Great Britain, and consequently it does not range as far west as Ireland. On the other hand, a migratory English bird may range as far north as Scotland without ranging as far west as Ireland. Though the North Channel appears to be the route across which most resident birds in Ireland have originally emigrated from Great Britain, it does not appear to be an important line of annual migration. This generalization from the known facts of distribution is remarkably supported by the observed facts of migration. Summer migrants to Ireland appear to cross over from Wales to the coasts of Wicklow and Wexford. "A marked migratory movement might be expected in our north-eastern counties between Scotland and Ireland, where the Channel is narrowest; but we have no evidence that such is the case. The bulk of the migrants arrive on the southern half of the east coast of Ireland and on the easternmost of our southern counties; in other words, along the shore extending from Dublin to Waterford" (More and Barrington, Report on the Migration of Birds, ii. p. 126).

Mr. Ussher was kind enough to get me a nestling Heron (*Ardea cinerea*), which obliges me to modify some of the diagnoses in my Classification of Birds.

The pterylosis of the nestling Heron a few days old very closely resembles that of the adult, except that the feathers are replaced by down. The spinal bare tract reaches from the nape almost to the oil-gland, and is absolutely naked. The two lateral bare patches on the lower back are also very conspicuous. On the under surface the ventral bare space is well marked from the chin to the vent.

## II. GREAT SALTEE ISLAND.

I am indebted to the kindness of John N. White, Esq., of Waterford, for an opportunity of visiting the Great Saltee Island, which is one of the most interesting breeding-places of Sea-fowl which I have ever seen. It lies about four miles due south of Forlorn Point, on the south coast of county Wexford, and about thirteen miles due east of Hook-Head,

at the entrance of Waterford Harbour. It is rather more than two hundred acres in extent, and is a pile of granite rocks, which slopes gently down to a shingly coast towards the south-east, but drops more or less precipitously nearly two hundred feet into the sea towards the north-west. There is a farm of about sixty acres on the sunny side of the island, which is cultivated by an Irish family, who are, for the most part, sublimely indifferent to the hundreds of thousands of birds which breed in the cliffs. Outside the farm the island is covered by grass cropped short by sheep and rabbits, and gay with tufts of pink thrift, or variegated with patches, some of them acres in extent, of intensely blue hyacinths, which suggest the former presence of forest, though every trace of a tree-stump, if it ever was there, has disappeared. On the upper portions of the steep side there is plenty of peat between the granite rocks, but lower down the cliffs are bare, with numerous caves and ledges, and in one or two places there is an escarpment which shows a deep deposit of boulder-clay full of angular rocks of all sizes, and resting upon a bed of rounded stones, which is obviously an old coast-line, some fourteen feet above the present high-water mark.

I suppose there must have been at least 60,000 Puffins (*Fratercula arctica*) on the island. The colony was more than two miles long, and many yards in width. In many places the grass on the surface was entirely worn away by the tramping of myriads of red feet, whilst the peat was so honey-combed by the burrows of the birds, that it continually gave way if any attempt was made to walk over it. The Puffins were ridiculously tame, and on one occasion I stood for at least five minutes within six feet of a rock upon which twenty-four of these birds remained in full view. The edge of the cliff was lined with row after row of them, sometimes the sea for acres in extent was thickly sprinkled over with them, and occasionally the air seemed to be full of them flying about in regiments; nevertheless nearly as many more must have been sitting in their burrows, and only took flight when we alarmed them by walking across the colony.

The number of Kittiwakes (*Rissa tridactyla*) was pos-

sibly less, though we fancied that they increased during the three days that we were on the island. They are much later breeders than the Puffins; we saw no eggs, and the birds did not seem to be in a hurry to finish their nests. The colony of Kittiwakes is not so continuous as that of the Puffins; they seldom occupy cliffs that are not perpendicular, but in some places the nests were crowded on every ledge and projecting stone. The Kittiwake is just as noisy as the Puffin is silent.

It is not easy to estimate the numbers of pairs of Guillemots (*Lomvia troile*) or Razorbills (*Alca torda*) which breed upon the Great Saltee Island, but they must amount to many thousands. There are many places on the cliffs where, with or without the help of a rope, you may climb amongst the eggs of both these species of birds and pick out handsome varieties of each. The Guillemot's eggs from the Saltees are quite as varied and as rich in colour as those from the Yorkshire cliffs; and what is very remarkable, when we consider the extraordinary range of variation, there is scarcely an egg to be found in one locality that cannot be matched by an example from the other. Either the birds mix together in their winter quarters, and return indiscriminately to any breeding-ground, irrespective of whether it be or be not their birthplace; or we must assume that all the present variety in the eggs of the Guillemot had been attained before the dispersal of the original colony, and that the present colonies have not been isolated long enough for any new variations to have been developed.

Not only are the same varieties found on the Saltees as are found on the Yorkshire cliffs, but the comparative scarcity of the rarer and more beautiful varieties is about the same. When the birds were frightened off their ledges it was pitiable to see the number of eggs precipitated into the sea, but so early in the season these would be replaced by a second laying.

Three pairs of Great Black-backed Gulls (*Larus marinus*) breed on the island, one on the highest point, and the others on the top of conspicuous promontories. One of the nests

contained three eggs, but the others contained only two eggs each. We left one of the latter, hoping to find a third egg on a future occasion, but when we revisited it the next day the two eggs were gone, and we found the broken shells lying on the rock not far off, probably eaten by one of the smaller species of Gulls, possibly in revenge for a similar act of robbery. It is curious that the Great Black-backed Gull should be so rare. It is the largest and the strongest of the Gulls which breed in the British Islands. It seems to have the pick of the breeding-places, and one would suppose that it had no enemies that it need fear. It seems to stand sullen and proud and solitary amongst the smaller species. Perhaps the reason of its comparative scarcity is to be found in its unsocial habits. It may not yet have learnt the security that is to be found in numbers. The Herring Gull (*Larus argentatus*) is a smaller bird, but it is very gregarious. There were thousands of pairs scattered over the island, some breeding on the level pasture, others on the steep grassy slopes, whilst a few invaded the colonies of Razorbills and made their nests amongst the rocks. The Lesser Black-backed Gull (*Larus fuscus*) was much less numerous, and was principally confined to one valley, which sloped gently down to the top of the cliffs. Most nests of both these species contained three eggs, but we found one nest of the Herring Gull containing four eggs. We took one very handsome clutch of the Lesser Black-backed Gull containing three blue eggs, with scarcely a spot on them. These large Gulls were very noisy whilst we were near their nests.

There are several colonies of Cormorants (*Phalacrocorax carbo*) on the island, one of them on a lofty pile of granite rocks separated from the main island by a narrow channel. Mr. Ussher swam across and climbed up to the colony. Most of the nests contained young birds nearly as big as their parents, and covered all over with sooty-black down. Some of the young birds were very small, and their slaty-black skins were absolutely naked. A dense crowd of Guillemots, each sitting upon its solitary egg, filled up the space between the Cormorant's nests. The top of the rock and

some distance down the sides were white with the droppings of the birds, and dead and decaying fishes dropped by the Cormorants assisted to make the atmosphere unpleasant.

Shags (*Phalacrocorax graculus*) were even more abundant than Cormorants, but they were rarely breeding in colonies, and their nests were seldom exposed to view. They prefer a cave or a ledge under an overhanging rock, and probably no Shag would choose to build its nest in a cave already occupied, if there was an empty one near at hand. They were, however, so numerous on the island, that they had perforce become gregarious, and on some ledges half a dozen nests were to be found. The Shag sits very close, especially if she has young, and requires to be driven off the nest, after she has tried her best to drive you away by snake-like hisses and contortions of the neck.

But perhaps the most interesting bird that breeds on the island is the Manx Shearwater (*Puffinus anglorum*). A hundred visits might be paid to the island by daylight without the presence of these mysterious birds being suspected. As we steamed to the island the weather was fine and the sea calm, but as we returned a stiff sou'-wester was blowing, the spray splashed over the hurricane-deck, and every now and then we caught a glimpse of the mysterious bird skimming over the waves. On the island itself we did not see a trace of them, but inasmuch as Mr. Ussher had met with them on the same day of May a year previously, we heroically devoted some hours of the night to the pursuit of Shearwaters. On the first night we walked across the island between 10 and 11 without success, probably because the moon was bright and the wind cold. We then turned in for a couple of hours, and tried again from 1 to 2. The moon was behind a bank of clouds near the horizon, and several times we heard the distant crow of the Shearwaters, *cuk-cuk-a-oo, cuk-cuk-a-oo*, in various tones, now angry, now plaintive, sometimes seeming to express delight, and sometimes surprise. Possibly the cold wind prevented them from appearing in greater force. About 2 o'clock the day began to dawn, and soon afterwards the Skylark (*Alda arvensis*) was in full song, and we heard

the loud purr of the Goatsucker (*Caprimulgus europæus*). On the second night we tried from 12 to 1 without success; it was not quite so cold, but the sky was clear and the moon brighter than ever. Sixty miles to the south-east there is a great colony of the Manx Shearwater, breeding on Skomer, off the coast of Pembrokeshire (Barrington, Zoologist, 1888, p. 367).

The most noisy bird on the island is the Oyster-catcher (*Hæmatopus ostralegus*), which was continually pursuing us with loud anxious cries, and I am afraid not without some reason. We took one clutch of four eggs, and several clutches of three were brought in to us by the farm-labourers. There must have been a score or two of these birds on the island, frequently half a dozen could be seen on the rocks from one spot. They breed among the rocks on the high part of the island, on the short grass halfway down, and on the shingle by the sea on the low side of the island. A clutch of four fresh eggs of the Peewit (*Vanellus vulgaris*) was found by one of the labourers, and we frequently heard the cries of the birds.

A pair of Peregrines (*Falco peregrinus*) breed on the island, and we saw one of them, but we had not time to look for their eyrie. Mr. Ussher picked up some bones of a hedgehog which had probably been eaten by the Peregrines, and remembered having found similar bones on a previous visit. The hedgehogs probably live on the island, which seems to have been part of the mainland after the Glacial Epoch, otherwise it is difficult to account for the great deposit of boulder-clay, which has probably been since washed away by the waves, except where the granite foundation upon which it rests is above the sea-level.

Twice we saw small parties of Sheldrake (*Tadorna cornuta*) fly across the island. They may breed in some of the rabbit-burrows on the island, or in the sand-hills on the opposite coast of the mainland.

We not unfrequently saw Rock Doves (*Columba livia*) fly out of the caves on the steep side of the island.

The Saltee Islands are visited by many species of Passerine

birds on migration, but very few of them remain to breed. The Skylark has already been mentioned, and both the Meadow Pipit (*Anthus pratensis*) and the Rock Pipit (*Anthus obscurus*) were numerous. A few Wheatears (*Saxicola ænanthe*) frequented the rocks at the north-east corner, and we found the empty nest of a Wren (*Troglodytes parvulus*) on the roof of a cave in which a Shag was breeding. A few Swallows (*Hirundo rustica*) build in the outhouses belonging to the farm; we saw a solitary pair of Hooded Crows (*Corvus cornix*), and Jackdaws (*Corvus monedula*) frequent the cliffs in great numbers. A pair of Pied Wagtails (*Motacilla lugubris*) frequented the farm-yard, but the almost ubiquitous Sparrow was conspicuous by his absence.

There are many other breeding-places of interesting birds within a short distance of the Saltee Islands. Seven miles to the north-west lie the Keragh Islands, where the Common Tern (*Sterna fluviatilis*), the Arctic Tern (*Sterna macrura*), and the Lesser Tern (*Sterna minuta*) breed in some numbers (Ussher, Zoologist, 1886, p. 369). We saw several small colonies of Herring Gulls on the cliffs of the mainland as we steamed up to Waterford. Mr. Ussher showed me some eggs of the Black Guillemot (*Uria grylle*) which had been taken this year on the cliffs of the mainland 30 or 40 miles due west of the Saltees. We frequently saw Gannets (*Sula bassana*) on the wing, but their nearest breeding-ground is more than 150 miles to the west.

The water round the Saltees is as clear as crystal, the birds are ridiculously tame, and though in most places on the steep side of the island the cliffs drop down into deep water, there are many nooks and crannies where you can creep down to so low a level that you are able to watch the habits of the birds with the greatest ease, and see the Guillemots and the other Alcidae plunge beneath the surface; and on a calm day you can trace their progress under water to a considerable depth, their wings labouring as if it were very hard work flying through such a dense medium. Cormorants use their wings under water in the same way; but Ducks keep their wings close to their bodies, and trust entirely to their feet

to urge them forward. It is worth remembering that in these habits the Divers resemble the Cormorants and the Alcidæ, whilst the Grebes seem to have had diving lessons from the Ducks.

There can be no doubt that the Puffin, and probably its nearest allies, feed their young in the nest until they are able to fly, exactly as the Petrels do, and consequently that my diagnoses of the Ciconiiformes and Galliformes (Seebohm, Classification of Birds, p. ix) are not absolutely diagnostic. The diagnosis of the Order Gallo-Grallæ on page 36 is easily altered to exclude the Tubinares and Impennes, but the Alternative Scheme, in the Appendix to the Introduction, must, I think, be given up.

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XL.—*On the Foot of the Young of Iynx torquilla.*

By Dr. A. GÜNTHER.

IN very young Wrynecks (*Iynx torquilla*), about two days old, in which the yolk has not yet been completely absorbed, I have found a very peculiar modification of the skin covering the heel. The skin of this part is greatly thickened, forming



*a.* Young Wryneck, about two days old; nat. size.  
*b.* Foot with heel-pad;  $\times 2$  nat. size.

a prominent pad, 5 millim. long and half as broad, the surface of which is studded with obtusely conical tubercles, as shown in the accompanying woodcut. These tubercles are the

dermal papillæ which at a later period of the growth of the bird form the small flat scuta of the integument of the heel.

This structure has a distinct function at this early age. In moving about in the nest-hole, particularly when wishing to move to the edge of the cavity, the young bird does not use the toes, but pushes itself forward by means of the rough surface of this heel-pad.

It would be interesting to ascertain whether a similar structure is found in young Woodpeckers of the same age.

XLI.—*Notes on Birds from the Papuan Region, with Descriptions of some new Species.* By A. B. MEYER, M.D., C.M.Z.S., Director of the Royal Zoological Museum of Dresden.

(Plate XII.)

THE Dresden Museum has recently received, from several sources and from different parts of New Guinea and New Britain, a series of birds, on which I beg leave to offer the following remarks. I do not propose to give a complete list of the species, but only to mention such as present something new as regards their countries, their native names, their plumages, or their specific differences. In their nomenclature I follow Salvadori's standard work on Papuan ornithology as nearly as possible.

1. *CYCLOPSITTACUS DIOPHTHALMUS* (H. et J.).

Constantine Harbour, N.E. New Guinea, March 1887 (*Kubary*). Native name "Aul känger."

Eyes dark brown; bill "black, at the base greyish blue; feet light grey, with greenish shades."

2. *CYCLOPSITTACUS EDWARDSI*, Oust.

A female; New Guinea, Constantine Harbour or its neighbourhood (*Kubary*).

Oustalet described the male of this bird in the year 1885 (see *Ann. Sc. Nat.* 7 sér. vol. xix. art. 3; cf. Salvadori, *Orn. Pap. Spl.* i. p. 33), but the female has remained unknown, though Mr. Oustalet has recently written to me that he has received examples of this sex.

The female differs from the male chiefly in the absence of the red on breast and abdomen; besides, the feathers on the middle of the crown are tipped with blue, and in front of the black band on the nape there is an olive-coloured one of the same breadth. Oustalet does not describe the olive band in the male, in which the green of the head is separated from the green of the hind neck by the black band only.

Length of wing 0.105 m., of tail 0.056 m., of bill (culmen) 0.020 m., of tarsus 0.011 m.

It would perhaps be advisable to remove *C. edwardsi* and *C. salvadorii* to a separate genus, on account of the long curiously shaped plumes of the cheeks and sides of the head, which diverge from the eye as a centre, a character not possessed by the other species of the genus *Cyclopsittacus*.

### 3. LORIUS ERYTHROTHORAX, Salvad.

New Guinea, Constantine Harbour or neighbourhood (*Kubary*).

### 4. TRICHOGLOSSUS MASSENA, Bp.

Constantine Harbour, New Guinea (*Kubary*).

### 5. CALIECHTHRUS LEUCOLOPHUS (Müll.).

Constantine Harbour, New Guinea, May 1887. Native name "Góunkohar, Sakéké" (*Kubary*).

### 6. MEROPS PHILIPPINUS, L.

Kurákakaul, north coast of New Britain. Native name "Purupír" (*Kubary*).

The occurrence of this species in New Britain is very remarkable, as, till now, only *Merops ornatus* has been recorded from the Papuan region and Australia. The specimen is a young bird, apparently of the first year. I have compared it with a long series from Celebes, the Philippines, Singapore, and other localities, as well as with many young specimens of *M. ornatus* from Celebes and New Guinea. The bill is very short, only 32 mm. (culmen) long; whereas in a specimen from Makassar, captured by myself in the year 1871, of the same age and in quite similar plumage, it measures 35 mm. (in full-grown specimens up to 43 mm.).

The other dimensions, too, are rather smaller. I cannot but suppose that *Merops philippinus* breeds on New Britain. The remark of Finsch therefore (Vögel der Südsee, 1884, p. 10) that *M. ornatus* is the only Bee eater on that island does not hold good.

7. SAUROMARPTIS KUBARYI, n. sp.

Fem. *S. gaudichaudi* similis, sed alarum tectricibus omnino cyanescenti-cæruleis, uropygio clariore et intense cyanescente, dorso albo et corpore subtus cædaque cinnamomeis, diversa. Long. al. 0·130 m., caud. 0·091, rostri (culm.) 0·059 (ab naribus 0·046), tarsi 0·016.

Constantine Harbour, New Guinea; a female, collected the 12th October, 1888, by Mrs. Kubary.

“Bill light yellowish green, feet dark grey, claws black, eyes dark brown.”

The differences between this bird and the female of *S. gaudichaudi* are obvious; the male of *S. kubaryi* is unknown. The upper wing-coverts are all over intensely blue, whereas they are more or less mixed with black in *S. gaudichaudi*, and the blue is more extended in the former species. Moreover the brown on the underparts and tail is lighter, cinnamonaceous, not chestnut; the rump is of a remarkably lighter blue, and the white on the middle of the back is much more extended. *S. gaudichaudi* only shows here and there some white feathers on the back, mostly none at all, but never, so far as I can ascertain from a series of specimens, an uninterrupted white patch, as in *S. kubaryi*, except in specimens from the Aru Islands, to which I shall recur immediately. All these differences together induce me to look on *S. kubaryi* as the representative species of *S. gaudichaudi* in the north-east of New Guinea. I may also remark, that in the specimen under discussion, the white band on the neck is prominently developed, much more so than is usually the case in specimens of *S. gaudichaudi*.

As to the sexual difference in the colour of the tail of *S. gaudichaudi* (and probably also of *S. kubaryi*), the specimens collected by myself in the year 1873 confirm Salvadori's views (Orn. Pap. i. p. 493, and Suppl. i. p. 60). Nevertheless

I am inclined to consider Guillemard's opinion (P. Z. S. 1885, p. 628) as the right one on the point, that adult males have always a blue tail, adult females always a brown one; whereas Guillemard is doubtless wrong in declaring that young males too have a brown tail, which latter point is clearly disproved by specimens collected by myself and now in the Dresden Museum. But I also believe that the sexes of blue-tailed specimens, labelled as females, occurring likewise in my collection, may have been wrongly determined. Future collectors ought to put this point beyond any doubt.

8. SAUROMARPTIS GAUDICHAUDI ARUENSIS, subsp. nov.

I have mentioned (Zeitschr. für ges. Orn. 1884, p. 276) a specimen from the Aru Islands as varying from *S. gaudichaudi*, which variation Salvadori (*op. cit.* Suppl. i. p. 59) considered to be but an individual one. I have consequently again compared the six specimens from Aru in the Dresden Museum with *S. gaudichaudi* from elsewhere, and have discovered that all the specimens from Aru have the white patch on the back, which I have described in *S. kubaryi*, though they are in all other respects similar to *S. gaudichaudi*. This induces me to separate the Aru bird as subsp. *aruensis*. I am not able, as yet, to understand the blue feathers on the sides of the head of the one Aru specimen described by myself (*l. c.*), but future collections from there will probably settle this also.

9. MELIDORA MACRORHINA (Less.).

A pair from South-east New Guinea (*Goldie*) have much green on the webs of the tail- and wing-feathers, very conspicuous in certain lights; the spots on the upperside of the body, too, are greenish. Salvadori (Orn. Pap. i. p. 500) does not mention this character in his diagnosis, but Sharpe notes it in his description of his *M. collaris* from South New Guinea (J. Proc. Linn. Soc. xiii. p. 314). Ramsay, again, does not allude to it in the description of his *M. goldiei* from the same region (Proc. Linn. Soc. N. S. Wales, i. p. 389). Salvadori (*op. cit.* i. p. 502, and iii. p. 527) considers the bird from the south to be identical with that from the north of New

Guinea; but if all southern birds show the above-mentioned greenish tints, it would be justifiable to separate them as *M. goldiei*, Rams. *M. jobiensis*, Salv., from Jobi (Salvadori, *op. cit.* i. p. 502), has the green tints, but the female is different in the coloration of the head. (I never got a male on Jobi, and only one female.) A specimen from Rubi (Southern Geelvink Bay) approaches the southern form (in the same way that other Rubi birds show affinities to southern forms); but specimens from Waweji, Doré, and Andei (North-west New Guinea) have no trace of this green hue. Sharpe, in Gould's 'Birds of New Guinea' (vol. iv. pl. 53), does not figure the specimens with green, but he does not mention whence his original specimens came.

10. MACROPTERYX MYSTACEA (Less.).

New Britain, 19th December, 1885, a male (*Kubary*).  
Native name "Avíu."

11. PELTOPS BLAINVILLII (L. et G.).

Karagassi, Constantine Harbour, 15th November, 1888, a male (*Kubary*). Native name "Mangawase" in the Bongu dialect.

"Eyes dark purple-red; bill and feet black."

The bill of the specimen is rather large (0.024 m. in length), whereas I measure in specimens from Arfak and Passim (Geelvink Bay) 0.020-0.022 m. The white patch on the mantle is not much expanded.

12. RHIPIDURA FINSCHI, Salvad.

One specimen from Duke-of-York group (*Brown*).

Salvadori (Orn. Pap. iii. p. 532) described this species from New Britain, and it is therefore not remarkable that it occurs on the near-lying Duke-of-York group too. But from the latter island *R. setosa* (Q. et G.) has been recorded, a wide-spread species (see Sharpe, Cat. iv. p. 329, and Salvadori, *op. cit.* p. 62). The differences between these two species are slight, but, if once recognized, are trustworthy, and a renewed comparison will perhaps prove that all specimens from the Duke-of-York group belong to *R. finschi*.

## 13. SAULOPROCTA MELALEUCA (Q. et G.).

Kubary gives the native name of this species on New Britain as "Angariri," Finsch (*l. c.* p. 12) "Angarira."

## 14. RHECTES FERRUGINEUS (S. Müll.).

Constantine Harbour, New Guinea, May 1887, a male (*Kubary*). Native name "Kogolin."

## 15. HERMOTIMIA CORINNA, Salvad.

A female from New Britain (*Kubary*). This specimen differs from Shelley's plate (*Mon. Nect.* pl. 39. p. 117) in this particular, that the white of the throat extends farther on to the breast. The males from Duke of York and New Britain ought to be compared carefully.

## 16. CYRTOSTOMUS FRENATUS (S. Müll.).

Constantine Harbour, New Guinea, 21st Nov., 1888 (*Kubary*).

"Eyes very dark greyish brown; bill and feet black."

## 17. DONACICOLA SPECTABILIS, Sel.

New Britain, 6th June, 1886, a female (*Kubary*). Native name "Aouringande." Finsch (*l. c.* p. 14) gives another native name for this bird.

## 18. CALORNIS NITIDA, G. R. Gr.

New Britain, a male and female, 21st May, 1886 (*Kubary*).

I do not agree with Salvadori that *C. nitida* should be united to *C. metallica* (T.). All the specimens from the Bismarck archipelago which I have seen are devoid of the steel-green spot in the middle of the violet of the interscapular region, and I cannot convince myself that this is only an individual difference (*cf.* Salvadori, *Orn. Pap.* ii. p. 452). According to my views, it is a specific (insular) character of exactly the same value as the specific characters of *C. inornata*, Salv., from Mysore, of *C. circumscripta*, mihi, from Timorlaut, and of others. After a close examination other constant differences between *C. metallica* and *C. nitida* can easily be found, for instance, the more gloomy metallic colour of the head and the more greenish (less bluish) wings in *C. nitida*.

19. *MINO DUMONTI*, Less.

Constantine Harbour, New Guinea, one female, 21st Nov., 1888 (*Kubary*). "Eyes dirty light brown; bill and feet vivid orange-yellow."

The specimen is green, like specimens from Passim, Nappan, Inwiorage, and Rubi, on the Geelvink Bay, and not bluish, as the specimen from Kafu (North New Guinea), which I mentioned *Z. f. ges. Orn.* 1886, p. 35. (I must amend the remark which I made then, specimens from Jobi and Aru being neither of them so blue as the specimen from Kafu, though rather more blue than specimens from the other parts of New Guinea.)

20. *EPIMACHUS ELLIOTI*, Ward.

A male from North-west New Guinea, without more exact locality (*viâ Ternate*).

This is the first complete specimen known, as the type was a defective native skin, also without locality (see Salvadori, *Orn. Pap.* ii. p. 548, and *Suppl.* ii. p. 154). Elliot's plate (*Mon. Parad.* xx.) is quite wrong, Gould's (*Birds of N. Guin.* vol. i. pl. 8) much better, though neither are exact, as the following details show:—The green colour of the flank-plumes, belly, and base of the ornamental breast-plumes is darker, as well as the violet of the breast, which latter colour shades slowly into the green of the belly; the throat is metallic green, shading into violet laterally; the metallic margins of the ornamental sickle-shaped breast-plumes are broader on the lower ones (up to 4 mm.), narrower on the upper, and entirely wanting on the outermost; all are much narrower underneath (see Gould's chief figure); the tail underneath is darker; the shape of the tail is concave; the violet of the back and wing-coverts is less vivid than on the plate.

As no exact measurements of the male are known, I add the following:—Bill 0.041 m., wing 0.202, tail 0.403, tarsus 0.050, longest ornamental breast-plumes 0.125, longest flank-plumes 0.190.

The female of this species is unknown.



2  
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## 21. DREPANORNIS BRUIJNI, Oust.

Walckenaers Bay, west of Humboldt Bay, on the north coast of New Guinea (*vid* Ternate).

A male in full plumage, whereas Oustalet had no such one in hand, as appears from his words, "vestiges de la livrée du jeune âge," viz. brown cross bands on the belly (see *Le Naturaliste*, 1887, p. 180, and comp. Salvadori, *Orn. Pap.* ii. p. 553, and *Suppl.* ii. p. 155), and as is further proved by his description of the ruff ("fraise"), which is less developed than in the specimen before me. The brown feathers of this foreneck-shield, mentioned by Oustalet, are black at their ends, margined with metallic blue-violet (not metallic green, as in Oustalet's specimen), the black shining in certain lights metallic green. On this layer of feathers lies another and shorter one of the same black colour (shining with metallic green in certain lights), margined, about 3 mm. broad, with metallic carmine copper-bronze, and forming a fan of twelve plumes. Oustalet speaks only of two or three such feathers, with carmine copper-bronze margins, at the commencement of the rows of ornamental side-plumes. The hair-like feathers of the upper breast are metallic greenish. In other respects Oustalet's description agrees generally with the Dresden specimen, though a more accurate description of this remarkable bird appears not to be superfluous, and a figure is very desirable.

## 22. CRASPEDOPHORA INTERCEDENS (Sharpe).

A male from Constantine Harbour, N.E. New Guinea.

## 23. CRASPEDOPHORA DUIVENBODEI, n. sp. (Plate XII.)

Mas, maribus *C. magnificæ* et *C. intercedentis* affinis, sed minor; nuchæ plumis dorso concoloribus, elongatis, erectis, collaris vel flabelli ad instar; scuto pectorali viridi, ejusdem plumis lateralibus elongatis; dorso alisque violascentioribus et striâ gulari centrali metallica brevi et angusta, diversus.

Long. tot. c. 0.280 m., al. 0.160, caud. 0.109, rostri (culm.) 0.040, tarsi 0.033.

A male from N.W. New Guinea, without exact locality.

This new species I dedicate to Mr. C. W. R. van Renesse van Duivenbode, of Ternate, to whom science is already indebted for many interesting additions to the Papuan avifauna. The female is, as yet, unknown.

This Paradise-bird is easily distinguished from *C. magnifica* and *C. intercedens* by the elongated erectable nuchal collar\*, with its central feathers shorter (3 cm.), its lateral ones longer (4 cm.), as also by the following characters:—The whole upperside, wings, and head, except its metallic-green top, are more reddish violet, whereas, especially in *C. intercedens*, the colour is decidedly blue-violet; the metallic-green breast-shield lessens towards the throat to a narrow band of only 1 mm. breadth, and ceases altogether at a distance from the base of the bill equalling the length of the free mandible; this narrow metallic-green stripe is surrounded by a violet velvet-like one, and this latter again by a broad olive-coloured zone. The lateral feathers of the metallic breast-shield are more elongated (over 3 cm. long, only 2 cm. in the two other species); the narrow line of feathers beneath the metallic of the breast is of less brilliant colours; in *C. duivenbodei* it is dark olive with a slight purple gloss, and in the middle of the breast less vivid. The green metallic breast-shield covers at its distal end a layer of feathers, margined with black and with metallic-blue subterminal spots. The breast and belly are darker; the ornamental flank-plumes are short, they do not reach the tip of the wing; the inner webs of the first two primaries are cut out at their tips, and the whole wing has not the remarkable rounded form of the two other species.

#### 24. PARADISEA FINSCHI, mihi.

I described (Z. f. ges. Orn. 1885, p. 383) under this name a mutilated skin from the north coast of New Guinea, brought home by Dr. Finsch, and declared by him to belong to a new species, as all specimens seen were of smaller size

\* Though I am not inclined to create a new genus for every new Bird of Paradise, I presume that this species will soon be generically separated by someone on account of its erectable nuchal collar. In such case I would propose to call the new genus *Paryphosphorus*, from *παρυφή* = collare, and *φορέω* = fero.

than *P. minor*. Now, having received from Constantine Harbour and its neighbourhood six specimens of different ages (*Weisser* and *Kubary*), I may state that the differences in size hold good, the ornamental plumes being shorter and the bill more slender, though its colour is as in *P. minor* (contrary to the statement *l. c.*). The skin brought home by Dr. Finsch had been prepared by natives, and is somewhat faded; the differences of colour (compared with *P. minor*) in fresh specimens are not so noticeable as was maintained *l. c.*, though existent; besides, the yellow of the lesser wing-coverts is more restricted and the mantle rather darker than in *P. minor*.

25. *PARADISEA AUGUSTÆ-VICTORIÆ*, Cab.

A male from Kaiserwilhemsland, without exact locality. Prof. Cabanis has given a short Latin diagnosis of the male (*J. f. O.* 1888, p. 119), and has figured male and female (*ib.* 1889, pl. ii.), but he also could give no exact locality for his specimens. It may be that Van Musschenbroek (*Dagboek, van Bernstein*, 1883, p. 187) had previously mentioned the species, though it would be difficult to be sure of it. Moreover that author appears to have named at the same time (*l. c.*) *P. gulielmi-secundi* of Cabanis as *P. minor*, var. *albescens*. (Comp. also *Salvadori, Orn. Pap. Suppl. ii. p. 158*, sub *P. minor*.)

26. *CICINNURUS REGIUS* (L.).

A pair from Constantine Harbour or that neighbourhood (*Kubary*). The male, not yet in full plumage, has a lighter tail, like the specimen from Kafu, north coast of New Guinea, mentioned by me (*Z. f. ges. Orn.* 1886, p. 36), and the black marking over the eye appears to be very long and pointed.

27. *PTILOPUS QUADRIGEMINUS*, n. sp.

*Pt. gemino*, Salv., similis, sed capitis lateribus et gula cinereis vix virescentibus; pileo lilacino paulo lætiore, postice linea purpurea nulla; area abdominis crocea paulo pallidior diversus.

Long. al. 0.115 m., caud. 0.066, rostri 0.012, tarsi 0.015.

A male from Constantine Harbour or its neighbourhood (*Kubary*).

Easily distinguished from the three allied species—*P. coronulatus*, Gr., *P. trigeminus*, Salv., and *P. geminus*, Salv.—by the grey cheeks and throat, the latter showing hardly a hue of yellowish in its middle, as well as by the absence of the purple stripe on the occiput in front of the yellow band. The lilac of the head is much lighter than in *P. coronulatus*, and more reddish than in *P. geminus*. (I have not specimens of *P. trigeminus* for comparison as to this character.) Finally, the yellowish brown of the belly is somewhat lighter, whereas the yellow of the under tail-coverts and abdomen is more intense.

28. *PTILOPUS PLUMBEICOLLIS*, n. sp.

Similis *Pt. perlato* et *Pt. zonuro*, sed capite cinereo et collo postico plumbeo diversus.

Long. al. 0.155 m., caud. 0.076, rostri 0.021, tarsi 0.021.

A specimen, not sexed, from Constantine Harbour or its neighbourhood (*Kubary*).

Easily distinguished from *Pt. perlatus* and *Pt. zonurus* by the whole of the head being light grey, only faintly tinged with green on the nape and whitish towards the front, as also by its sharply defined light plumbeous hind neck, which colour stretches on to the sides of the neck. This plumbeous collar is also possessed by the two other species, but in these it is quite narrow, whereas in *Pt. plumbeicollis* it measures 20 mm. in breadth. The brown of the breast is still lighter than in *Pt. perlatus*. *Pt. plumbeicollis* has, like *Pt. zonurus*, a light terminal band on the tail, but this is narrower (10 mm.) and less vivid. The under tail-coverts equal those of *Pt. zonurus*.

29. *MEGALOPREPPIA POLIURA*, Salvad.

A specimen, not sexed, from Gumbu, N.E. New Guinea, 10th Nov. 1888 (*Kubary*). "Eyes dark orange-red, eye-ring and lids tinged with citron-yellow; bill orange-yellow, base of the upper bill purple up to the nostrils; feet olive-green, nails dark horn-grey."

Length of the wings 0.160 m.

Dr. Finsch records (Vögel d. Südsee, 1884, p. 28) *M. assimilis* from S.E. New Guinea, considering *M. poliura* (*polinea*!) undistinguishable from it. This is, in my opinion, a mistake.

30. *GYMNOPHAPS ALBERTISI*, Salv.

A female from Constantine Harbour, February 1887 (*Kubary*). "Feet purple; eyes orange-brown; bill purple, tip and base of maxilla bluish grey; region of eyes crimson. Native name 'Buna járur'."

31. *REINWARDTÆNAS REINWARDTI* (T.).

A specimen from Constantine Harbour or neighbourhood (*Kubary*).

32. *MACROPYGIA NIGRIROSTRIS*, Salvad.

Three specimens from New Britain, 23rd May and 17th June, 1886 (*Kubary*).

All three specimens have a brown bill, instead of a black one!

33. *MEGAPODIUS BRENCHELYI*, G. R. Gray.

An egg from the island of Sawo, Solomon Islands (*Dr. Finsch*). Length 78 mm., breadth 47 mm. Vinaceous buff (Ridgway, Nomenclator of Colours, 1886, pl. v. no. 15), but rather more yellow, inclining to pinkish buff (pl. v. no. 14); elliptical oval (*l. c.* pl. xvi. no. 10).

34. *MEGAPODIUS EREMITA*, Hartl.

Six eggs from New Britain (*Dr. Finsch*; see 'Vögel der Südsee,' 1884, p. 20). Length 75-82 mm., breadth 45-48.6 mm. Vinaceous buff (Ridgway, pl. v. no. 15, but rather darker).

35. *TALEGALLUS* (sive *ÆPYPODIUS*), sp. inc.

Two eggs from Constantine Harbour (*Kubary*). Length 100.4 and 97.3 mm., breadth 62.4 and 62.3 mm. Fawn-colour (Ridgway, pl. iii. no. 22), one specimen rather lighter than the other one. What species of this genus occurs in the North-east of New Guinea is still unknown; in the south occur *Talegallus fuscirostris*, Salv. (see Salvadori, *op. cit.* iii. p. 248) and *Æpypodius arfakianus* (Salv.) (see *op. cit.* iii. p. 564).

The eggs therefore may belong to one of these species, or to an unknown one.

36. *TALEGALLUS FUSCIROSTRIS*, Salvad.

The measurements of the egg of *Talegallus fuscirostris* are still unpublished, so far as I know. The Dresden Museum has a specimen from Aru (*Ribbe* and *Kühn*): length 97 mm., breadth 60 mm. Vinaceous cinnamon (*Ridgway*, pl. iv. no. 15). Elliptical oval. Judging from the colour, the eggs from Constantine Harbour, described above, do not belong to *T. fuscirostris*.

37. *TALEGALLUS JOBIENSIS*, A. B. M.

In the year 1874 I published the measurements of two eggs of *Talegallus jobiensis* from Jobi (*Sitz. Akad. Wien*, lxi. p. 88), viz. 88-93 × 60-62 mm. I then had no good instrument at my disposal for the measuring of eggs, and am obliged now to correct my statement. Length 95-98·3 mm., breadth 60·4-61·5 mm. Colour and form similar to the two eggs described above from Constantine Harbour, but rather more reddish and more pointed, in structure smoother. The measurements of the eggs of *Talegallus cuvieri*, Less., *Aepyodius arfakianus* (Salv.), and *Aep. bruijnii* (Oust.), are still unpublished, so far as I know.

	Length. mm.	Breadth. mm.
<i>Talegallus jobiensis</i> . . . . .	95-98·3	60·4-61·5
— <i>fuscirostris</i> . . . . .	97	60
— sp. inc. ex Nov. Guin.	100·4	62·4

38. *ORTYGOMETRA CINEREA* (V.).

Kurakakaul, North coast of New Britain (*Kubary*).

XLII.—*On some Birds of the Argentine Republic.* By A. H. HOLLAND. With Notes by P. L. SCLATER.

[MR. A. H. HOLLAND has kindly sent to me for examination a collection of beautifully prepared birds lately made by himself at the Estancia of Espartillar, near the Ranchos Station of the Southern Railway of Buenos Ayres, where he is resi-

dent. The collection contains examples of 65 species\*, all of which are included in 'Argentine Ornithology' except one. This is the Gull-billed Tern (*Sterna anglica*), of which a single example (marked *female*), apparently an adult in winter plumage, is in the series.

Mr. Holland sends me also a few remarks on some of the species, which he has noticed. I trust that he may continue his researches, and furnish us with more information, as there

\* The following is a list of them:—

- |   |                                      |
|---|--------------------------------------|
| 1. <i>Mimus modulator</i> .             | 34. <i>Polyborus tharus</i> .        |
| 2. <i>Poliophtila dumicola</i> .        | 35. <i>Ardea cocoi</i> .             |
| 3. <i>Troglodytes furvus</i> .          | 36. — <i>egretta</i> .               |
| 4. <i>Anthus correndera</i> .           | 37. — <i>candidissima</i> .          |
| 5. <i>Parula pitiayumi</i> .            | 38. <i>Ardetta involucris</i> .      |
| 6. <i>Progne tapera</i> .               | 39. <i>Nycticorax obscurus</i> .     |
| 7. <i>Atticora cyanoleuca</i> .         | 40. <i>Plegadis guaraua</i> .        |
| 8. <i>Spermophila cærulescens</i> .     | 41. <i>Ajaja rosea</i> .             |
| 9. <i>Paroaria cucullata</i> .          | 42. <i>Phœnicopterus ignipalli-</i>  |
| 10. <i>Embernagra platensis</i> .       | <i>tis</i> .                         |
| 11. <i>Sycalis pelzelni</i> .           | 43. <i>Chauna chavaria</i> .         |
| 12. <i>Molothrus bonariensis</i> .      | 44. <i>Querquedula cyanoptera</i> .  |
| 13. — <i>badius</i> .                   | 45. — <i>flavirostris</i> .          |
| 14. <i>Leistes superciliaris</i> .      | 46. — <i>versicolor</i> .            |
| 15. <i>Tænioptera coronata</i> .        | 47. <i>Dafla spinicauda</i> .        |
| 16. <i>Lichenops perspicillatus</i> .   | 48. — <i>bahamensis</i> .            |
| 17. <i>Serpophaga subcristata</i> .     | 49. <i>Spatula platalea</i> .        |
| 18. <i>Pitangus bolivianus</i> .        | 50. <i>Metopiana peposaca</i> .      |
| 19. <i>Pyrocephalus rubineus</i> .      | 51. <i>Nomonyx dominicus</i> .       |
| 20. <i>Tyrannus melancholicus</i> .     | 52. <i>Zenaida maculata</i> .        |
| 21. <i>Milvulus tyrannus</i> .          | 53. <i>Fulica leucoptera</i> .       |
| 22. <i>Furnarius rufus</i> .            | 54. <i>Aramus scolopaceus</i> .      |
| 23. <i>Leptasthenura ægithaloides</i> . | 55. <i>Vanellus cayennensis</i> .    |
| 24. <i>Synallaxis hudsoni</i> .         | 56. <i>Himantopus brasiliensis</i> . |
| 25. <i>Anumbius acuticaudatus</i> .     | 57. <i>Totanus melanoleucus</i> .    |
| 26. <i>Guira piririgua</i> .            | 58. <i>Actiturus bartramius</i> .    |
| 27. <i>Coccyzus melanocoryphus</i> .    | 59. <i>Sterna anglica</i> .          |
| 28. <i>Bolborhynchus monachus</i> .     | 60. — <i>trudeauii</i> .             |
| 29. <i>Asio brachyotus</i> .            | 61. <i>Larus dominicanus</i> .       |
| 30. <i>Speotyto cunicularia</i> .       | 62. — <i>maculipennis</i> .          |
| 31. <i>Circus cinereus</i> .            | 63. <i>Æchmophorus major</i> .       |
| 32. <i>Tinnunculus cinnamominus</i> .   | 64. <i>Tachybaptus dominicus</i> .   |
| 33. <i>Milvago chimango</i> .           | 65. <i>Nothura maculosa</i> .        |

is yet much to be done in working out the Argentine Avifauna.—P. L. S.]

1. WHITE-THROATED FINCH.

This little Finch I am unable to name, as I cannot find a description to suit it.

The nest was placed in the fork of a poplar-tree low down. It was composed of twigs, rootlets, thistle-down, leaves, and moss, and lined with white cow-hair. The eggs were pointed, white, faintly spotted with pale red.

[The specimen sent, marked ♂, appears to be a female or young female of *Spermophila cærulescens* (Arg. Orn. i. p. 46), but I should like to see more examples of both sexes.—P. L. S.]

2. TYRANNUS MELANCHOLICUS. (Arg. Orn. i. p. 158.)

In November I took a nest of this bird in a small Eucalyptus wood. It contained eggs of *Molothrus bonariensis*. The nest was placed at the outermost end of a bough, in a very exposed situation, and was very slight, being composed of a few roots and twigs firmly interwoven and lined with a very little hay.

The nest contained two eggs of the Tyrant and two of the Cow-bird; those of the latter were white, thinly spotted with pale red.

3. LEPTASTHENURA ÆGITHALOIDES. (Arg. Orn. i. p. 177.)

Common. In October, during the last week, I found three nests of this Spine-tail, all of which were in those of deserted Oven-birds. The first nest was composed of numberless soft feathers, with a little grass as a lining, the others of feathers and wool, with no lining besides. The eggs were three in one nest and one in another; they are white, very broad towards the larger end, and thick-shelled, without any gloss.

4. BUTEO, sp. inc.

This Buzzard arrives here towards the middle of January in company with *Buteo swainsoni*, the latter in immense flocks. In the daytime the flock departs over the camp,

soaring in a straggling body in search of beetles, but returns at sundown to roost in the monte of Eucalyptus trees. They are anything but shy, and take little notice of being shot at. I am not certain when or where they depart.

[As Mr. Holland supposes, this is the young of *Buteo swainsoni* (Arg. Orn. ii. p. 59).—P. L. S.]

5. *CHAUNA CHAVARIA*. (Arg. Orn. ii. p. 119.)

[One of the most interesting specimens in Mr. Holland's collection is the skin of a chick of the Crested Screamer (*Chauna chavaria*) apparently quite recently hatched.

Mr. E. Gibson (Ibis, 1880, p. 166) has given us some excellent notes on the breeding-habits of this strange bird. "The young, when hatched," he says, "are covered with an abundance of beautifully soft down, of a yellow-brown colour." This, as is seen in the present specimen, is quite true. The down is very dense, very soft, and continuous over the whole of the body above and beneath, leaving only the bill, lores, rim round the eye, feet, and lower part of tibiae naked. But the head in the present specimen is tinged with rufous, and on the back the down is slightly tinged with blackish.

The condition of the chick, therefore, in this form, as well as the structure of the egg, strongly tend to confirm the view originally put forward by Parker (P. Z. S. 1863, p. 511) that the nearest living allies of the Palamadeidæ are the Anseres. The egg of *Chauna* is so much like that of a Goose (*Anser*), that it is difficult to tell any difference. The characters of the chick serve to confirm this resemblance.—P. L. S.]

6. *METOPIANA PEPOSACA*. (Arg. Orn. ii. p. 137.)

In October and November almost every nest of *Fulica armillata* and *Fulica leucoptera*, as also many nests of *Larus maculipennis* and a few of *Chauna chavaria*, contained parasitic eggs. These eggs were undoubtedly those of a Duck, though they varied in size and shape, the largest being  $2\frac{3}{4}$  in.  $\times 1\frac{3}{4}$ ; in colour they were of a dirty white. This Duck, I think, must be *Metopiana peposaca*, as these birds were extremely plentiful this year throughout the breeding-season, and I have taken the eggs of all the other Ducks here that

are at all common, excepting those of the Shoveller. These eggs were invariably covered over with a fresh lining in the nests of *Fulica armillata*, but not in the others.

7. STERNA ANGLICA.

*Viralva aranea*, Darw. Zool. Beagle, iii. p. 143 (Bahia Blanca).

*Gelochelidon anglica*, Sel. et Salv. P. Z. S. 1871, p. 572 (S.E. Brazil).

As mentioned above, this species was accidentally omitted in 'Argentine Ornithology.' Darwin obtained a specimen of it near Bahia Blanca, and Rogers got examples on the coast of S.E. Brazil. Mr. Holland sends a single, apparently adult female in winter plumage.

8. STERNA TRUDEAUII. (Arg. Orn. ii. p. 195.)

This Tern is rare with us, excepting in the breeding-season, when it appears suddenly and in numbers, either singly or in pairs.

Whilst hunting through a large gully of *Larus maculipennis* early in November, I came upon a corner of the lagoon entirely occupied by these pretty Terns. There was little shelter for the nests, a few scattered willow-stumps, but no rushes or flags, and the water was some 4½ feet deep. The nests were all placed close together, as the Gulls' nests were, thirty or forty of them, each a foot or two from its neighbour, and so on; they were very shallow structures, composed of green water-grasses (very succulent ones and wet), with no lining, and supported on the water by the thick growth of grass underneath. The eggs were three to four in number, of the usual Tern-type, varying from the dark, thickly spotted and blotched varieties to the thinly spotted pale ones; in no two nests were the eggs similar. As I approached the ternery (if there is such an expression) the birds became very anxious, darting down close to my head as I stood over a nest and uttering shrill cries. The sight was a beautiful one, with the thousands of Gulls and these graceful Terns as well, all showing beautifully against a blue sky.

9. LARUS CIRRHOCEPHALUS. (Arg. Orn. ii. p. 201.)

This Gull is very plentiful here in the breeding-season, but I was unable to find its nesting-place.

XLIII.—*Further Notes on the Birds of the Canary Islands.*

By E. G. MEADE-WALDO.

(Plate XIII.)

I AM afraid that I have much less to relate of these islands, ornithologically, this time than in my previous papers, having recently explored only the little island of Hierro, which is but a small field, and Lanzarote, that resembles the worst parts (for birds) of Fuerteventura.

Tenerife was visited this spring on April 25th by a great influx of migrants; the oldest inhabitant had never seen anything like it. There was no gale of wind or anything to account for it, the migration being only preceded by two or three days of dull steamy heat. *Chelidon urbica* and *Hirundo rustica* were in thousands; *Cotile riparia* was very numerous. The Golden Oriole (*Oriolus galbula*) was in small parties of four or five individuals, frequenting the orange and loquat trees. When disturbed in these they would dart away into the tops of the tallest plane trees, where it was almost impossible to see them. A small dark form of the Cuckoo (*Cuculus canorus*) was very numerous, as was also the Bee-eater (*Merops apiaster*). The Pied Flycatcher (*Muscicapa atricapilla*) occurred at Laguna, as did also *Merops persica*; and Coots (*Fulica atra*) and Moorhens (*Gallinula chloropus*) were common. I have heard, since I left, that a gentleman at Tacaronte has some living Purple Gallinules (*Porphyrio*?) that were caught by the country-people at the same time. Red-footed Falcons (*Falco vespertinus*) were not uncommon, and were shamefully bullied by the Common Kestrels. Nearly all the common Waders were in large numbers, except the Knot; Curlew Sandpipers (*Tringa subarquata*) in nearly full breeding-plumage and Greenshanks (*Totanus glottis*) being especially numerous, and frequenting the tanks, *not* the shore. Common Herons were also exceedingly numerous and absurdly tame. By the 4th of May I do not think there was left a single example out of this vast number of birds, all having gone away on the night of the 3rd.

Don Anatael Cabrera has added to his interesting collection of birds killed in the neighbourhood of Laguna an example of *Ardetta sturmi* and several of *Porzana maruetta* and *Porzana parva*, which appear to be pretty regular winter visitors to the ditches round Laguna. I spent last summer in the Valle de Guerra, near Laguna, where the Barn Owl (*Strix flammæa*), which has generally been considered a scarce bird in the Canaries, was quite common, its shriek being heard every night. I once saw five on the wing together; they are all large and very dark-coloured birds here. I found in castings of this bird from a cave many more small bird-remains than is usual in this country, also remains of lizards. The Long-eared Owl (*Asio vulgaris*) I found to be exceedingly numerous on the lava-flows near the sea, where they inhabit the large candalabra-like *Euphorbia canariensis*, and prey principally on lizards; they breed on the ground in the centre of these practically impenetrable strongholds during the winter, for I procured a young one at the end of January this year, just able to fly. Many birds breed very irregularly in these islands, for in November last a little girl brought me a Thick-knee (*Ædicnemus crepitans*) still in the down. The distribution of the Shrike (*Lanius algeriensis*) in Tenerife is rather peculiar. It frequents the hot *Euphorbia*-covered slopes close to the sea on the south side of the island; it is almost equally common and resident all the year on the "Cumbre," 5000 to 7000 feet, and is seldom or never seen on the north or west of the island.

On the 19th of November, 1889, I went to Hierro, calling at Santa Cruz de la Palma on the way, and, as the steamer was obliged to wait all day, I got a mule and rode up to the mountain where I had procured the first Palma Tit (*Parus palmensis*). Very nearly in the same spot where I shot my first specimen I had the luck to shoot in a few minutes four beautiful examples. They came to a call which I always find very effective in bringing up small birds, viz. imitating the cry of a rabbit that a stoat or ferret has got hold of; all the small birds on hearing it come up and utter their alarm-notes. I also shot some Chaffinches (*Fringilla palmæ*). The young males

at this time of year are quite indistinguishable from young males of *F. tintillon*. We went on board that night, and called for a few minutes next morning at the beach below the Valle Hermoso, Gomera. This enabled me to have a glimpse of the Cordillera, where I had procured my first *Columba laurivora*. We then steamed slowly on and anchored off the Port of Valverde, Hierro, at 3 o'clock in the afternoon. The Port of Hierro is very unpretentious; there is not even a beach, but here the precipices, which almost surround the island, are a little less steep. There is not a single house in sight, but there is a cave, in which what little business there may be on the weekly arrival of the mails is transacted. The delivery of the mails is unique in its way—the small mail-bag is opened on the beach, the correspondence handed round among the crowd, and anyone who sees a letter for himself, or for any of his acquaintances who may live near him in any part of the island, appropriates it or undertakes to deliver it. Nearly two hours' climb brought us to Valverde, the capital, a small straggling village, about 2000 feet above the sea. Hierro has no coast-town, the island being a high undulating tableland, surrounded by almost perpendicular precipices, excepting the valley of El Golfo, which, in a way, resembles the valley of Orotava on a small scale, except in that the mountain rises much nearer to the coast and is far steeper. Nothing much is grown in the valley except figs and tobacco, there being no water to irrigate the crops. As soon as it was known that I had come to look for birds, I was conducted to see a great rarity that had been caught a few days before, a Common Coot (*Fulica atra*). It seemed a strange bird to be introduced to on one's first arrival in this out-of-the-way little island. The man that we engaged as guide, and servant also, was anxious to procure for us specimens of the large lizard that inhabits the outer Zalmone Rock. After we had arranged to visit this spot, the dark weather and heavy surf prevented any attempt at landing on it while we were in Hierro, but Canon Tristram, who came afterwards, was more successful. We started for El Pinal next day, passing through the centre of

the island, a high down-like tableland. Nearly all the birds of the Western Canaries are common here, the Common Linnet (*Linota cannabina*) and Berthelot's Pipit (*Anthus bertheloti*) being perhaps the most numerous; but Canaries, Corn Buntings, Goldfinches, and Rock Sparrows were nearly equally abundant. The Chiffchaff and Black-headed Warbler (*Sylvia melanocephala*) were common where there was suitable cover. The dark-coloured Kestrels were fairly common, but I do not think quite so much so as in the other Western islands. The Quail is not rare, but there is no Partridge in Hierro: they tell me it has been introduced from Gomera, but has died from want of water. The Thick-knee (*Edicnemus crepitans*) is far from rare. The Buzzard (*Buteo vulgaris*) is fairly numerous in the Ladera of El Golfo, and the Red Kite (*Milvus ictinus*) is in about the same numbers.

We did not see the Neophron, neither is the name of "Quirre" known to the islanders, so I expect that if it visits Hierro, it is only occasional. It is common in Gomera, but unknown in Palma. Probably nowhere in the world is the Tangier Raven (*Corvus tingitanus*) more numerous than here; it is always in sight, flying in flocks, large and small, walking about close to one, and showing but little fear. They would come to our tent and greedily pick up the bodies of birds that had been skinned, and the pine-forest where our tent was pitched resembled a scattered rookery. The pairs in November frequently sat by their old nests and made most ridiculous noises, sometimes almost resembling a song. The peasants tell me (and I can quite believe it, for food for so many must be very hard to get) that the Ravens do them a great deal of harm, that they have great difficulty in saving their lambs from them (for in Hierro sheep take the place of the goats of the rest of the islands), that they are equally destructive amongst their crops, and that if it were not for the Ravens the island could support many more people.

The most interesting bird in Hierro is the Tit. I procured my first specimens soon after entering the pine-forest, and when looking for a camping-ground I shot three more, which at a glance I saw belonged to a new species. This



directed me in choosing what proved to be an excellent spot. This Tit, which in habits resembles *Parus palmensis*, lives essentially only in the pine-forest, occasionally wandering into the grass-heath; it has the voice of *Parus tenerife*, and also the look of that form, not standing so high on its legs, nor in the upright manner of the Palma Tit. It is the smallest and meekest of all the Canarian Tits, and differs in colour from those of its back of a fine olive-green instead of the blue, there being only a band of light blue at the back of the neck. The under of the breast is very rich in colour, and is marked with a trace of white; the black line is very indistinct. It is a very common bird in the pine-forest, and I succeeded in procuring as many specimens as I wanted. I considered this bird as a new species, and named it *Parus canariensis*, after "Gambrios," King Juba's name for the island of Canaria.

Plate XIII. (Plate XIII.)  
 Parus canariensis. Meade-Waldo, Anp. Mag. N. H. ser. 6,

canariensis, and fortius et robustior: tergo toto  
 olivaceo, nec ceruleo: tectricibus alarum  
 albis, marginibus angustissime albo terminatis: subtus  
 rubro. *Parus tenerife* similis. *Femina* haud a mari dis-

The Tit adds a fourth to the number of forms found in the Canary Islands, three of which are quite peculiar to the islands, and the fourth is peculiar to their own islands. *Pterodroma*, *Phoenicurus*, *Corvus*, *Alcedo*, almost all the birds of the islands are found here. Great Canary, Tenerife, and Palma have *Parus tenerife*, the only known form of the species by its original occurrence and by never being white-eyed migrants. The island of Palma has *Parus canariensis*, distinguished by having its under-parts all marked of yellow, the wing-coverts slightly tipped with blue, and the tail and legs longer. It has also a peculiar whistling note, which can be distinguished at once from the other Tits, and its song is very different from that of any other Tit. Besides it there is a third form, which is only occasionally coming into



decided me in choosing what proved to be an excellent spot. This Tit, which in habits resembles *Parus palmensis*, lives apparently only in the pine-forest, occasionally wandering into the tree-heath; it has the voice of *Parus tenerifæ*, and also the style of that form, not standing so high on its legs, nor in the knock-kneed manner of the Palma Tit. It is the largest and strongest of all the Canarian Tits, and differs in having the *whole* of its back of a fine olive-green instead of blue, there being only a band of light blue at the back of the neck; the yellow of the breast is very rich in colour, and there is *never* a trace of white; the black line is very indistinct. It is quite a common bird in the pine-forest, and I had no trouble in procuring as many specimens as I wanted. I have described this bird as a new species, and named it *Parus ombriosus*, after "Ombrios," King Juba's name for the island of Hierro.

PARUS OMBRIOSUS. (Plate XIII.)

*Parus ombriosus*, Meade-Waldo, Ann. Mag. N. H. ser. 6, v. p. 103.

*Parus tenerifæ* similis, sed fortior et robustior: tergo toto olivaceo-viridescente nec cæruleo: tectricibus alarum viridibus, majoribus angustissime albo terminatis: subtus citrinus, *P. tenerifæ* similis. *Femina* haud a mari distinguenda.

This Tit adds a fourth to the number of forms found in the Canary Islands, three of which are quite peculiar to the archipelago, and two are peculiar to their own islands. Fuerteventura and Lanzarote have *Parus ultramarinus*, almost indistinguishable from the mainland bird. Grand Canary, Tenerife, and Gomera have *Parus tenerifæ*, easily known from *P. ultramarinus* by its brighter colouring and in *never* having white-tipped wing-coverts. The island of Palma has *Parus palmensis*, distinguished by having its underparts *white* instead of yellow, the wing-coverts slightly tipped with white, and the tail and tarsi longer. It has also a differently pitched voice, which can be distinguished at once from the other Tits, and its more slender form and different style show it at once to belong to a different race. Besides it is confined to the pine-forest, only occasionally coming into

the laurels, and apparently never frequenting villages and gardens, as does *Parus tenerifæ* in the three islands which it frequents.

*Parus ombriosus* resembles *Parus tenerifæ* in all its ways, except that it lives only in the pine-forest, and occasionally in the tree-heaths and laurels.

In Hierro the Goldcrest (*Regulus tenerifæ*, Seebohm) is common in the pines and heath-forest. It is of the same form that is common to all the Canary Islands where Goldcrests exist, and has the black sides to the crest joined across the forehead, as in *R. ignicapillus*. It appears that some Goldcrests from other parts have the same feature, especially those from China, but in my large series from all the Canary Islands I find no variation in this respect.

The Chaffinch is not very numerous. It is intermediate between *Fringilla tintillon* and *F. palmæ*, having a little green over the tail, and the breast of a dirty, not pure, white, as in *F. palmæ*. Grand Canary, Tenerife, and Gomera have the same Chaffinch (*F. tintillon*), the adult male of which has a pure buff breast, a dark-slate back, and a green rump. La Palma has its Chaffinch, with no green on the rump and very little green on the wings, a white breast, and the slate-blue of the head is paler than in *F. tintillon*. It is interesting to note that in the three islands where the Chaffinch is the same the Tit is also the same, and where the Chaffinch is different, as in Palma, both have white breasts; this, however, does not apply to Hierro, where both are different. I noticed that in Palma *F. palmæ* ranged right through the pine-forest, as does *F. teydea* in Tenerife. A pair that we have in our aviary, on being given seeds of *Pinus canariensis* are as eager for them as *F. teydea*, while *F. tintillon*, in the same aviary, takes little or no notice of them.

The Robin of Hierro is the same as that of Palma, and has a pale-coloured breast; it is, however, much more generally distributed about the island than in the rest of the Canaries, and was common in the thickets of fig-trees in the town of Valverde; it was most remarkably shy.

There is no Laurel Pigeon in Hierro. At the first glance

the Ladera of El Golfo looks splendid ground for both *Columba bolli* and *C. laurivora*, but a short scramble about it shows that there is no food-plant, the "viñatigo," asiriña, "laurel," and til-tree being almost absent, and the forest consisting almost entirely of tree-heath and "haya," which, however, is the favourite nesting-tree of *C. bolli*. A man who was accustomed to shoot Rock Doves (*C. livia*) at a spring told me he had once seen two large Pigeons with red breasts, from which the Rock Doves fled: these may have been a pair of *C. laurivora* crossed over from Palma.

In the end of March of this year I paid a visit to the Eastern islands, accompanied by Canon Tristram. At Las Palmas, while waiting for the steamer that was to take us to Lanzarote, I saw several pairs and single males of the Trumpeter Bullfinch (*Erythrospiza githaginea*) close to the town, and at the back of the new hotel. I do not think that they have been recorded from any part of Grand Canary before, though Canon Tristram concluded that they would be found on the barren tract near Maspalomas Point.

After having thoroughly explored Fuerteventura, we did not find Lanzarote ornithologically interesting. This island is very carefully cultivated under most difficult circumstances, for there is hardly any water, only that which is caught in tanks after the very slight and uncertain rainfall. This year, however, the inhabitants had had abundant rain, enough, they told us, for ten years. They must be easily satisfied, for I thought the whole place, with the exception of the valley of Haría, had a most burnt-up appearance; they had, however, cultivated a splendid crop of onions, which long files of camels were bringing into the port of Arrecife for export to Cuba. The people of Lanzarote are remarkably industrious in comparison with the rest of the Canarians, and we found them obliging and kind throughout the island. The birds of Lanzarote appear to be, as would be expected, the same as those of Fuerteventura, with two differences. I do not believe that the Fuerteventura Chat (*Pratincola dacotie*) occurs there, we kept the most lively look-out in all the likely places and never saw one; while in Lanzarote exists

the Barbary Partridge (*Caccabis petrosa*), and there is no Partridge in Fuerteventura.

The Partridge in Lanzarote is confined to *one* lava-flow (that which flows from the Monte de Corona), and on that it is said to be fairly numerous. I only saw one, which I shot—a dingy-coloured male, that was not breeding. It has never spread to any other part of the island. No one knew if they had been introduced there or not, but it is almost the nearest point to the African coast, and the Partridge of Grand Canary is *C. rufa*.

The Quail appeared to be very numerous, and the Desert Short-toed Lark (*Calandrella minor*) swarmed everywhere; while Berthelot's Pipits, Common Linnets (which differed from those of Fuerteventura in being very bright instead of colourless), and Trumpeter Bullfinches were very common. The Ultramarine Tit was very local, and appeared to be confined to the Valley of Haría, where it was fairly numerous; those procured were small and pale in colour. We found a nest in a hole in the ground, and dug it out; it contained three young and one addled egg. We caught the old female, and kept her whilst we remade the nest, and arranged stones over it to prevent the earth falling in; on releasing her a little distance off, she went straight back and into the nest, notwithstanding the altered appearance it must have had to her. The Cream-coloured Courser is pretty numerous in suitable places, and I saw them in the fields, which I do not remember to have done in Fuerteventura; they were very tame from seeing many people, who never molest them. The Courser is not at all good meat. The Houbara is not really common, but there appear to be some on each suitable plain. There are great numbers of Waders on the shores, and at "Papagayo," the tiny village from which we took our boat to sail across to Fuerteventura, the Yellow-legged Herring Gull was absolutely tame, walking about among the children's legs and sitting on the tops of the houses. We saw them picking at food which the children were holding in their hands.

Our visit to the little islet of La Graciosa was not very

productive, as we were too early for the Petrels, which breed here in great numbers—the only early breeder that I am aware of being *Puffinus obscurus*, which lays at the end of February and beginning of March; none of the others seem to come to their holes before the end of May. La Graciosa is about three miles long by one and a half broad, and is flat, with three small extinct volcanoes on it; it is covered with a low scrubby bush, called by the people “salada mora.” The Petrels burrow at the foot of these bushes, their roots preventing the sand from filling in. We procured a pair of breeding Black Oyster-catchers (*Hæmatopus capensis*). They call them here “Corvino,” on Lanzarote “Grajo de mar,” and on Fuerteventura “Cuervo marino”—three different names on three adjoining islands. Shrikes were not uncommon here; they appear to be intermediate between *Lanius algeriensis* and *L. hemileucurus*, as are those on Fuerteventura; some are perfect *hemileucurus*. The Osprey is common round these small islands, and breeds on the isolated rocks and on the great precipice of El Risco, 2000 feet almost sheer down, on Lanzarote. The only small land-birds we saw on La Graciosa were Berthelot's Pipits, Spectacled Warblers, and Common Linnets; a few Common Buzzards live in the walls of the crater of one of the volcanoes. I shot one, the most miserable specimen of *Buteo vulgaris* I ever saw. There is a fine fish-curing establishment on this island, built and started at a great expense, which is fast going to ruin, all the valuable plant being in an absolutely neglected and rotting condition; the fish caught were principally tunnies and sardines.

Leaving Graciosa, we crossed over to Lanzarote, and walked the whole length of the island, and though we kept a sharp look-out, nothing fresh appeared. I think the plain adjoining “Papagayo” is the barrenest in the Canary Islands; it was too poor for Coursers, which is saying a good deal. They tell me there are a few Bustards on it. We then sailed across to Corralejo, in Fuerteventura, passing by the island of Los Lobos. From Corralejo we walked, in two days, by Oliva to Puerto Cabras. Here we embarked for

Las Palmas, but besides some Common Curlews, which are decidedly rare in the Canaries, nothing of note appeared.

I am sorry to have no more islands to go to, and am afraid that, with the exception of the Petrels, nothing much remains to be done; but to observe these satisfactorily, it would be necessary to visit and carefully work the outer islands and rocks during the months of June and July, and I have no greater wish than to do this, accompanied by my energetic friend and mentor Canon Tristram.

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XLIV.—*Notes on some Birds obtained at Madeira, Deserta Grande, and Porto Santo.* By W. R. OGILVIE GRANT  
(Nat. Hist. Mus.).

(Plate XIV.)

It was my good fortune to be invited during the spring of this year to accompany a friend on a five weeks' trip to Madeira, and, having never visited that beautiful island, I gladly embraced the opportunity, and determined, if possible, to obtain there a number of birds which were much wanted for the British Museum Collection. I certainly never dreamed of finding anything new, least of all in the bird-line, and the handsome new Sparrow-Hawk so excellently delineated by Mr. Keulemans in the accompanying Plate was an unexpected surprise.

After a terribly rough voyage from start to finish, we arrived in a somewhat battered condition at Funchal on the 15th of April, truly thankful to find ourselves once more on firm land, where, in the glorious sunshine and delightful climate of that most favoured island, our troubles were soon forgotten. The weather, owing to the late spring, was still all that could be desired, and not too hot to make walking unpleasant. Almost the whole of the three weeks we remained at Madeira were spent in making expeditions in all directions, and combined a very large amount of exercise with a thorough enjoyment of the grand scenery and the delights of collecting zoological specimens of all kinds, though



principally birds. At the end of our stay I found that I had got together a very satisfactory series of birds, a list of which is given below, along with some notes. We had also obtained a number of lizards and many examples of land and fresh-water Mollusca, Myriopoda (including two specimens of a new species of *Geophilus*), Arachnida, Coleoptera, Lepidoptera, and Vermes.

The town of Funchal does not boast of a taxidermist, and one is thus dependent on one's own exertions in the skinning-line. Thus I soon found that, even by getting up every morning at six and working for a couple of hours or more, it was impossible to keep pace with the day's results. I was therefore obliged to put a number of specimens in spirit, and on my return sent them to Mr. Cullingford at Durham, who returned them transformed into most beautiful skins, quite as good as if they had been made from fresh specimens.

#### A. Specimens from Madeira.

##### I. ACCIPITER GRANTI, Sharpe. (Plate XIV.)

*Accipiter granti*, Sharpe, Ann. & Mag. N. H. ser. 6, v. p. 485.

The only specimen as yet obtained of this very handsome Sparrow-Hawk was got by my friends Messrs. C. J. Cossart and C. Hinton while shooting Partridges in October last year. The former of these gentlemen showed me the skin, together with some other specimens in his possession, and I at once felt sure that it was distinct from anything I had ever seen; but never having made a special study of the Hawk-tribe, I thought I could not do better than place the bird in the hands of my friend Mr. Sharpe and leave the responsibility of describing it or not to him. He at once pronounced it to be a very distinct insular form, most nearly allied to the Madagascar Sparrow-Hawk, *Accipiter madagascariensis*, from which it is only to be distinguished by possessing rufous flank-tufts, like *A. nisus*. My own opinion is that *A. granti* is the resident bird which breeds in the island, and that the common Sparrow-Hawks obtained there are visitors only. It has been denied that the Sparrow-Hawk breeds in Madeira, but this has been proved to be incorrect, as

I am informed by Mr. Cossart that a clutch of eggs, taken on the island, were shown him by a gentleman residing in Funchal. There is a popular superstition in Madeira that the Sparrow-Hawk is the outcome of the fifth egg in the "Mantas" or Common Buzzard's nest! During my stay I saw a number of Sparrow-Hawks, but never had an opportunity of obtaining any specimens, as the chances of getting them always occurred while I was temporarily disarmed in pursuit of some other branch of zoology. Some of the birds seen were undoubtedly only *A. nisus*, but two, at least, I believe to have been specimens of *A. granti*, judging from the hurried glimpses I had of them. I should imagine that the resident birds were not nearly so numerous as the visitors. Mr. Cossart tells me that what first drew his attention to this Hawk was its peculiar flight, just topping the bushes, like a tired or wounded bird, and it was this that made him and Mr. Hinton give chase and procure it. As he had never seen so large a Sparrow-Hawk, and as it was a particularly fine one, he fortunately brought it home and skinned it.

2. STRIX FLAMMEA.

3. PHYLLOSCOPUS SIBILATRIX.

Four specimens, which undoubtedly belong to this species, were obtained by me in a garden a few miles from Funchal. I was first attracted to the bird by its note, which was perfectly different from that of any Wood-Wren I had ever heard at home. When I had remained quiet for some minutes, I found there were several of these birds dodging about in a very thick hedge, and every now and then darting out among the apple-trees in pursuit of some insects. It would have been easy to get more specimens, as there were at least a dozen. I never saw them anywhere else, and suppose they had only touched there on their way north.

4. SYLVIA ATRICAPILLA.

5. SYLVIA HEINEKENI.

6. SYLVIA MELANOCEPHALA.

I shot a pair a mile or so north of Santa Cruz, in some thick furze-bushes, but never saw them anywhere else.

## 7. ERITHACUS RUBECULA.

## 8. TURDUS MERULA.

## 9. REGULUS MADERENSIS.

Common in suitable localities all over the island. It is not met with in altitudes much below 2000 feet, and prefers the gigantic heath-trees which clad the steep rugged sides of the Serras, where it is met with in small parties.

## 10. MOTACILLA MELANOPE.

## 11. ANTHUS BERTHELOTI.

## 12. LINOTA CANNABINA.

This species was nesting. I found a nest with young.

## 13. CRITHAGRA BUTYRACEA.

This bird had already nested, and many of the young were already flying about.

## 14. PETRONIA PETRONIA.

Very common about the cliffs and houses near the sea.

## 15. FRINGILLA MADERENSIS.

There has been so much discussion with regard to the advisability of separating the various forms of Buff-breasted Chaffinch found in Madeira and the Canary Islands, that I took care to obtain a good series of these birds in the former island. Thanks to the kindness of Mr. Meade-Waldo and Canon Tristram, I have been able to inspect their large series of specimens from the different islands of the Canaries, and I entirely agree with Mr. Sharpe as to the advisability of giving these forms distinct names. All the young are undoubtedly much the same, but the adults are perfectly distinct, except the form found in Hierro, which is somewhat intermediate between *F. canariensis* and *F. palmæ*, having the back and rump somewhat intermixed with green. On the whole, however, this bird is so close to the grey-backed *F. palmæ*, that it is certainly most reasonable and convenient to unite it with that species. The "buff-breasted" species may be distinguished in the adult state by the following characters:—

- a. *F. maderensis*, Sharpe.—Pale slate-coloured head; mantle green; back slate; rump and upper tail-coverts green. Breast pinkish. (Madeira.)
- b. *F. moreleti*, Pucher.—As the last, but black frontal band stronger. Breast buff, never pinkish. (Azores.)
- c. *F. canariensis*, Vieill. (*F. tintillon*, W. & B.).—Head, mantle, and back dark slate-blue; rump and upper tail-coverts green; breast and belly buff. (Grand Canary, Teneriffe, and Gomera.)
- d. *F. palmae*, Meade-Waldo.—Whole of back and rump slate-blue; breast and belly pure white. (Palma and Hierro.)

## 16. CUCULUS CANORUS.

## 17. COLUMBA TROCAZ.

I was fortunate enough to get eight specimens of this fine Pigeon, which is still fairly common in the north of the island.

## 18. NUMENIUS PHÆOPUS.

## 19. TOTANUS CALIDRIS.

## 20. MACHETES PUGNAX.

## 21. TRINGA ALPINA.

## 22. STREPSILAS INTERPRES.

## 23. ARDETTA MINUTA.

## 24. STERNA DOUGALLI.

B. *Specimens from Deserta Grande.*

About twenty-five miles to the south-east of Madeira lies a group of rocky volcanic islands known as the Desertas, and it was our great desire to visit these before leaving Madeira, and, if possible, to obtain specimens of certain Petrels which breed there. The group consists of a chain of three islands connected by numerous small rocks. The middle island, known as Deserta Grande, is the largest, being about 9 miles long and  $1\frac{1}{2}$  wide, and is the only one on which it is

possible to land for anyone not born a native fisherman. The little Deserta, which lies to the north, is flat-topped and about 1000 feet high, and only to be ascended, we believe, by means of ropes; while the middle Deserta, which is the most southern, rises in wild peaks, and is said to be quite inaccessible. By the kind invitation of some of our Madeira friends, who had made up a party to shoot goats on Deserta Grande, we joined their expedition, and started about 2 o'clock on the morning of the 4th of May, and, both wind and sea being favourable, landed on the island without difficulty about 6 o'clock. The landing-place, the only one on the island, is merely a table of rock, covered with huge blocks of loose stone, quite unapproachable in rough weather; the rest of the island rises sheer up from the sea to a height of from one to two thousand feet. The ascent to the higher level is just above the place where one lands, and is a narrow steep zigzag path up a nearly perpendicular face; but the climb is simple compared with the descent, which in parts is far from pleasant, the loose volcanic earth and stones giving way at every step, and often going unpleasantly near the heads of those in front. On gaining the summit one emerges into a valley, which furrows the centre of the island, and is covered with rough grass and white poppies, scattered stones and boulders. Among these we soon unearthed several pairs of Bulwer's Petrel, which, however, had not then begun to breed. Underneath some of the stones we caught a number of specimens of the great black Tarantula (*Lycosa nigra*) peculiar to the Desertas. We may remark that there is no water whatever on the islands, and my friends had to bring all their drinking-water with them in barrels, which were carried up by the fishermen employed to drive the goats. These latter, now perfectly wild, together with numerous rabbits and black cats, are the only quadrupeds, and are the descendants of animals introduced when the island was inhabited by Portuguese fishermen. The only shelter on the whole place consists of two small clumps of stone-pine near the middle of the island, and here we found Canaries and Linnets in plenty, also a Redstart and a pair or two of Golden Orioles:

one of these was shot, but it fell over the cliff and was lost. We returned to Madeira the same evening, and the birds obtained were the following:—

1. CRITHAGRA BUTYRACEA.

2. LINOTA CANNABINA.

A nest with young.

3. THALASSIDROMA BULWERI.

We caught a number of pairs in holes among the stones, but they had not yet begun to breed. Bill and feet black; tarsi greyish pink. Iris deep brown.

4. PUFFINUS KUHLI.

Also paired, but no eggs. They defended themselves fiercely and bit with great power. Legs and feet pale pink, outer toe and web dusky. Bill dull yellow, darker towards the tip. Iris dark brown.

5. PUFFINUS OBSCURUS.

Only one specimen caught, an adult female, which had not bred. It seems curious that at Porto Santo, which is only about forty miles distant, this species had not only bred, but that some of the young were in nearly adult plumage. The bill is lead-coloured; the outer toe, sole, and back of tarsus black, rest livid. Eye dark brown.

We were unfortunate in obtaining no specimens of either *Estrelata mollis* or *Pelagodroma marina*.

6. LARUS LEUCOPHEUS.

C. Specimens from Lime Island, Porto Santo.

The three islands of Porto Santo lie north-east of Madeira, and, like the Desertas, consist of three main islands, from one of which, known as the Lime Island, we obtained some interesting specimens. This island contains lime-quarries, and supplies all the lime used for building purposes in Madeira; before their discovery it had all to be brought from great distances by ship, and was so expensive that the older houses in Funchal are built with mud and merely faced with lime. The two birds obtained were:—

## 1. THALASSIDROMA BULWERI.

## 2. PUFFINUS OBSCURUS.

By the kind help of our friend Mr. C. F. R. Blandy, to whom we are indebted for many of our pleasant trips, we got a very interesting series of the young of this species, showing every stage from the downy nestling to the adult. The down is first cast off the middle of the back and shoulders, then off the top of the head and throat, next from the whole of the upper parts. After this stage the breast becomes bare, then the belly and underparts, leaving only the flanks and tail-feathers with a downy fringe, which, in the most adult of the young specimens before us, is reduced to a few filaments on the flanks. The plumage of this last bird differs in nowise from that of the parent.

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XLV.—Notices of recent Ornithological Publications.

[Continued from p. 383.]

80. *The British Museum Report for 1890.*

[Return to an Order of the Honourable The House of Commons, dated 5th May, 1890; for, Account "of the Income and Expenditure of the British Museum (Special Trust Funds) for the Year ending the 31st day of March 1890." "And, Return of the Number of Persons admitted to visit the Museum and the British Museum (Natural History) in each Year for 1884 to 1889, both Years inclusive; together with a Statement of the Progress made in the Arrangement and Description of the Collections, and an Account of Objects added to them, in the Year 1889."]

The Parliamentary Report on the British Museum for the present Session announces the addition of more than 69,000 specimens to the National Zoological Collection. Amongst these are specially noticed:—

(1) "A collection made by H. C. V. Hunter, Esq., in the Kilimanjaro district. It comprises twenty-five Mammals, including the type of *Damalis hunteri*; one hundred and eighty-six birds, amongst which are types of six new species and of nine species new to the collection; a new fish (*Oreochromis hunteri*) from one of the crater-lakes; two hundred

and twenty-four Coleoptera, with many rare species; nineteen Lepidoptera and two Hemiptera."

(2) "The fifth instalment of the Godman-Salvin collection of birds, referred to in the Report for 1885. This series consists of three thousand nine hundred and thirty-nine specimens, and includes sixty-two types and one hundred and sixty-four species new to the collection. Presented by Osbert Salvin, Esq., F.R.S., and F. DuCane Godman, Esq., F.R.S."

(3) "The collection of *Dendrocolaptidæ* and *Formicariidæ*, formed by P. L. Sclater, Esq., F.R.S., containing one thousand nine hundred and forty-five specimens, and including one hundred and ten types and twenty-five species new to the collection. Purchased."

(4) "The first instalment of the collection of African birds formed by Captain G. E. Shelley, containing one thousand six hundred and sixty-six specimens, and comprising Finches, Starlings, Larks, Weaver-birds, Woodpeckers, Cuckoos, and Barbets, of which fifteen are types and twenty-one species new to the collection. Purchased."

(5) "One hundred and forty-eight specimens, forming part of the collection of the late Count Riocour, and containing many of the original specimens described and figured by Vieillot, as well as fourteen other types and three species new to the collection, among them a specimen of the extinct Starling (*Fregilupus varius*). This bird, formerly common in the Island of Réunion, is supposed to have been exterminated about fifty years ago, and not more than sixteen specimens are known to be preserved in various museums. Purchased."

Under the head of "Birds" we are informed that "Nine thousand eight hundred and thirty-six additions were made to this branch of the collection during the past year. Besides the collections already mentioned, the following are the most noteworthy:—

"Three hundred and eighty-three specimens from the Palæarctic Region, Africa, and New Guinea, including nine types and seven species new to the collection, and among

them the Paradise-birds *Epimachus macleayanæ* and *Astrarchia stephaniæ*; presented by Henry Seebohm; Esq.

“Sixty-four specimens from N. Borneo, including *Cissa jeffreyi*, a species new to the collection; presented by John Whitehead, Esq.

“Thirty-six specimens from Palawan, including five species new to the collection, collected by Mr. John Whitehead; purchased.

“Forty-four specimens from Kansu, W. China, including seventeen species new to the collection; purchased.

“Six specimens from Somali-land, including *Saxicola phillipsi*, new to the collection; presented by E. Lort Phillips, Esq.

“One hundred and five specimens from the West Indies; presented by the West-Indian Committee for the Exploration of the Lesser Antilles.

“Six specimens from the Solomon Islands, collected by Mr. C. M. Woodford, and including the types of *Pomarea florenciæ* and *Rallina woodfordi*; purchased.

“The type of *Eudyptes sclateri* from the Auckland Isles; purchased.

“Ninety-seven Ducks and Geese from various localities; presented by Captain H. J. Elwes.”

### 81. *Burmeister on Patagonian Birds.*

[Expedicion a Patagonia por encargo del Museo Nacional, confiada a Carlos V. Burmeister, Naturalista viajero del Establecimiento. An. Mus. Nac. de Buenos Aires. Entrega decimasesta. Buenos Aires: 1890.]

The appendix to Señor Carlos Burmeister's report on his expedition to Patagonia, undertaken during the summer of 1888-89, contains a systematic list of the birds collected on this occasion, with some notes on their localities and habits. The species recorded are 50 in number, mostly well-known inhabitants of Antarctic America. A single example of *Milvago albogularis*, Gould, originally discovered in the same district by Darwin during the voyage of the 'Beagle,' was obtained. Some notes by Señor Fauvety on the habits of the Penguins met with on the coast are appended.

82. *Burmeister on the Fauna of Patagonia.*

[Relacion de un viaje á la gobernacion del Chubut por Cárlos V. Burmeister, Ayudante del Museo Nacional. Apéndice. Algunas noticias sobre la Fauna de la Patagonia. Anales del Mus. Nac. de Buenos Ayres. Entrega décimaquinta. 1888.]

The appendix to Sr. Carlos Burmeister's narrative of his journey across the territory of Chubut, published in the fifteenth part of the 'Annals of the National Museum of Buenos Aires,' contains a summary of what is known of the fauna of Patagonia, so far as regards the vertebrated animals. After a short *résumé* of the chief authorities on this subject, Sr. Burmeister gives a systematic list of the Mammals, Birds, Reptiles, and Batrachians hitherto recorded as having been met with in Patagonia and in the Falkland Islands, which belong to the same fauna. Besides the names, little information is added in most cases except the localities. The species of which no examples are contained in the National Museum of Buenos Aires are indicated by an asterisk. The birds thus enumerated are about 190 in number, but among their names are a few, we think, which might be eliminated, as merely synonyms of other species also on the list. The author appears to have added very little original matter to his compilation, and in referring the large Cormorant of the Patagonian coast, often called *Phalacrocorax carunculatus*, to *P. verrucosus*, Cab., has fallen into an error. Dr. Cabanis's species was established on the allied form from Kerguelen Island (see Birds of the 'Challenger' Expedition, p. 122, pl. xxvi.), and the Patagonian species should probably be called *P. albiventris* (op. cit. p. 121, pl. xxv. fig. 2). But Sr. Burmeister does not appear to be acquainted with this work.

83. *Christy's 'Birds of Essex.'*

[Essex Field Club Special Memoirs.—Vol. II. The Birds of Essex: A Contribution to the Natural History of the County. By Miller Christy, F.L.S. With 162 woodcut illustrations, two plans, and a frontispiece. 8vo. Chelmsford, Buckhurst Hill, and London: 1890.]

The number of avifaunas of the English counties increases

rapidly. We have now before us a volume on the Birds of Essex, for which the author tells us he has been "collecting information and materials for fifteen years." It seems to fully correspond in completeness to the time spent upon it, for it contains not only an excellent account of the birds met with within the limits of the county, but also an essay upon its physical features, biographical notices of Essex ornithologists (among whom we see the familiar names of Bree, Doubleday, Hoy, and Legge), descriptions of the most important collections of birds within the county, an account of its decoys, and a list of previously published works on the same subject. Mr. Christy's volume is, in fact, well planned and well got up, and has the great merit of not being too bulky. We must, however, confess that we do not much like some of the woodcuts, although it is possible that, as the preface says, they may "largely add to the popularity of the work." Some of them, however, are familiar friends of great merit. Five "British Birds" are specially claimed as having been first met with in Essex. These are the Alpine Accentor, the Blue-headed Wagtail, the Adriatic Gull, the Scopoli's Sooty Tern, and the Pheasant (!), the first record of the occurrence of the last-named bird in England being in 1059 (*cf.* *Ibis*, 1869, p. 358).

#### 84. *Clarke on the Birds of Jan Mayen Island.*

[The Birds of Jan Mayen Island. Communicated, with Annotations, by W. Eagle Clarke, F.R.S. *Zoologist*, 1890, pp. 1-16, 41-51.]

Mr. Eagle Clarke has communicated to the '*Zoologist*' a translation of Dr. Fischer and A. v. Pelzeln's joint paper on the birds collected and observed in Jan Mayen Island during the sojourn there of the Austro-Hungarian Expedition in 1882-83, and has added some excellent annotations thereto. We have already noticed the original paper (*Ibis*, 1887, p. 106), but Mr. Eagle Clarke's introductory observations and his apposite criticisms on the determinations of some of the species deserve to be consulted. What is the "Blackbird" that appeared in Jan Mayen at Christmas?

Can it be really *Turdus merula*, or is it not more probably *T. torquatus*? We would ask any member of the B. O. U. that goes to Vienna to endeavour to settle this point.

#### 85. *Everett on the Birds of Borneo.*

[A List of the Birds of the Bornean Group of Islands. By A. H. Everett, C.M.Z.S. Journ. Straits Branch Royal Asiatic Soc. Singapore, No. 20, 1889, p. 91.]

Mr. Everett's useful list contains the names and references of 570 species now known to be found in Borneo and in its dependent islands, embracing Balabac, Palawan, the Calamines, and the Cuyo Islands. Much, however, still has to be done, especially in exploring the eastern, south-western, and central districts of Borneo itself and the outlying islands, before our knowledge of its avifauna can be deemed to be anything like complete.

Summing up his list, Mr. Everett tells us that "no family of birds is exclusively confined to the Bornean group, and but few genera, even, are peculiar. *Allocotops*, *Chlorocharis*, *Androphilus*, and *Ptilopyga* among the Timeliidæ, *Tricophoropsis* and *Oreoclestes* among the Brachypodidæ, *Pityriasis* (?) among the Laniidæ, *Chlamydochæra* among the Campophagidæ, *Heteroscops* among the Bubonidæ, *Lobiophasis* among the Phasianidæ, and *Hematortyx* among the Tetraonidæ all appear to be peculiar to the island of Borneo alone; while we have *Ptilocichla* among the Timeliidæ and *Dryococcyx* among the Cuculidæ restricted apparently to the Palawan subgroup." Of the species, however, a considerable proportion seem to be exclusively confined to the group, and Mr. Everett gives us a list of 140 thus restricted.

#### 86. *Hargitt on the Picidæ.*

[Catalogue of the Picariæ in the Collection of the British Museum. Scansores, containing the Family Picidæ. By Edward Hargitt. 8vo. London: 1890.]

The 18th volume of the Catalogue of Birds has been issued in advance of the 16th and 17th. It is devoted to the Picidæ

—the first family of the “Scansores,” which are here considered as a “suborder” of the Picariæ. The Catalogue of the Picidæ has been prepared by Mr. Edward Hargitt, who, as is well known to most of us, has devoted much time and great attention to this group of birds for many years.

The number of genera of the family Picidæ is, as the author tells us, 50, every known genus being represented in the British Museum. The number of species and subspecies recognized is 385, of which 36 are still wanting to complete the series in the Collection. Of these 385 species, the Museum possesses the types of 75. The number of specimens of Picidæ in the Collection at the present date is 7894.

Mr. Hargitt divides the family Picidæ into three sub-families—Picinæ, Picumninæ, and Iynginæ. He recognizes 338 species of the first group, 43 of the second, and 4 of the third.

The following four genera are now proposed for the first time:—*Sapheopipo* for *Picus noguchii*, Seeb.; *Crocomorphus* for *Celeus flavus*, auctt.; *Microstictus* in place of *Lichtensteinipicus* (!), Bp.; and *Nesocitites* for *Picumnus micromegas*, Sund. Only one new species appears to be described, namely, *Chloronerpes godmani*, from Mexico.

Fifteen coloured plates (very nicely executed by Peter Smit) are attached to the present volume. They represent the following 17 species:—*Chloronerpes xanthochlorus*, *Chrysophlegma wrayi*, *Melanerpes pulcher*, *Dendrocopus pyrrhōthorax*, *Iyngipicus nigrescens*, *I. picatus*, *I. grandis*, *Dendrobates fidelis*, *Mesopicus xantholophus*, *M. johnstoni*, *Celeus spectabilis*, *Cerchneipicus occidentalis*, *Chrysocolaptes rufopunctatus*, *Thriponax pectoralis*, *Picumnus flavifrons*, *P. wallacii*, and *Sasia everetti*.

Having been lately engaged in studying the birds of Chili, we may venture to say that we doubt the occurrence of *Dendrocopus mixtus* in that Republic. The “Pampas Argentinas,” whence Leybold’s specimens were obtained, are near Mendoza, in Argentina, and the other specimens labelled “Chili” are in all probability from the same district. The only Chilean Woodpecker of this group is, we believe, *Dendrocopus lignarinus*.

87. *Hartert and Kutter on East-Indian Birds and Eggs.*

[Zur Ornithologie der indisch-malayischen Gegenden. Von Ernst Hartert. (Mit oologischen Beiträgen von Oberstabsarzt Dr. Kutter.) J. f. O. 1889, p. 345.]

Herr Ernst Hartert has made a nineteen-months' collecting-tour in the East, and now gives us the benefit of his ornithological collections and experiences. During the first nine months he devoted himself principally to insects in Penang, Sumatra, Salanga, and Perak, but obtained likewise a few birds. Returning to Calcutta, Herr Hartert proceeded, along with an American entomologist, Mr. Wm. Doherty, to Upper Assam, and after several months' stay there, went back to the Malay Peninsula, whence he returned home through continental India. The birds have been determined at the Berlin Museum, while Dr. Kutter, the well-known Oologist of Cassel, contributes notes on the eggs.

Herr Hartert divides his observations into four sections—Sumatra, Perak, Assam, and continental India, and gives us many interesting remarks on all these subjects. Under the second head will be found the author's collected notes on the *Eurylæmidæ* and their nesting. He obtained nests and eggs of *Eurylæmus ochromelas* and *Cymborhynchus macrorhynchus* in Perak and of *Serilophus rubropggius* in Assam, and was furnished with notes on those of *Psarisomus dalhousiæ* by a correspondent. From his observations and those already recorded by Messrs. Davison and Oates, it is now certain, as is pointed out by Dr. Kutter, that the *Eurylæmidæ* construct a domed purse-shaped nest, suspended to the bough of a tree, and lay more or less spotted eggs.

In Assam Herr Hartert stationed himself first at Margherita, on the Dihong, at the foot of the Patkoi Hills, and afterwards under the Mishmi Hills, north of Sadiya, whence he explored the adjoining ranges. Amongst other birds of interest, he met with *Cypselus infumatus* (*verus*) breeding in the native villages at an elevation of 1500 feet and upwards, and asserts its specific difference from the Burmese Swift so called by Oates. A Swift determined as *Collocalia linchi* (?) was also obtained here, and the

nest, attached to the stem of a fallen tree, was taken. Three specimens of the rare Hornbill *Anorrhinus austeni* (cf. Ibis, 1872, p. 6) were procured on the Patkoi Hills and are described in detail. Altogether Herr Hartert seems to have made a most successful and instructive expedition.

#### 88. *Hartlaub on Birds from China.*

[Ueber eine Sammlung Chinesischen Vögel. Von Dr. G. Hartlaub. Abhandl. naturw. Ver. Bremen, xi. 1890.]

Dr. Hartlaub gives us an account of a small collection of birds sent to the Bremen Museum by Herr B. Schmacker, a Bremner resident in Shanghai. It contains 100 specimens, which are referred to 48 species. These are all known species, but our friend manages to give us some very interesting notes on them, and prefaces his account of them with a concise but accurate *résumé* of our chief authorities on Chinese ornithology. Only we must inform him that Mr. Seebohm, not the British Museum, is the fortunate owner of the "Swinhoe Collection."

#### 89. *Oustalet on a new Tinamou.*

[Description d'un nouveau Tinamou de la Patagonie. Par M. E. Oustalet. Ann. d. Sc. Nat. Zool. ix. p. 34.]

Under the name *Tinamotis ingoufi*, M. Oustalet describes a second species of this peculiar genus of Tinamidæ, of which a specimen was obtained by M. Lebrun, of the French Scientific Mission to Patagonia, at Santa Cruz in 1882. The only previously known species of this genus is *T. pentlandi*, of the Bolivian Andes.

#### 90. *Pycraft on the Bird's Wing.*

[A Contribution to the Pterylography of Birds' Wings. By W. P. Pycraft. 8vo. Leicester: 1890. Reprinted from the Trans. Leicester Lit. & Phil. Soc. ii. pt. 3.]

We are much pleased to see a new writer taking up pterylography—there is still so much to be done, even as regards the most ordinary British species, in this much-neglected branch

of ornithology. Mr. Pycraft has established some good points in his little paper, and has evidently studied the bird's wing to some purpose. He maintains that the "remicle" is attached to the third phalanx of the second digit, and not to the second, as stated by Wray, and discusses well the degeneration of this little feather in certain groups. As regards *Phænicopterus*, Wray was again undoubtedly wrong in stating that it is quincubital (*cf.* Ibis, 1890, p. 81). But we may well excuse an occasional slip in so precise and original a writer.

We quite agree with Mr. Pycraft that the term "tertials" should be totally abolished, and "inner secondaries" used for the secondaries next to the primaries, which in some birds are much elongated. We trust that this author will continue his studies of the bird's wing.

#### 91. *Records of the Australian Museum.*

[Records of the Australian Museum. Edited by the Curator. Vol. I. No. 1. Printed by Order of the Trustees: E. P. Ramsay, LL.D., Curator. 8vo. Sydney: 1890.]

This is the first number of a "new occasional periodical," intended to contain "the results of original researches" made by the officers of the Australian Museum, "reports of their collecting-expeditions," and "other matter relating to the work of the Museum." Dr. E. P. Ramsay is the editor. Several of the papers in the present number relate to birds. In Dr. Ramsay's report on a zoological collection from the Solomon Islands, seven species of birds are mentioned as obtained in Howla Island, belonging to the Shortland group; one of these, *Pomarea leucophthalma*, is described as new. A list is given of the birds obtained by Messrs. E. J. Cairn and R. Grant during their collecting-trips to N.E. Queensland from April to September 1889. Dr. Ramsay contributes remarks on the occurrence of some rare birds in New South Wales—*Piezorhynchus leucotis*, *Pycnoptilus floccosus*, &c. Mr. A. J. North gives notes on the nests and eggs of *Merula vinincta* and *Ocydromus sylvestris* of Lord Howe's Island, and on the nidification of *Heteromyias cinereifrons* and

*Orthonyx spaldingi* in N.E. Queensland. The latter builds a dome-shaped nest and lays white eggs.

92. *Reid on the Birds of the Lucknow Museum.*

[Catalogue of the Birds in the Provincial Museum, N.W. P. and Oudh, Lucknow, on the 1st April, 1880. Allahabad: 1890. 1 vol. 8vo. 358 pp.]

This volume gives a list of the specimens of Indian birds in the Lucknow Museum, about 5360 in number, representing 783 species, with an accurate record of their localities. Jerdon's arrangement is followed. The species not included in that work are described in an appendix. References are also given to the volumes of the B. M. Catalogue where published.

93. *Ridgway's 'Birds of Illinois.'*

[The Ornithology of Illinois. Part I. Descriptive Catalogue. By Robert Ridgway. Part II. Economic Ornithology. By S. A. Forbes. Volume I. Published by Authority of the State Legislature. Springfield, Ill.: 1889.]

Mr. Ridgway is a native of Illinois, having been born at Mount Carmel, in the S.E. part of that State, and mainly resident there until 1867. No better qualified person therefore could have been found to undertake the task of compiling an account of the birds of Illinois. Moreover, the Bird-collection of the U. S. National Museum under his charge contains "thousands of specimens from Illinois, contributed by various naturalists now or formerly residing in the State." Mr. H. K. Coale of Chicago, whose industry in collecting and observing birds is known to many of us, has also placed "his note-books, full of valuable records," at the "author's disposal."

In the Introduction are described, first, the physical features of the State, which are generally of a very simple nature, the highest point at the northern border only reaching some 1100 feet above the sea-level, and the whole extent presenting a gradual slope to the south-east. While the northern portion is (or was) uniform prairie, the southern is

heavily wooded. The characteristic features of the avifauna are then pointed out, and a series of tables given, showing the residents, summer migrants, and visitants. A full Bibliography follows.

The systematic portion of the present volume begins with the Passeres, that most inconvenient and unnecessary system of beginning at the wrong end, so dear to our American friends, being on this occasion ignored. The other higher groups down to the end of the Columbæ follow.

94. *Sharpe's Catalogue of the Sturniformes and Abnormal Passeres.*

[Catalogue of the Passeriformes, or Perching Birds, in the Collection of the British Museum. Sturniformes, containing the Families Artamidæ, Sturnidæ, Ploceidæ, Alaudidæ, also the Families Atrichiidæ and Menuridæ. By R. Bowdler Sharpe. London: 1890.]

The issue of the 13th volume of the Catalogue of Birds renders the account of the great Order Passeres complete (see above, p. 388). As regards species, the Passeres are usually supposed to be equally numerous with, or perhaps slightly more numerous than, all the other Orders of Birds put together. According to the views of the authors of the thirteen volumes in which they are catalogued, about 6480 species of Passeres are at present known. We shall probably not be far wrong, therefore, if we give the total number of species of Birds to be catalogued as 13,000. But we doubt whether twenty-six volumes (*i. e.* twice the number assigned to the Passeres) will be sufficient for this purpose; perhaps twenty-nine or thirty will be nearer the mark.

In the present volume we have an account of 601 species and subspecies, belonging to the families Artamidæ, Sturnidæ, Ploceidæ, Alaudidæ, Atrichiidæ, and Menuridæ. Of these only 58 (25 of which are of doubtful value) are unrepresented in the British Museum. The number of specimens illustrative of these families reaches the total of 11,699.

Two genera only are recognized in the Artamidæ—*Artamus*, with 17 species, and the curious Æthiopian monotype *Pseudochelidon*, which, in our opinion, should rather constitute a family by itself.

The Sturnidæ are divided into two subfamilies, Sturninæ and Buphaginæ; the former contains 39 genera, the latter only *Buphaga* with two species. The following genera appear to be proposed for the first time:—

*Chalcopsar*, for *Megalopterus australis*, Smith.

*Hagiopsar*, for *Amydrus tristrami*, Scl.

*Heteropsar*, for *Lamprocolius acuticaudus*, Bocage.

*Mainatus* (sive *Eulabes*) *palawanensis* is a new subspecies of *Gracula javanensis*\* from Palawan.

The Ploceidæ in the Catalogue are divided into two subfamilies, Viduinæ and Ploceinæ. Of the former 42 genera are recognized, embracing 212 species and subspecies; of the latter 20 genera, with 100 species and subspecies. The following generic terms are new:—

*Penthetriopsis*, for *Loxia macrura*, Gm.

*Stictospiza*, for *Fringilla formosa*, Lath.

*Granatina*, for *Fringilla granatina*, Linn.

*Heteryphantes*, for *Malimbus nigricollis*, Vieill.

*Nesacanthis*, for *Foudia eminentissima*, Bp.

We trust that Mr. Sharpe will excuse us for remarking that, according to the principles which he usually goes upon (*i. e.* of spelling names correctly, when the derivation is obvious), "Philæterus" should be written *Philetærus* (φίλος, *amicus*, et ἑταῖρος, *socius*), and "Aidemosyne" *Ædemosyne*.

The following new specific and subspecific terms are employed in the Ploceidæ:—*Urobrachya hildebrandti*, *Lagonosticta landanæ*, *Amadina marginalis*, *Zonogastris soudanensis*, *Coccopygia kilimensis*, *Hypochæra amauropteryx*, *Nigrita pinaronota*, *Munia wallacii*, *M. cabanisi*, *Uroloncha squamcollis*, *U. propinqua*, *Sitagra monacha*, *Hyphantornis jamesoni*, *H. castaneiceps*, *H. shelleyi*, and *Malimbus bartletti*.

In the family Alaudidæ Mr. Sharpe recognizes 116 species and subspecies, and refers them to 21 genera, of which two

\* In the body of the work Mr. Sharpe uses *Mainatus* for *Gracula religiosa*, Linn., and its allied forms. In the Appendix he changes it to *Eulabes*, following Mr. Oates (Faun. Brit. Ind., Aves, i. p. 509). But we see no sufficient reason for not employing the Linnean term *Gracula*, generally adopted.

(*Chersophilus*, for *Alauda duponti*, and *Heliocorys*, for *Galerita modesta*) are new. The following new specific and sub-specific terms are used:—*Alaudula persica*, *A. seebohmi*, *Mirafra secunda*, *M. alopec*, *Heliocorys modesta*, *Ammomanes algeriensis*.

Fifteen coloured plates, drawn by J. and Peter Smit, illustrate this volume, and give us representations of the following 39 species:—*Sturnus menzbieri*, *S. porphyronotus*, *Poliopsisar cambodianus*, *P. burmanicus*, *P. leucocephalus*, *Sturnopastor contra*, *S. superciliaris*, *S. jalla*, *Aplonis brunnescens*, *Lamprocolius ignitus*, *L. glaucovirens*, *L. lessoni*, *L. splendens*, *L. purpureus*, *L. chloropterus*, *L. sycobius*, *L. chalcurus*, *L. purpureiceps*, *L. cupreocaudus*, *Urobrachya bocagii*, *Quelea erythrops*, *Q. cardinalis*, *Q. quelea*, *Q. intermedia*, *Q. ethiopica*, *Q. russi*, *Lagonosticta jamesoni*, *L. polionota*, *L. congica*, *L. landanæ*, *Pytelia hypogrammica*, *Hyphantornis castanops*, *H. xanthopterus*, *H. aurantius*, *H. aureoflavus*, *H. castaneiceps*, *H. bojeri*, *H. superciliosus*, and *Spermospiza ruficapilla*.

#### 95. Shufeldt on the Anatomy of *Speotyto*.

[Notes on the Anatomy of *Speotyto cucicularia hypogæa*. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. of Morph. iii. p. 115.]

Dr. Shufeldt has already treated of the skeleton of *Speotyto* (cf. U. S. Geol. & Geogr. Surv. of the Terr., Hayden's 12th Ann. Rep. pp. 593–695), but now gives us some further information, and describes at full length the pterylosis, muscles, and viscera of this Owl. The pterylosis presents some peculiar points, which, however, may be shared in by other Owls not yet carefully examined. There is also a peculiarity in the structure of the plantar tendons, which merits further examination. An excellent figure of the pterylosis illustrates the memoir.

#### 96. Shufeldt on the North-American Passeres.

[Contributions to the Comparative Osteology of the Families of North-American Passeres. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. of Morph. iii. p. 81.]

Dr. Shufeldt takes the twenty families of North-American

Passeres, as adopted in the Check-list of the American Ornithologists' Union, and, after a "concise sketch" of the osteology of one or more of the representatives of each of these groups, proposes to show how they may be arranged in a more natural linear order. Many of these types (*Lanius*, *Sturnella*, *Eremophila*, *Chamæa*, &c.) have been studied in former papers, details are now given on most of the remainder. The revised table (*op. cit.* p. 107) is perhaps, in some respects, an improvement upon that of the Check-list; but, as is unfortunately the case in most of this author's elaborate memoirs, no *precise* characters are given by which the twenty families may be distinguished. If Dr. Shufeldt would furnish these he would do a good deed.

As regards the elevation of Corvidæ to the highest place in the Passerine series, in maintaining which Dr. Shufeldt follows Professor Newton, we think that the wing-structure of the Crows is hardly reconcilable with this view. Surely the families in which the primary quills are nearly (or quite) reduced to nine in number must be allowed to be of a higher degree of development than those which retain ten or eleven fully formed primaries. It may be quite true that the Raven has a "relatively larger brain" than that of other Passeres, that its young have "substantially the plumage of their parents," and even that it is "a far more intelligent bird than any species of *Sialia*"; but its wing-structure is, to our mind, a more significant character, and the Corvine wing-structure is of a "low type."

#### 97. *Shufeldt on the Position of Chamæa.*

[On the Position of *Chamæa* in the System. By R. W. Shufeldt. Journ. of Morph. iii. p. 475.]

The much-vexed question of the position of *Chamæa* in the natural series is here discussed by Dr. Shufeldt at full length, after examination of a goodly series of specimens of this form and its supposed allies, contributed by sympathizing friends and correspondents. The ultimate results arrived at are not very concisely given. But it would seem that the "general form of *Chamæa* is more like that of a Bush-Tit

(*Psaltriparus*)” than that of other birds with which it has been compared. The cranial characters tend in the same direction, and “force us to believe” that *Chamea* is more nearly allied to *Psaltriparus* than to any other bird of the North-American avifauna.

98. *Shufeldt on the Osteology of the Water-birds.*

[Contributions to the Comparative Osteology of Arctic and Sub-Arctic Water-Birds—Part VI. By R. W. Shufeldt, M.D., C.M.Z.S. Journ. Anat. & Physiol. xxiv. p. 169.]

Dr. Shufeldt continues his studies on the osteology of the Water-birds (see above, p. 381), and now treats of the Loons and Grebes. He does not at all agree with the plan of the “Check-list” in separating these two families, and uniting the Loons with the Awks. However widely separated now, Dr. Shufeldt believes that the Loons and Grebes are derived from the same ancestral stock.

The osteological characters of the Loons are concisely summarized in seven numbered paragraphs at the close of the article.

99. *Stejneger on Birds from Kauai, Hawaiian Islands.*

[Notes on a third Collection of Birds made in Kauai, Hawaiian Islands, by Valdemar Knudsen. By Leonhard Stejneger. Proc. U.S. Nat. Mus. xii. pp. 377-386.]

Dr. Stejneger, who, though “Curator of the Department of Reptiles and Batrachians” in the U.S. National Museum, does not, we are happy to see, neglect the birds, gives us an account of another collection of his correspondent, Mr. Knudsen, in Kauai, of the Hawaiian Islands. As must be the case with all collections from this locality, it is full of interest. Additional specimens now convince the author of the identity of his *Puffinus knudseni* with *P. cuneatus*, Salvin. *Bulweria bulweri* (!) is an unexpected addition to the Hawaiian list. Dr. Stejneger is now “fully satisfied” that *Phæornis* is very closely allied to *Myiadestes*, and should be included in the same group. This is certainly, as he remarks, of “very

great interest," as it is "the only instance of a peculiar Hawaiian genus of Passerine birds being related to birds exclusively American in their present distribution." Finally, a new species of *Oreomyza* is described as *O. wilsoni*. Altogether 22 species of birds are spoken of in the present memoir.

100. *Tschusi zu Schmidhoffen's 'Ornithologisches Jahrbuch.'*

[Ornithologisches Jahrbuch—Organ für das palæarktische Faunengebiet. Herausgegeben von Victor, Ritter von Tschusi zu Schmidhoffen. Band I. Hefte 2-4. 1890.]

Three more numbers of the new 'Ornithologisches Jahrbuch,' of which we have already mentioned the institution (above, p. 382), have reached us. They contain various articles on Central European birds, of which that which interests us most is an account of the irruption of *Pastor roseus* into South-eastern Europe in June 1889. In that month large flocks of this remarkable migrant arrived at Knjajevo, near Sophia. Small flocks and wandering individuals appear to have separated from the main swarm, and were met with at different points in Bohemia, Galizia, Moravia, Carinthia, Lower Austria, Croatia, Bosnia, and Hungary. The last great irruption of *Pastor roseus* took place in 1875 (cf. Verh. k.-k. zool.-bot. Ges. Wien, xxvii. Abh. p. 196).

101. *Tschusi zu Schmidhoffen on Pallas's Sand-Grouse.*

[Das Steppenhuhn (*Syrrhaptus paradoxus*, Pall.) in Oesterreich-Ungarn, eine ornithologische Studie von Victor, Ritter von Tschusi zu Schmidhoffen. Separat-Abdruck aus d. Mitth. Naturw. Ver. Steiermark, 1889.]

In this memoir we have a very complete account of the various occurrences of *Syrrhaptus* within the limits of the Austro-Hungarian Empire. After a list of the publications on the subject, which occupies eight closely printed pages, the fifteen principal divisions of the dual monarchy are taken in alphabetical order, and the various authorities are given for the occurrences of this bird in each of these divisions. By the "tabular review" which follows, it would seem

that the greatest number of specimens were recorded in Bukowina, as might have been expected. General details as to the flights of the different years, their direction, and their length of stay, also as to the manner of life and the food of the birds, and other particulars are appended, and a clearly drawn map accompanies the memoir. Although several cases of females being shot with ripe eggs in the oviduct are recorded, no authentic instance of the bird's breeding in Austro-Hungary has been ascertained.

102. *Zeledón on the Birds of Costa Rica.*

[Catálogo de las Aves de Costa Rica. Con indicación de las especies, localidades y número de ejemplares contenidos en la colección del Museo Nacional. Por José C. Zeledón. Ann. Mus. Nac. Rep. Costa Rica, 1887, p. 107.]

This revised and augmented Catalogue of the Birds of Costa Rica gives the names and localities of no less than 708 species. The last published list (Proc. U.S. Nat. Mus. 1885, p. 104) contained 692, showing that 16 species have been recently added to the Costa-Rican avifauna by the exertions of the author, whose zeal in the good cause is well known to us.

XLVI.—*Letters, Extracts, Notices, &c.*

THE following letters, addressed "to the Editor," have been received since our last issue:—

SIR,—Occasionally individuals of the Penguin of New Zealand (*Eudyptes pachyrhynchus*) leave the sea and ramble considerable distances up the freshwater rivers. Two instances, which have occurred to my knowledge within the last five years, are worth recording. On February 9th, 1886, a specimen of this species was captured on the Kakauni river, in North Otago, six miles from the sea. A second specimen was captured on the 24th of last month, on the Ashburton river, twelve miles from the sea, and was duly chronicled in the local newspapers. Mr. Robin, the farmer who brought

the bird into town, placed it on the ornamental waters of the Domain, where I saw it in the afternoon leisurely deporting itself in one of the shallow ponds. The bird (♀) is in excellent plumage, and appears to be otherwise in good condition. It may be noted that the summer and autumn of 1885-86 were exceedingly dry and hot, while the present season is also exceptionally dry and hot, in New Zealand, and the rivers are lower at the present time than they have been for many years. Some of the streams are well stocked with numerous shoals of small fishes as well as mollusks and crustaceans, and the fact of their being easily obtained in the present low state of the rivers may account for the Penguins ascending the rivers in dry seasons to obtain food. After the nesting-season they frequently repair to the estuaries of rivers to feed, but they rarely wander so far from the sea. Sir Walter Buller records the capture (Birds N. Z. 2nd ed. 1888, vol. ii. p. 288) of a specimen by the natives half a mile up the Opotiki river (North Island) in 1868, but this is the only case yet recorded of the Penguin wandering any distance from the sea.

Yours &c.,

W. W. SMITH.

Ashburton, New Zealand,  
March 6, 1890.

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SIR,—On the 22nd May a beautiful adult male specimen of the Caspian Plover (*Ægialitis asiatica*, Pall.) was shot by a boy named Samuel Bensley on the Denes, Great Yarmouth. There was another one with it at the time, but that escaped. The ground on which they were observed was sand overgrown with grass. The bird, which has since been purchased, I am informed, by Mr. Southwell for the Norwich Museum for the sum of £10, has been nicely mounted by Mr. Lowne, naturalist, Yarmouth, in whose shop it is still on view.

I have compared it with the description of the summer plumage in 'Stray Feathers' (vol. vii. p. 438), with which it agrees well, except that the crown, nape, wings, and back appear to be in the paler winter plumage.

The bird is about the size of the common Ringed Plover (*Ægialitis hiaticula*), but in plumage reminds one more of the Dotterel (*Eudromias morinellus*) on account of its broad rufous pectoral band and the white stripe over the eye. The most striking feature, however, is the long tarsus, in which it seems to approach the genus *Himantopus*. The birds were not at all shy, and consequently easily approached, and that they were genuine wild birds there is not a doubt. This adds one more species to the British list, and it is to be hoped will find a place amongst the beautiful plates in Lord Lilford's new work, to which it will be a valuable addition.

Yours &c.,

E. A. BUTLER, Lt.-Col.

Herringfleet Hall,  
Lowestoft, Suffolk,  
June 20th, 1890.

P.S.—The sternum has been forwarded to Prof. Newton.

[The specimen in question was exhibited by Mr. Southwell at the meeting of the Zoological Society of London on June 17th.—Ed.]

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SIR,—It will probably interest your readers to hear that there was sent to the Society's Gardens in the month of March last, a Chaffinch (*Fringilla cælebs*), a specimen which was very curious. The right half of the bird was exactly like that of a male in breeding-dress, whilst the left half was that of a female.

The two different plumages were so perfectly separated that one could draw a straight line from the point of the beak over the back and over the breast to the middle of the tail. The beak itself presented the two different colouring in perfect distinctness.

The bird having been sacrificed to science, its post-mortem examination was effected by Prof. Max Weber, who found it, as was to be expected, a hermaphrodite. On the left side the ovary was well developed, whilst the right side had a normal testicle.

The bird was caught at Hardenogh (prov. Gelderland), and the skin is preserved mounted in the series illustrative of the fauna of Holland in our Society's Museum.

Yours &c.,

Koninklijk Zoologisch Genootschap,  
Natura Artis Magistra,  
Amsterdam, June 7, 1890.

F. E. BLAAUW.

SIR,—I beg leave to place on record the occurrence of the following birds in Borneo :—

*Locustella lanceolata* (T.). Labuan Island.

*Motacilla ocularis*, Swinhoe. Baram (C. Hose).

*Milvus melanotis*, T. & S. Labuan Island.

*Calidris arenaria* (L.). Baram Point.

All these birds were shot during the N.E. monsoon, and may be looked upon as occasional winter migrants. Referring to Mr. Sharpe's note in the July number of 'The Ibis,' on birds from Penrisen Mountain, in Western Borneo, I may mention that examples of the following highland forms were also obtained there by my native hunter, viz. *Myiophoneus borneensis*, *Criniger ruficrissus*, *Cryptolopha schwaneri*, and *Æthopyga temmincki*.

Yours &c.,

41 York Terrace, Regent's Park,  
July 7, 1890.

A. H. EVERETT.

*Syrhaptēs paradoxus* in Captivity.—Mr. F. E. Blaauw kindly furnishes us with the following particulars in reference to the specimens of *Syrhaptēs paradoxus* now living in the Gardens of the Royal Zoological Society at Amsterdam :—

"In the course of the summer of 1888, our Zoological Society received from different quarters (by purchase or presentation) many specimens of *Syrhaptēs*, alive, for the menagerie, and dead, for the Museum. Most of the living birds came from the island of Texel, where these birds were found in great numbers, and we also got two eggs from the same place. The living birds, twelve in number (four of

which were hens), were placed in an open-air aviary, which had a glass roof, so that the soil always remained dry and sandy. The birds were fed with different kinds of seeds and vegetables, of which last food they are very fond.

"The first spring (1889) of their captivity the birds did not lay any eggs, and in course of time three of the twelve died, so that now (July 1890) only three females and six males remain. At the end of May and beginning of June the hens began to lay, and in all fourteen eggs were laid. As the birds showed no inclination to breed, the eggs were placed in an incubator, and after 28 days four chicks came out. Two of these could not get out of the shell perfectly, and died during the act. The other two came out well, but died after two or three days, refusing to take any food. The other ten eggs were bad or contained dead embryos. As a general remark, I may add that the *Syrhaptēs*, in a wild state, have completely left this country, as I suppose they have done elsewhere in Western Europe."

[I may add to Mr. Blaauw's remarks that six specimens of *Syrhaptēs paradoxus*, presented to the Zoological Society of London in 1888 by various donors, and one received in 1889, are now all dead.—ED.]

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*A Tame Cuckoo*\*.—At the end of July 1889, being in Suffolk, I was informed by the servants that a strange bird, "like a Hawk," had been seen at the pantry window, and that it took raw meat chopped up small. I watched for the bird and found a full-grown young Cuckoo, the chief object of its visit being a bush of *Pyracanthus japonica*, which was covered with the larvæ of *Orgyia antiqua*, the common vapourer moth. In a day or two the bird had completely cleared the bush, and then shifted its quarters to another bush, similarly infested, on the other side of the house. After clearing this it took up its abode in the front garden, where it perched on the lawn-tennis stop-nets, which are hung up round the lawn, and it occurred to me that I might induce

\* From 'Land and Water,' Aug. 17, 1889.

it to feed there, so I procured some lobworms and threw them on the grass.

The bird instantly took them, and now has become quite tame, and will come within a yard or two of me, and, so far, has given no sign of migrating. I have watched carefully, but have never seen any bird attempt to feed it, except in one instance, a Wagtail; but, as the pair of these are accompanied by six young ones, they have not much time to devote to the stranger, who, to a large extent, has shifted for itself. Since I have fed it with worms it seems to have got fat, and if a worm moves near the surface when the dew is on, it goes down and digs it out like a Thrush.

Its favourite position is a pole, which I have put up for it, and sitting on this it much resembles a Hawk, and is mobbed sometimes by Swallows, which it snaps its beak at when they come too close. Several naturalists of repute, including my brother and Mr. Frank Norgate, have witnessed these interesting facts; and we all agree that this is a somewhat new phase in the life-habits of a very mysterious bird, and worthy of record in your columns.—W. H. TUCK, *August 12, 1889.*

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*New Breeding Birds in the Trondhjem District.*—Prof. Collett, writing from Róros, north of Trondhjem, in Norway, on July 8th, says as follows:—"I am just now in good collecting-ground. Three days ago I found *Tringa maritima* breeding on the mountains of Trondhjem, close to the Swedish frontier, and to-day I have found here (at Róros) the nests of *Tringa temminckii* (four eggs) and *Otocoris alpestris* (full-grown young ones). The nearest breeding-place hitherto known of these three species is Tromsö and Finmark."

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*International Ornithological Congress of 1891.*—We have received circulars announcing that the "Second International Ornithological Congress" will be held at Budapest at Whitsuntide next year.

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*Breeding of Falco babylonicus.*—Mr. Hume kindly communicates the following note from Lieut. Philott on the

breeding of *Falco babylonicus* :—" It may interest you to know that a nest of the Red-naped Shahin (*Falco babylonicus*) was found on the 13th May last in the Gumál Pass, in the Waziri country, about 30 miles from Dera Ismail Khan. The nest was taken by Mr. Donald, Political Officer at Tamleh, and myself. It contained two young ones, a male and a female, which would have left the nest in about a week. I have these birds now in my possession. The nest was found at an elevation of a little over 2000 feet.

" Mr. Hume told me last year that this Falcon would probably be found breeding in the Sulimani range, but that he was not aware that any European had ever found the nest.

" Mr. Donald also shot an adult female of this Falcon near Fort Munro about two years ago during the hot weather, and I have seen others near Bahkri and Kingri, in Baluchistan, during the same season. Last year a native falconer near Jhelum had two of these birds, which were said to have been taken in the salt-range."—(D. C. PHILLOTT, Lieut. 3rd Punjab Cavalry : Dera Ismail Khan, July 3rd, 1890.)

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*The Gätke Collection.*—Ornithologists will be much pleased to hear that Mr. Seebohm has purchased the celebrated Bird-Collection of Herr Gätke, of Heligoland, with the intention of presenting it to the British Museum. The collection, which is said to contain upwards of a thousand specimens, referable to 396 species, is expected to arrive in England in October. The specimens, which were all captured in this wonderful little ornithological paradise, are mounted. They will be arranged and exhibited in one series in the Natural History Museum. We are informed that Herr Gätke's extensive notes on the Birds of Heligoland are now *actually* in the press, and that an English edition of this long-expected work will also be published.

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*Obituary.*—WILLIAM KITCHEN PARKER, who died suddenly at Cardiff on the 3rd of July last, at the age of 67 years, was not an Ornithologist in the ordinary sense of the term, but has rendered such services in advancing our

special science as may well claim a few lines of acknowledgment in this Journal. Born in Northamptonshire in 1823, Parker passed the early years of his life as apprentice to a chemist and druggist, and showed his taste for natural history by collecting plants, keeping pet animals, and preparing skeletons. In 1844-46 he was a student at King's College, London, and became demonstrator to Dr. Todd and Sir William Bowman. Having qualified for practice, he commenced his medical career at Tachbrook Street, Pimlico, in 1849, and soon made himself known amongst the men of science of the metropolis by his laborious investigations, especially in microscopic work. The Foraminifera, both recent and fossil, were selected as special objects of study, and a series of excellent memoirs, partly written in conjunction with Prof. Rupert Jones and other fellow workers, were prepared by him on this subject. These were followed by a series of original and most elaborate investigations on the osteology of different groups of Vertebrates that have made his name ever famous. Parker was elected a Fellow of the Royal Society in 1865, and received a well-earned Royal Medal in 1866. In 1873 he was appointed Hunterian Professor at the Royal College of Surgeons, and held that post until 1884. Parker's principal ornithological memoirs are:— On the Osteology of *Balæniceps rex* (Trans. Zool. Soc. iv. p. 269); On the Osteology of Gallinaceous Birds and Tinamous (Trans. Zool. Soc. v. p. 149); On some Fossil Birds from the Zebbug Cave, Malta (Trans. Zool. Soc. vi. p. 119); On the Osteology of the Kagu (*Rhinocetus jubatus*) (Trans. Zool. Soc. vi. p. 501); On *Ægithognathous* Birds: Part I. (Trans. Zool. Soc. ix. p. 289), Part II. (*ibid.* x. p. 251); On the Osteology of *Microglossa alecto* (Proc. Zool. Soc. 1865, p. 235); On the Systematic Position of the Crested Screamer (Proc. Zool. Soc. 1863, p. 511); Remarks on the Skeleton of the Archæopteryx (Geol. Mag. 1864, p. 55); On the structure and development of the Skull of the Ostrich Tribe (Phil. Trans. 1866, p. 113); On the structure and development of the Skull of the Common Fowl (Phil. Trans. 1869, p. 755); On the structure and development of the Crow's Skull

(Monthly Microsc. Journ. 1872, p. 217); On the development of the Skull of the Tit and Sparrow-Hawk (Monthly Microsc. Journ. 1873, pp. 6, 45); On the development of the Skull in the genus *Turdus* (Monthly Microsc. Journ. 1873, p. 102); On the structure and development of the Wing in the Common Fowl (Phil. Trans. 1888, p. 385); On the presence of Claws in the wings of the Ratitæ (Ibis, 1888, p. 124); Morphological elements of the Skull (Journ. Anat. & Phys. viii. p. 62); On the Vertebral Chain of Birds (Proc. R. Soc. xliii. p. 465); and on the Osteology of *Steatornis caripensis* (Proc. Zool. Soc. 1889, p. 161). A paper on the "Morphology of a Reptilian bird (*Opisthocomus cristatus*)" was read before the Zoological Society on Feb. 4th, 1890, and will shortly be published in the Society's 'Transactions.' We may also remind our readers that Prof. Parker was the joint author with Prof. Newton of the excellent article on Birds, published in the 'Encyclopædia Britannica,' ed. 9, vol. iii.

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JOHN HENRY GURNEY (*Correction of an Error*).—In the obituary notice of the late Mr. Gurney in our last number, it was stated (p. 394) that he attended the meeting at Cambridge in the autumn of 1858. This is a mistake, for he was prevented, almost at the last moment, from carrying out his intention of being present. His advice, however, was acted upon none the less, and was of great service to the other founders of 'The Ibis.'

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